

THE ROLE OF POSITIVE IRRATIONAL BELIEFS
IN MENTAL HEALTH & WELLBEING

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CANDIDATE DECLARATION



I certify that the thesis entitled:

“The Role of Positive Irrational Beliefs in Mental Health & Wellbeing”,

submitted for the degree of

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is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

I also certify that any material in the thesis which has been accepted for a degree or diploma by any university or institution is identified in the text.

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Abstract

This thesis is an investigation based on the social psychological model of mental health proposed by Taylor and Brown (1988). Contrary to traditional approaches, their model proposes that positive irrational beliefs of the self, of control and of the future, contribute to mental health. The premise of this model is based largely on the ability of positive irrational beliefs to promote wellbeing. Their model has been criticised on a number of methodological and theoretical fronts. In particular, criticism has been levelled at their method of indirectly operationalising positive irrational beliefs, and at their focus on wellbeing to the neglect of other aspects of mental health. It has also been suggested that while the short term influence of positive irrational beliefs may appear positive, the long term consequence may be negative. This current research investigates these criticisms through two linked studies.

The first study involved the creation of a measurement tool to ‘directly’ measure positive irrational beliefs. Furthermore, it related these direct reports to subjective wellbeing (SWB). Analysis indicated that positive irrational beliefs can be separated into four factors, with beliefs relating to the self being separated into two factors. Together, the different factors were found to only have a very weak relationship with SWB for those demonstrating a normal level of SWB. However, the contribution of the four factors was not uniform. Only self-enhancing beliefs and beliefs rejecting imperfection about the self demonstrated individual relationships with SWB, and the latter was negative.

In the second study, the new measure was compared again to SWB, and also to other constructs pertaining to mental health. Essentially the same factor structure was found for the scale. Collectively, the positive irrational beliefs demonstrated only a very weak relationship with the constructs of mental health that were measured. Again, analysis of the individual factors revealed that their contribution was not uniform. Beliefs enhancing the self and those that were overly optimistic demonstrated a positive relationship with mental health. However, beliefs rejecting an imperfect self concept demonstrated a negative relationship with mental health, and irrational beliefs of control had no relationship.

It was concluded that, even in the short term, positive irrational beliefs have little power for explaining aspects of mental health, including emotional state, satisfaction with life, self-esteem, and coping styles. It was also concluded that future studies of positive irrational beliefs would benefit from examining specific types of positive irrational beliefs, rather than subsuming them in a single factor.

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Introduction

Interest in positive psychology has experienced a resurgence over recent years. This has resulted in a broadening of psychological research to include a scientific focus for the study of the humanistic philosophy of ‘the good life’ (Biswas-Diener, 2006; Haslam, Bain, & Neal, 2004; Seligman & Csikszentmihalyi, 2000). Consequently, this resurgence has led to the scientific investigation of such topics as personal fulfilment, character, resilience, and wellbeing (Haslam et al., 2004; Peterson & Seligman, 2003; Resnick & Rosenheck, 2006).

With wide ranging goals, the field of positive psychology is concerned with issues at a subjective level, at an individual level, and at a social level. Examples of subjective issues are satisfaction judgements, optimism, happiness and wellbeing, while at the individual level issues covered include interpersonal skills, perseverance, and wisdom (Peterson & Seligman, 2003; Seligman & Csikszentmihalyi, 2000). Hence, of obvious interest to positive psychology has been the concept of mental health, or more specifically, good mental health. As such, positive psychology has spurred a renewed interest in the debate over what constitutes a mentally healthy individual, and the factors that promote such health.

Central to this discussion is the definition of mental health and the role it assigns to subjective wellbeing. Over the years there have been a range of proposed models, however, at present there are two predominant perspectives. These are the ‘traditional’ mental health model, and Taylor and Brown’s (1988) social psychological model, which has been enhanced by Baumeister’s (1989) optimal margin of illusion theory. The traditional model holds that the key to good mental health is self-insight and accurate

perception of the world and oneself (Gana, Alaphilippe, & Bailly, 2004). Conversely, in the social psychological model, positive irrational beliefs, under the title of ‘positive illusions’, are purported to promote psychological wellbeing, and therefore mental health (Taylor & Brown, 1988, 1994). The optimal margin theory builds on this, stating that a moderate level of positive illusions are required for optimal wellbeing, and that either too much or too little is maladaptive (Baumeister, 1989).

These theories and questions and the questions arising out of them will be explored in the following chapters.

Chapter 1: Perspectives on Mental Health

There is no agreed definition for the term ‘mental health’. Rather, it has acquired a variety of meanings over the years as various individuals have attempted to incorporate new findings and ideas they believe to be pertinent to the concept. Historically, the term ‘mental health’ has been predominantly used in a contrary manner, referring to the absence of conditions of psychopathology, such as depression, anxiety, and even psychosis (reported in Cummins & Lau, 2006; Jahoda, 1958). This negative approach to mental health can clearly be seen in Shaffer’s (1948) description of mental hygiene as the “prevention of anxieties and maladjustment” (p. 542). Moreover, its dominance of the literature has been reported in numerous places (for example Jahoda, 1958; Seligman & Csikszentmihalyi, 2000). Such use of the term results in a clear distinction, polarizing individuals into either a category with psychopathology, who are thus deemed to be of poor mental health, or into a category of individuals without psychopathology, who are deemed normal and to be of good mental health (Gilbert & Weitz, 1949; Taylor & Brown, 1988). However, the reality of the matter is not so black and white. As noted by a number of prominent writers, mental health exists in degrees (Allport, 1960; Jahoda, 1958; Maslow, 1962). Furthermore, the development of such simplistic distinctions is misleading, and restricts the identification of attributes that may promote positive mental health and go beyond a mere lack of psychopathology, such as social competence and optimism (Cummins & Lau, 2006; Ryff & Singer, 1998).

Despite this, attempts to define the positive psychological features that may be used to define mental health have been made for centuries.

Traditional Perspectives on Positive Mental Health

Philosophical Background

Traditionally, Western philosophers dating back to, and possibly even beyond, the Greek philosophers such as Socrates, have proposed that one of the distinguishing features of mankind is the ability to think rationally, and to separate fact from fiction (Copleston, 1962). As a result, the attainment of truth and understanding was upheld by the Greek philosophers as wisdom, and was thought to be the ultimate goal upon which happiness and satisfaction was built (reported in Copleston, 1962). Through such wisdom or knowledge, individuals were thought to be able to determine what was “right”, to best serve man’s utility. Conversely, departures from “truth”, into illusion and reality distortion, were seen as malign and regressive, inhibiting the individual’s ability to engage with life (Copleston, 1962). Hence the ability to accurately know oneself was seen as a virtue, which should be pursued in an attempt to better oneself. This philosophical tradition resonates strongly with later theories of mental health.

Early 20th Century Perspectives

Due to its dominance in the first half of the 20th century, psychodynamic theory played a major role in early psychological descriptions of mental health. While initially the Freudian psychodynamic approach evolved as a theory of neurosis, the formulations were later regarded as a universally valid science of psychology (reported in Allport, 1960). Freud (1922) considered mental functioning to be based upon two principles under control of the ego, the pleasure-pain principle and the reality principle. The

pleasure-pain principle formed the basis of what later became known as the id (Freud, 1951). More specifically, Freud believed that mental functioning is concerned with the conflict that may arise from these principles' competing drives, and the resulting neurosis. In regard to the reality principle, he considered that the mentally unhealthy, or neurotic, individual is one who turns away from reality because they find it unbearable, either in its entirety or in parts (Freud, 1922). The mentally healthy individual, with an appropriately developed reality principle, is therefore considered able to endure pain, acknowledging it as a part of life and sometimes necessary for longer term pleasure (Freud, 1922). Within this context, psychological health is viewed as a continuum, with normality depending upon the degree to which the individual's reality principle was able to manage the pleasure-pain principle for adaptive outcomes. Furthermore, this view of mental health is completely ego dependent.

Other attempts to define the positive aspects of mental health, at that time, tended to describe the outcomes of good mental health, rather than the underlying processes of such health. For instance, Taylor (1927) stated that "mental hygiene is the development of the best mental condition in everyone" (p.743), referring to intellectual, affective, emotional, and volitional processes. Elsewhere, the mentally healthy individual was described as someone who was "balanced and integrated in all phases of his being" (Morgan, 1928, p. 598). For such balance, the individual was required to continually adjust to changes in their life, learning from experience. It was proposed that the mentally healthy individual had learnt how to implement a variety of defence reactions, and could determine which were appropriate for any situation. They also approached life

with enthusiasm, considering it to be a game towards which they must use all their skill, taking gratification from success and stimulation from failure (Morgan, 1928).

While these descriptions were able to define the desirable attributes for mental health, and the processes involved in the development of neurosis, they were limited in their ability to aid in the promotion and development of mental health beyond a mere lack of pathology. This was due to a lack of attention spent on the possible processes contributing to such health.

Towards the middle of the 20th century, the proposed psychodynamic processes underlying mental health were modified, and became more complex. This arose from criticism of the ego dominant view, which quite rightly identified that the early concepts of mental health were overly driven from the perspective of neurosis, giving inadequate attention to the identification of processes for adaptation to reality (e.g. Hartmann, 1939). Later psychodynamic perspectives proposed a more integrated approach. In this later view, the mentally healthy individual was purported to have an ego that could accommodate their superego, the structure of the mind responsible for moral drives, and id with little conflict, and furthermore, that the interaction between the different aspects of the mind would be less likely to be repressed, being more acceptable, and therefore more easily available to the conscious mind (Hartmann, 1939). For example, a mentally healthy individual's ego would allow for the awareness of competing desires to fulfil id driven impulses, while also fulfilling the superego driven desire to maintain social standards. The same conflict in a mentally unhealthy individual would be considered unacceptable to that person and so remain unconscious.

These early perspectives of mental health were largely developed by the various authors in relation to the anecdotal evidence they encountered through their work with the mentally ill. As such, there was little empirical evidence offered in support. Hence, the congruence of these theories to those individuals considered to be mentally healthy was rarely tested.

Mid 20th Century Perspectives

A view similar to that of the Greek philosophy of mental health dominated the literature in the middle of the 20th century. Prominent authors on the topic at this time included Foote and Cottrell, Jahoda, Allport and Maslow.

The view of Foote and Cottrell was socially based, wherein mental health was based on a criterion of successful interpersonal competence. Such competence was defined as having “capabilities to meet and deal with a changing world, to formulate ends and implement them” (Foote & Cottrell, 1955, p. 49). The proposed components of interpersonal competence included physical health, intelligence, empathy, autonomy, judgement, and creativity, with each component considered to be an acquired ability for effective interaction (Foote & Cottrell, 1955). For example, creativity was concerned with the resourcefulness and effectiveness of the individual in solving problematic interpersonal situations, rather than with artistic ability.

The six components were separated into three groups. Physical health and intelligence referred to the individual’s experience of the overt ‘real’ world, empathy and autonomy concerned how the individual related to others, while judgement and creativity represented the individual’s relationship to the past and future (Foote &

Cottrell, 1955). Thus, according to Foote and Cottrell, the mentally healthy person would have good physical health and intelligence, which would allow for the development and maintenance of independent relationships and understanding of others, a creative attitude to interpersonal problem solving, and an ability to make appropriate critical decisions. Such an approach to mental health, however, neglected the non-social aspects of the individual's development, including areas such as the setting and pursuit of goals for achievement.

Alternatively, in an attempt to define positive mental health, Jahoda (1958) reviewed much of the literature available from the first half of the 20th century, referencing a number of her contemporary authors. From her review Jahoda concluded that for healthy perception, what one perceives must correspond with objective cues, and that healthy perception is therefore "a process of viewing the world so that one is able to take in matters one wishes were different, without distorting them to fit these wishes" (1958, p. 51). While Jahoda gave these principles dominance, it is also worth noting that accurate perception of reality was only one of six major concepts relating to good mental health to emerge from the review. The other dimensions identified were; attitude towards the self, self-actualisation, autonomy, environmental mastery, and capacity for integrating the different aspects of psychological functioning (Jahoda, 1958). Having relied upon the available literature at the time may have limited the criteria for mental health, however, as such a review may have overlooked other items not previously considered.

Allport (1960), on the other hand, in his writings on "soundness" of mind proposed a list of criteria for the normal personality. This, he presumed, was the

foundation for mental health. Originally his list consisted of *ego-extension* – the capacity to be interested in more than oneself, *self-objectification* – the ability to relate the past to the present and for humour promoting a broader perspective of life, and a *unifying philosophy of life* – a frame of meaning and responsibility for life's major activities (Allport, 1960). However, he later expanded his list to incorporate three further criteria. These were *the capacity for a warm, profound relating of one's self to others; the possession of realistic skills, abilities, and perceptions; and, a compassionate regard for all living creatures* (Allport, 1960).

In general, Allport (1960) viewed the outward expression, or the symptoms of mental health as a continuum. The processes or mechanisms underlying mental health, however, were considered to be polarised, discrete variables. These variables were split into two categories, catabolic functions which were classed as inherently abnormal, such as avoidance behaviours and rigid thinking, and anabolic functions which were inherently normal, such as abstract thinking, confrontation, and frustration tolerance (Allport, 1960). While Allport believed that all individuals express both anabolic and catabolic functions, it was the individuals with a dominant anabolic style that he purported were normal. These criteria, however, were limited in their ability to explain positive mental health as they were occupied with describing the normal or average level of functioning, and may therefore have been insufficient to describe the optimal levels of functioning which may involve additional or more psychologically advanced criteria.

In contrast, Maslow did consider the optimal level of human functioning with his theory of mental health revolving around self-actualisation. As can be seen in his later writings, Maslow (1962) viewed the mature or healthier individual to be someone who

pursued “growth” values of truth, beauty, and goodness, in addition to the more “regressive” values of peace and quiet, sleep and rest, and of dependency and safety. Furthermore, he proposed that the healthier the person, the more they would pursue these growth values and the less they would pursue the regressive values, however, both were still required (Maslow, 1962). Such healthy behaviour was thought to promote growth towards self-actualisation, which involved acceptance and expression of the inner self in conjunction with a minimisation of ill health (Maslow, 1962).

The achievement of self-actualisation was said to be acquired through the resolution of dichotomies in the individual’s life (Maslow, 1962). For instance, this could include the merging of items like work and play, or the unification of selfish and unselfish behaviour into a higher order of unity. The achievement of such resolutions was claimed to produce creativity applicable to all areas of life, promoting enjoyment, love, and humour. Furthermore, healthier individuals were thought to have such experiences more frequently and to better value such emotional experiences (Maslow, 1962). Maslow believed that for a theory of mental health “extra-psychic” success, elsewhere called mastery, was not sufficient. He proposed that mental health also required intra-psychic health, such as the ability to transcend, tolerate, neglect, fight against, or become independent of the environment (Maslow, 1962). With such an approach, wellbeing was considered to be a product of good mental health.

Perhaps the biggest criticism of Maslow’s theory was the methodology he used to gather information for its formulation. Maslow handpicked a small number of individuals whom he considered to be self-actualising, and then proceeded to read about them or interview them (Boeree, 2006). Whether such a group would elsewhere be

considered to have demonstrated the optimum in mental health is debatable.

Furthermore, his theory has difficulty reconciling creativity, which he valued highly, that may arise from states of poor mental health, such as depression. Such creativity, stemming from a negative aspect of mental health, sits in contrast to Maslow's claims that creativity is the product of healthy resolutions of problematic dichotomies in a person's life.

While not stated explicitly by some authors, these descriptions tend to hold an important role for accurate perceptions of reality. As with the earlier attempts, they were also largely based on philosophy, with limited empirical evidence provided in support. This was generally acknowledged by the authors, however, who viewed their work as a starting point for further scientific study and discussion of mental health (e.g. Jahoda, 1958; Maslow, 1962). Not only have aspects of these theories filtered through into recent theories of mental health, some still hold considerable influence.

Late 20th Century Perspectives

As with many others, Ellis has written about mental health from the perspective of poor mental health, deriving his theories from a range of Eastern and Western philosophical teachings (Ellis, 1994). He, however, proposed that the mentally healthy individual is able to use rationality, and therefore accurate perceptions, to overcome their biological and habitual tendencies to disturb themselves (Ellis, 1987). Furthermore, Ellis (1987) believed that while all humans are hedonistic, those demonstrating greater mental health have greater concern for long-range hedonism, rather than for short-term indulgence, and are therefore less prone to acting in a self-defeating manner. While acknowledging

the ability for individuals to change themselves for the better in pursuit of self-actualisation, Ellis maintained that it is effectively impossible for humans to consistently achieve and maintain good mental health, due to inherent tendencies for self-defeating cognitions, emotions, and behaviours (Ellis, 1987).

In a similar manner, Ryff and Singer (1998) attempted to determine the components of wellbeing contributing to the 'good life' from a review of relevant philosophical and scientific literature. Core features identified as contributing to mental health were meaning in life, quality relationships, self-regard, mastery, and an ability to learn from negative experiences. Happiness was considered to be a by-product of a well lived life. While perceptual accuracy was not directly identified by Ryff and Singer, some of the core features they identified are arguably reliant upon it, to some degree at least. For instance, mastery and growth would likely be unattainable without accurate identification of areas that require development, whereas the development and maintenance of quality relationships would most likely be hindered if little attention is given to reality.

Accurate perceptions are held to be the key to understanding mental health by a range of contemporary clinical theorists, who claim that an accurate view of reality is a necessary condition for good mental health (Brookings & Serratelli, 2006; Colvin, Block, & Funder, 1995; Gana et al., 2004). It is stated or implied by many of these authors that self-deception has a crippling ability, exposing the individual to potential harm and prevents successful adaptation and growth (e.g. Boyd-Wilson, McClure, & Walkey, 2004; Brookings & Serratelli, 2006; Colvin & Block, 1994; Ellis, 2005). Nonetheless, there remains a lack of consensus around the definition of mental health,

and the area is still significantly influenced by philosophical views. This has begun to change in recent years, however, with empirical evidence helping to shape the debate.

Social Psychological Model

In recent years, research studies from the area of social psychology have emerged to challenge the traditional, clinical perspectives on the need for accurate perceptions for good mental health. This movement has been championed by Taylor and Brown who have reiterated in a number of papers (e.g. 1988, 1994) that positive illusions, or more accurately, positive irrational beliefs, provide the basis for good mental health. After reviewing literature from a social psychological perspective, Taylor and Brown (1988) identified that within the cognitions of the normal population there existed a prevalence of positive illusions. Furthermore, these illusions were often related to aspects of the self and the environment, generally taking one of three forms; unrealistic positive self-evaluations, exaggerated perceptions of control, and unrealistic optimism. The conclusion they reached from their review was that positive irrational beliefs play a variety of adaptive cognitive, affective, and social functions for psychological wellbeing, which they took to be largely synonymous with mental health (Taylor & Brown, 1988).

Taylor and Brown developed their viewpoint following studies they had conducted into errors and biases in perception. They believed that the use of the terms 'error' and 'bias' underplayed how pervasive, enduring, and systematic such distortions tended to be, preferring the term 'illusion'. Furthermore, they noted that such illusions were overwhelmingly in a self-serving positive direction (Taylor & Brown, 1988). While the presence of these positive illusions was difficult to measure, Taylor and

Brown (1988) used an inferential method whereby illusion was implied if the majority of people reported that they were more likely to have a certain belief than the average person. For instance, if most people believed that they were happier, more content, or more likely to have a better future than the average person, such beliefs were used to provide evidence of illusion.

As noted previously, the key three illusions to emerge were unrealistically positive views of the self, illusions of control, and unrealistic optimism. Based on their findings, Taylor and Brown (1988) disputed the traditional view of mental health, that in regard to the view of self, a well adjusted individual is aware and accepting of both the positive and negative aspects of self. They claimed instead, that healthy individuals have an unbalanced view towards the positive, and believe themselves to be better than the majority, giving others less credit for successes and more blame for failures than they would for themselves. Adding to their initial claims, they provided evidence from individuals with depression to highlight the positive views most individuals hold, as those with depression were reported as having a less biased and more balanced view of the self (Taylor & Brown, 1988).

In discussing beliefs about control, Taylor and Brown (1988, 1994) maintained that evidence suggests people tend to believe they have greater control than can be justified. For example, in situations which are heavily chance dependent, healthy individuals were said to overestimate their level of control, and tended to attribute success to their skill. Again, individuals with depressed mood were used as a comparison, and were said to report more realistic estimates of their level of control than those without depressed mood (Taylor & Brown, 1988).

Finally, for optimism it was shown that people typically believe that with the progression of time they will be increasingly happier, with the present believed to be better than the past, and the future holding greater promise still (Brickman, Coates, & Janoff-Bulman, 1978). Adding to this, Taylor and Brown (1988) reported that individuals typically foresee a greater number of positive than negative possibilities for their future lives. The illusory nature of such beliefs was claimed to be revealed when compared with the expected future for others, as most people believed their future would be better than the majorities for a wide range of issues, such as health and employment. Taylor and Brown then concluded that because it is objectively impossible for everyone to have a better future than the average person, such beliefs were indicative of positive illusions. Once more, a comparison with mildly depressed individuals was also used in support of their claims, which indicated to them that depressed individuals had a more balanced view of their likely future circumstances (Taylor & Brown, 1988, 1994).

Next, Taylor and Brown (1988) proposed that these positive illusions act to promote mental health through several functions which they hold central to good mental health. These functions included the ability to be happy or content, the ability to care for others, and the ability for productive and creative work. In regard to the ability to be happy and content, they contended that there is a direct relationship, in that self-serving attributional biases provide a basis for positive mood states (Taylor & Brown, 1988). The evidence upon which this relationship was developed, however, was largely correlational, prohibiting causative conclusions. Turning to the ability to care for others, Taylor and Brown (1988) asserted that positive illusions in self-evaluations and optimism are associated with social bonding and functioning. Further, incorporating

their belief that positive illusions create positive mood, they suggested that the possible influence of positive illusions on mood may indirectly affect the ability to care for others, citing findings that happy people tend to be more co-operative and helpful, and engage in social activities. Finally, positive illusions were claimed to promote the individual's aptitude for creative and productive work in two ways; through the facilitation of intellectual creativity itself, and through the augmentation of motivation, persistence, and performance (Taylor & Brown, 1988).

The evidence reported for the facilitation of intellectual functioning was claimed to come from the promotion and use of diverse and complex cognitive cues. These were said to improve the efficiency and quality of decision making, in some cases by diverting cognitive effort to simpler, more efficient problem-solving strategies (Taylor & Brown, 1988). In support of the enhancement of motivation, persistence, and performance, Taylor and Brown (1988) suggested that self aggrandisement, illusions of control, and unrealistic optimism can create self-fulfilling prophecies which encourage people to try harder in situations with objectively poor outcomes, ultimately producing more effective performance and goal attainment. Thus it was concluded by Taylor and Brown (1988, 1994) that positive irrational beliefs promote many of the traditional aspects of mental health, such as growth and mastery, and therefore that being attuned to reality is not required for positive mental health.

Curiously, in a later article, Taylor and Brown (1994) amended their position on "depressive realism", stating that the literature was inconclusive. In addition, they also claimed that the resolution of this issue was not important to their proposal that illusions foster mental health.

While Taylor and Brown (1988, 1994) maintained that illusions could reach harmful levels, it was Baumeister (1989) who further developed the distinction between beneficial and harmful illusions in what he called the “Optimal Margin of Illusion”. He proposed that illusions pertaining to the self can be either adaptive or maladaptive, and that the primary determinant of this is the degree to which the illusion distorts the truth, with a small distortion in a positive direction claimed to be optimal (Baumeister, 1989). Leading from this, he suggested that there is a ‘bandwidth’ of distortion that is required for optimal functioning, and deviation from this results in negative consequences (Baumeister, 1989). The consequences for movement out of this bandwidth were considered to be different depending on the direction of departure. Those moving out of the optimal range in a positive direction were thought to increasingly overestimate reality and glorify themselves, heightening their risk for judgement errors and the potential self-destructive results of such errors (Baumeister, 1989). On the other hand, those moving out in a negative manner, or seeing themselves and life more realistically, were considered to experience depression (Baumeister, 1989).

Moving outside his optimal bandwidth, Baumeister (1989) implied that too large a margin of illusion is functionally more advantageous than too little, as a large margin of illusion will maintain subjective wellbeing, while too small a margin endangers subjective wellbeing and adjustment, despite potentially enhancing pragmatic behaviours. This was also despite the notion that large margins of illusion were problematic in that they could be disconfirmed, potentially creating a distinctly unpleasant experience for the individual, and set a vulnerability to stress, due to the effort required for their maintenance (Baumeister, 1989).

Baumeister's conclusions, however, appear to be based predominantly on only an immediate consideration of the impact of such illusory beliefs upon the individual's wellbeing. A broader view of mental health and a longer term perspective may instead result in quite different conclusions. These theoretical and relevant methodological issues will be reviewed in a later chapter.

Chapter 2: Wellbeing

Considering that the argument for mental health based on positive illusions is largely reliant upon the link between illusions and “psychological wellbeing”, a firm understanding of the current literature on wellbeing is required. As noted in the previous chapter, a central component of Taylor and Brown’s (1988) argument is that these illusions result in a greater level of wellbeing, by providing happiness, or at least contentment, which is claimed to enhance other areas important to mental health. Thus, this chapter will explore the concept of wellbeing and the role of positive illusions.

Subjective Wellbeing

While many different views have been published on the subject of wellbeing, the most prevalent contemporary approach is that of subjective wellbeing (SWB) (Diener, Lucas, & Oishi, 2002; Diener, Suh, Lucas, & Smith, 1999). SWB is a multidimensional concept that incorporates two major aspects. One is the hedonic perspective of wellbeing, occupied with pleasure seeking, and the other is the eudemonic perspective, which emphasises self-actualisation (Ryan & Deci, 2001). This construct is highly regarded as it offers a subjective approach to wellbeing that enables individuals to determine their own pathways to happiness, and to decide for themselves whether their life is meaningful and worthwhile (Diener, 2000; Veenhoven, 1994).

SWB is most commonly viewed as the result of both cognitive processing and affect. The cognitive component involves judgements of meaning, fulfilment and satisfaction, while the affective component is based on emotional reactions to events

(Diener, 2000; Diener, Lucas, & Oishi, 2002; Diener & Seligman, 2004; Diener et al., 1999; Eid & Diener, 2004; Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005; Lucas, Diener, & Suh, 1996). As such, SWB relates to both an individual's momentary state and enduring traits (Eid & Diener, 2004; Kim-Prieto et al., 2005). Thus a person who views life as satisfying and worthwhile, and generally experiences pleasant emotions, with only a few unpleasant emotions, would be likely to testify as having a high level of SWB.

Each cognitive and affective component of SWB comprises a wide range of phenomena. Within the affective, or emotional, component are broad emotional judgements about life as a whole, incorporating areas such as work, health and relationships, and also more specific reactions, such as the momentary evaluations of, and reactions to, events (Diener, 2000; Diener et al., 1999). The affective component can be separated on the basis of emotional experience, for instance, with negative and positive affect considered separately (Cropanzano, Weiss, Hale, & Reb, 2003; Diener, Lucas, & Oishi, 2002). In a similar manner, the cognitive component can also be separated into global judgements of life satisfaction, and into the more specific judgements of various life domains (Diener, 2000; Diener et al., 1999; Kim-Prieto et al., 2005).

The Emotional Component of SWB

Due to several theoretical advances in the construction of models representing affect, the study of the emotional component of SWB has become more refined. Resulting from the recognition that emotion is not a simple construct existing on a

continuum from negative affect to positive affect, positive affect has come to be considered more than a mere lack of negative emotions. In addition, it has also been recognised that the two types of affect can co-occur. As such, measures of mood have been developed to reflect this, providing separate data for both positive and negative affect. A basic model proposed by Diener and colleagues (Diener, Lucas, Oishi, & Suh, 2002; Diener, Smith, & Fujita, 1995; Diener et al., 1999) to explain this holds that while positive and negative affect are related, they are still independent factors. This model was supported by a series of longitudinal studies which demonstrated that with increased time from an incident, there was an increased distinction between positive and negative affect (Diener & Emmons, 1984). In these studies participants were asked to indicate on a seven point scale the degree to which they had experienced 6 positive and 6 negative emotions over the past year, and over the past month. The results showed that over a one month period the positive and negative emotions had a significant negative relationship, however, over the twelve month period there was no significant relationship (Diener & Emmons, 1984). This distinction alone is insufficient for the study of affect, however, as it fails to account for other emotional factors of importance to SWB. In addition, the relationship of emotions to one another may also be influenced by more than just the pleasantness of those emotions.

An alternative model proposed in relation to emotion has been the affective circumplex. The circumplex model is a conceptual, two dimensional circle, with an axis based generally on hedonic tone, pleasure to displeasure, and activity level, from high to low (Cropanzano et al., 2003; Davern & Cummins, 2006). Each emotion can be located on the outer of the circle by its unique combination of hedonic tone and activation. This

combination also indicates a particular emotions relationship to other emotions, with those emotions considered to be opposites being situated 180 degrees from each other (Cropanzano et al., 2003; Davern & Cummins, 2006). For instance, happiness would be on the peak of hedonic pleasure and neutral for activity, while sadness is conceptualised as being at the negative end of hedonic pleasure and also neutral for activity. There is, however, some debate over the exact nature of the axis within the circumplex model, and also in regard to the conceptual placement of different kinds of affect as they relate to one another. In addition, the model does not account for other factors that may be of importance to the study of SWB, such as the frequency or intensity of the emotion experienced.

The frequency and intensity of emotional experiences have, however, been considered in the study of SWB (Eid & Diener, 2004). It appears from studies investigating these factors that the frequency of pleasant emotional experiences is a better predictor of high levels of SWB than the intensity of emotional experiences (Diener, 2000; Eid & Diener, 2004). For example, a study by Eid and Diener (2004) correlated mood traits with the reported intensity and frequency of emotional experiences. This was a longitudinal study of 280 college students which assessed affect for the month prior to the study through a list of 24 emotions, with frequency and intensity of emotional experience being reported. The study also measured state reports of mood through a four item list, ranging from happy to depressed, requiring a response on a seven point intensity scale. These state reports were aggregated to produce a measure of trait mood. It was demonstrated that, with the exception of love, the various emotions' frequency scales correlated more strongly with mood traits than did the

intensity scales. This appears intuitively logical, as those with a positive trait mood would be expected to report a high frequency of positive emotions, however, the intensity of these emotional experiences would still be free to vary. The exception, intense love, as described by Eid & Diener (2004), may be explained by the likelihood that such an emotional experience is a result of the formation of a new romantic relationship, which has the propensity to also increase the frequency of other positive emotions.

Furthermore, it has been proposed that highly intense positive emotions may have a negative relationship with SWB in the long term (Diener, 2000). This could possibly be via the creation of expectations or desires for the future occurrence of such experiences, which then results in disappointment and negative affect when they do not re-occur as often as the person expects. Interestingly, the occurrence of intense positive emotions are claimed to be rare, even for the happiest individuals (Diener, 2000), with evidence of this emerging from the study by Eid and Diener (2004). This may be due to individuals adapting to increasingly positive experiences, with the subjective pleasure gained consequently being reduced. In line with these findings, it has been fittingly concluded that those individuals demonstrating the highest levels of SWB are those able to maintain a relatively stable positive affect of a mild-moderate intensity, with few unpleasant emotional experiences. Whether such a hypothesis can be extended across all emotions, however, has not been determined, as research has typically focused only on a limited range of emotions, such as happiness and depression. Other emotions that have been generally neglected so far may impact differently on SWB.

The Cognitive Component

In regard to the cognitive component of SWB, both global and specific satisfaction judgements can be influenced by information from a variety of sources. Generally, this information is either of a temporary nature, or of a stable, internal nature (Diener, Lucas, & Oishi, 2002; Schimmack, Diener, & Oishi, 2002). Such judgements can be conceptualised as working via a bottom-up process, incorporating momentary information relating to the immediate circumstance, or via a top-down process, relying on traits and pre-established knowledge and beliefs (Diener et al., 1999; Schimmack et al., 2002). Thus, the bottom-up model predicts that people with good social relations, sufficient resources and good health will report high levels of SWB, as these factors tend to promote positive circumstances. The top-down model, on the other hand, maintains that those higher in traits, such as neuroticism, would be expected to report a lower sense of SWB compared to others who have matching experiences.

More specifically, it has been shown by Strack, Schwarz and Gschneidinger (1985) that life satisfaction judgements are not stored, unchangeable values that individuals can report on request, but are instead judgements based on current, salient information. They supported this with evidence from a study where they asked participants to first report either three positive or three negative events in their lives. Participants then indicated how happy and satisfied they were on eleven point scales and reported their mood on a seven point scale. For those recalling recent events, the results indicated that positive events were associated with greater happiness and satisfaction than negative events. However, the reverse was true for those reporting more historical events. This does not mean, however, that the immediate situational variables, such as

the task of recall, are of the greatest importance to the assessment of SWB. In fact, a review of the literature on situational variables found that situational variables explained less than 20 percent of the variance in SWB reports across a number of studies (Diener et al., 1999). Consequently, it has been suggested that individuals have a source of information that is chronically salient, the nature of which is dependent on each individual's unique characteristics (Diener, Lucas, & Oishi, 2002; Ryan & Deci, 2001). Thus, some individuals with low SWB may have negatively biased information that is chronically salient to them, while others with higher SWB may have a more positive bias to such information.

Support for both bottom-up and top-down processes was found in a study by Schimmack, Diener and Oishi (2002) who discovered that while stable variables, such as personality, had the greatest influence on global judgements of satisfaction, more immediate variables, such as mood, mediated responses. In this semester long experiment, they measured on four occasions the individuals' state mood, via three items on pleasure and three items on displeasure that required an indication of intensity on a four point scale, and life-satisfaction, through the Satisfaction With Life Scale (SWLS), which measures satisfaction with various life domains on a seven point scale from "terrible" to "outstanding". Information sources for judgements relating to these measures were also identified via a list of possible sources including current mood, health and relationships. This demonstrated that over time, participants continually identified the same information sources as being important to their satisfaction judgement. Furthermore, it was also demonstrated that people can be primed to include or omit various sources of information that may influence their reported level of SWB.

This was done by instructing participants that a particular source of information, current mood, should be excluded from global judgements of SWB. Subsequently, the influence of mood decreased (Schimmack et al., 2002). Hence, Schimmack, Diener and Oishi (2002) concluded that people use a combination of both chronically salient and situational information processes in making judgments of SWB. Their study, however, had only a small, highly homogeneous sample of 136, predominantly female university students, limiting the application of its findings to other groups. Hence, it remains possible that other groups may be more variable in the sources they use for satisfaction judgements, or alternatively, their reports may be less influenced by current mood.

Despite this possible mediating role of current mood, Diener and colleagues (Diener, Lucas, & Oishi, 2002; Diener et al., 1999) maintain that global reports of SWB are the most important area within the cognitive component, as they provide insight into the processes used by individuals in making judgements about their lives. Such reports are considered to demonstrate how a person summarises their life as a whole, and as a result may have little in common with situational reports of SWB (Diener, Lucas, & Oishi, 2002). For instance, if an individual is unwell they may provide a low situational assessment of SWB, however, a global report would remain high, reflecting satisfaction with work and relationships. Therefore, it is claimed that these global reports can identify which life domains are the most important to an individual, giving information about their personality, and also identifying which variables act as the strongest and most consistent predictors of SWB (Diener et al., 1999; Eid & Diener, 2004; Ryan & Deci, 2001). It is possible, however, that over time and with particular life experiences, the importance of a variable for an individual may change. For instance, in early

adulthood financial circumstance may be of greatest importance to an individual, but later in life, family relationships may become most important to the individual.

Cognitive and Affective Interaction in SWB

As indicated by the presence of mood in cognitive source reports, the cognitive and affective components of SWB interact. Interestingly, in regard to state reports, Eid and Diener (2004) demonstrated, in the afore mentioned study, that the relationship between the cognitive component and the emotional component may be very weak. Their study found that the correlation between occasion-specific global life satisfaction judgements and mood only explained 1.7 percent of variance. The satisfaction judgements were measured with the SWLS, while mood was measure through the state ratings that were taken. Whether the findings can be generalised across other populations is yet to be determined however, as it has been proposed that with maturity the relationship between life satisfaction and mood may be strengthened (Eid & Diener, 2004).

The Eid and Diener (2004) study also assessed the trait relationship between the affective and cognitive component. Again SWLS was used to measure the cognitive component, however this time it was compared to the list of 24 emotions used to measure affect. The trait level correlation demonstrated was quite strong ($r = .74$), explaining 54.8 percent of reliable variance, which indicated people with higher life satisfaction are generally in a better mood. Elsewhere, this relationship has been explained by the use of emotion as information (e.g. Forgas, 1995; Schwarz & Strack, 1991). According to this theory, affect is used as a heuristic to short-cut cognitive

processing. For example, an individual assumes that because they are generally in a good mood, their life must be satisfying. While this emotional reasoning may be used by some individuals, possibly even the majority, it is still possible that others may not use such short cuts, and engage in more specific and complex cognitive appraisals, which would also increase the congruence of their mood to their circumstances.

Set Point Theory

An important concept to emerge from the literature on SWB to explain the stability of trait ratings has been the concept of a set point. This concept contends that people have a stable base line for SWB, and that homeostatic forces act to facilitate adaptation to this SWB base line, regardless of the life events and challenges the individual is presented with (Davern, Cummins, & Stokes, 2007; Diener, Lucas, & Oishi, 2002; Diener et al., 1999; Fujita & Diener, 2005; Kim-Prieto et al., 2005). This set point theory has developed from a variety of studies examining reactions to both positive and negative life events. Support has emerged from research exploring reactions of SWB to widowhood, loss of employment, the winning of a lottery, and the acquisition of a severe physical disability (Brickman et al., 1978; Diener & Oishi, 2005; Kim-Prieto et al., 2005).

Among the first to study the set point concept were Brickman, Coates, and Janoff-Bulman (1978). Their research revealed that ratings of past, present, and future happiness were the same for individuals who had recently won the lottery when compared with a control sample, and that such individuals, while experiencing some pleasure from their win, also experienced a reduction in pleasure from ordinary activities

(Brickman et al., 1978). The same study also found that while individuals who had recently experienced a crippling accident reported a reduction in their present levels of happiness, when compared to the control group, their expectations of future happiness did not show a significant difference (Brickman et al., 1978).

However, this adaptation back to a set point is not thought to be absolute, with some individuals expected to experience a change in their set point over time due to significant life events. Supporting such a contention is research by Fujita and Diener (2005) who conducted a longitudinal study over 17 years, with 3,608 participants from a nationally representative panel in Germany. The study found that 24 percent of participants experienced a significant shift in their life satisfaction judgements when responses from the first five years of the study were compared with responses from the last five years. It is important to note that the study was reliant on only a single measure of global life satisfaction, failing to take into account the impacts of specific domains, or for possible influences by the affective component of SWB. In summary, it does appear that while SWB is relatively stable over time, both positive and negative changes in a person's life can influence the level at which their set point resides. The impact of these life changes may be dependent upon the recency, severity and stability of the change itself (Diener, 2000; Kim-Prieto et al., 2005).

Personality or Core Affect as the Dominant Influence on SWB

Personality has been suggested to be the key element underlying the set point of SWB (Diener et al., 1999; Fujita & Diener, 2005; Tkach & Lyubomirsky, 2006). In fact, it was suggested that happiness, loosely referring to SWB, is a variable product

repeatedly produced by stable personality traits (Veenhoven, 1994). The main personality traits to be studied in relation to SWB have been extroversion and neuroticism. These traits formed part of Costa and McCrae's (1980) Five Factor Model (FFM), and their application to SWB was largely due to the assertion that extroversion influences positive affect, and that neuroticism influences negative affect. Supporting these claims is evidence demonstrating that personality has a relationship with emotional reactivity to stimuli, personal differences in intensity and duration of emotional responses, and life satisfaction judgements (Fujita & Diener, 2005; Kim-Prieto et al., 2005). For example, Rusting and Larsen (1997) investigated the relationship between the positive and negative affect scales of the PANAS in relation to extroversion and neuroticism via the Eysenck Personality Inventory. To induce mood states, they had participants read a positive and a negative scenario within which to imagine themselves. This research found that extroversion correlated positively with positive affect and negatively with negative affect, while neuroticism correlated positively with negative affect (Rusting & Larsen, 1997).

Furthermore, in reviews of the literature, it has been reported that a moderate to strong correlation between extraversion and SWB has been consistently found, with some reporting correlations of up to 0.80 (Diener, Lucas, & Oishi, 2002; Diener et al., 1999; Ryan & Deci, 2001), thereby explaining up to 64 percent of the reliable variance between the two factors. It has been hypothesised that this is due to extroverts being more sensitive to rewards, resulting in a greater experience of pleasant affect when exposed to rewarding stimuli, which therefore reinforces and promotes future engagement with the stimuli (Diener et al., 1999). Hence, social situations are

considered to be highly rewarding, providing motivation for the continuation of the behaviour. Put simply, Veenhoven (1994) stated that extraversion promotes intimate relationships, which makes life more enjoyable. In support, it has been reported that not only have social relationships shown an association with positive emotions and cognitive functioning, but also with better biological functioning, in terms of autonomic activity, immunosurveillance, and stress hormone levels (Diener & Oishi, 2005). However, while extroverts, by definition, engage in more social activities, this does not necessarily imply that their relationships are of a supportive quality. Thus, the issue may be more complicated than these theories suggest.

The trait of neuroticism, on the other hand has been linked so strongly with negative affect, both conceptually and empirically, that they are stated as being virtually indistinguishable from each other (reported in Diener, Lucas, & Oishi, 2002; Diener et al., 1999). Moreover, this relationship has typically been demonstrated as even stronger than that between positive affect and extraversion (e.g. Costa & McCrae, 1980). Hence, neuroticism has been relabelled by some authors as negative affectivity (Watson, Clark, & Tellegen, 1984). An explanation for this relationship proposed by Veenhoven (1994, p. 129) is that neuroticism “induces a constant stream of negative life events”. While such a description sounds quite simple, the mechanics of the relationship may be considerably more complex. For instance, research evidence has indicated that individuals with high levels of neuroticism have both less stable moods and lower levels of life satisfaction than those with low levels of neuroticism. It has been suggested that this may be due to those with lower levels of neuroticism having more stable lives,

which are therefore more predictable, providing for a sense of security and better living conditions in the long term (Fujita & Diener, 2005).

Alternatively, Davern, Cummins, and Stokes (2007) have recently suggested that SWB is not a cognitive-affective construct dominated by personality, but is rather an affective-cognitive construct. This is based upon core affect, which represents the operationalisation of a theoretical construct proposed by Russell (2003). According to Russell, core affect is a primitive elemental mood state, in that it is object free and therefore different from an emotion in that it is not created in reaction to any perception or cognition. Core affect is described as a feeling, and as “an assessment of one’s current condition” (Russell, 2003, p. 148). It is also proposed that there are homeostatic mechanisms which help to maintain core affect at a baseline, either directly (Davern et al., 2007) or indirectly (Russell, 2003), which could account for an individual’s set point. As such, Russell likens core affect to felt body temperature, and attributes changes in affect directly to stimuli, for both the individual’s general mood state and emotional episodes.

The claim that core affect underlies SWB resulted from the finding that the influence of personality on SWB almost disappeared when the common variance with core affect was controlled for. Moreover, following this procedure core affect maintained a significant influence on SWB while personality did not (Davern et al., 2007). Interestingly, a measure of the cognitive contribution to SWB, through Multiple Discrepancies Theory, which was analysed in the same manner, also demonstrated a significant relationship with SWB when compared with personality. However, dominance was attributed to core affect when used with abstract measurements of SWB

within the normal population (Davern et al., 2007). This was due to the role it is given within the context of homeostasis. According to homeostatic theory, the cognitive contribution to SWB is increased by increasing the specificity of questions, while instead, the contribution of core affect increases as measures of SWB become more abstract (Cummins, Eckersley, Pallant, van Vugt, & Misajon, 2003). The homeostatic theory thereby contends that core affect, as a non-specific mood state, has a strong influence upon an individual's abstract sense of personal satisfaction.

There are, however, several problems with the arguments for core affect as a primitive, free-floating element, which also generate problems for the claim that it independently underlies SWB. Firstly, the assertion that it is a non-specific, object free mood state requires clarification. While it can be said that core affect is not reliant on any external object, the description of core affect as an "assessment of one's current condition" clearly identifies that it is attributed to an object in the form of a person, being the individual themselves. Furthermore, in saying that "the feeling is an assessment. . . .", Russell (2003) incorporates a cognitive process, an assessment, into its associated emotional response. According to cognitive theories, these can be separated, with the cognition not only preceding, but also influencing, the emotional response (Beck, 1995; Ellis, 1994). Once separated, core affect can itself be seen to be dependent upon a cognitive process. Thus, even if core affect is used as a cognitive heuristic in assessments of life satisfaction, it may still be a product of pre-established, or automatic, cognitive processes. Secondly, the attribution of emotional responses to stimuli seems to ignore psychological theories that identify such affect as arising from the individual's perceptions of stimuli, rather than the stimuli itself (Beck, 1995; Ellis,

1987, 1994; Lazarus & Folkman, 1984). Finally, the use of “felt body temperature” as an analogy is also conceptually poor, as felt body temperature is a sensory perception dependent upon stimuli, even if the individual is not consciously aware of all sources of stimulation, and therefore not inherently homeostatic. Instead, body temperature itself would seem a more logical analogy, as this is under homeostatic control in an attempt to maintain a constant temperature.

Thus, with the above points in mind, core affect could be considered to result from the general assessments of oneself known as core beliefs (Beck, 1995; Ellis, 1994). For instance, individuals who have a core belief that they are worthwhile in general would be expected to experience a core affect of happiness or contentment, while individuals with a core belief that they are worthless would be expected to experience a core affect of depression. In healthy individuals, maintenance of this may well be under homeostatic control, especially for returning the body to its neutral state when physiological symptoms of emotions not related to the core belief are experienced.

Hence, the claims by Davern, Cummins and Stokes (2007) are consistent with these views, but could possibly be strengthened by incorporating core beliefs. Such a step would further reinforce their arguments against personality. According to cognitive behavioural theories, personality is considered to be a reflection of the pattern of cognitions, or schemas, experienced by an individual, which are themselves influenced by the individual’s core beliefs (Beck & Weishaar, 2005; Ellis, 2005).

SWB and Positive Illusions

The positive irrational beliefs Taylor and Brown claim are beneficial for mental health, and more specifically wellbeing, would obviously fit within the cognitive component of SWB. Arguably, it would follow that if individuals believe these positive illusions, thinking they are the greatest, in total control of life, and that life will only get better in the future, they would report a strong positive cognitive contribution to SWB, regardless of the truth. Accordingly, positive irrational beliefs would appear to have a strong influence over top-down processing of SWB. In addition, such beliefs would also likely report a correspondingly positive emotional component of SWB. While this is expected to remain consistent in the short-term, the longer term consequences may not be the same, as high levels of SWB may be mitigated by the challenging nature of reality.

Furthermore, the maintenance of such illusory strategies would indicate a role for the trait like factors relevant to SWB. Conceptually, positive irrational beliefs may therefore be produced by the factors underlying SWB, whether it is personality or core affect. Further, these factors may use positive irrational beliefs as a mechanism for producing continued positive affect and a high level of SWB. For instance, personality traits may set a trend for such positive illusions, whereas for core affect, an individual may use emotional reasoning and believe that because they feel good, things are better than what they actually are. Thus, some individuals within the normal population may use positive irrational beliefs in an attempt to maintain a high set point for their SWB.

Hence, positive irrational beliefs would influence an individual's ability to be happy and content. Whether this is a healthy way to achieve such wellbeing, however, needs to be answered by considering other factors.

Chapter 3: A Critique of the Social Psychological Model

The social psychological model of mental health has gained considerable support in the years since it was first proposed by Taylor and Brown (1988). There are however, a number of criticisms that have been levelled at this approach, both in terms of methodology and theory. These will be explored in the following chapter.

Methodological Criticisms

Operationalisation of Illusions

The methods by which Taylor and Brown identified the presence of positive illusions within subject groups tended to be somewhat problematic. This was especially true for research evidence arising from studies that compared individuals self reports against normative standards (Colvin & Block, 1994). It has been argued that those individuals who reported that they were better than the norm for a range of criteria, such as happiness, adjustment, and skill were demonstrating a self-enhancing illusion. While it is true that everyone cannot be above the average, some individuals will indeed have higher than average levels of happiness, adjustment and life skills. The reasoning offered by Taylor and Brown, however, combined all of those claiming higher than average levels for a range of life criteria, regardless of the validity of their claims. Such an approach fails to differentiate illusion from reality, and so inappropriately labels some individuals as demonstrating positive irrational beliefs when in fact they are being realistic.

Adding to this, such a criteria for positive illusions confuses the objective and subjective components of wellbeing, as it couples subjective questions with objective standards (Cummins & Nistico, 2002). With subjective questions people are free to choose their own criteria for answering a question, which tends to be based upon some criterion which is of value to them. For instance, a business person may select criteria relating to their work, while another person may rely more on criteria relating to personal relationships when making life satisfaction judgements. Such a process, however, does not necessarily have objective standards by which people can accurately compare themselves, such as a 'norm' of 50 percent. According to such self-selecting criteria, it is possible for people to select life domains in which they may be better than most others. Hence, using such selective criteria it is possible for all individuals to report higher than the midpoint level for items such as happiness, adjustment, and life skills without it being indicative of illusions. Moreover, it has been reported that when questions become more specific this "better off than most" effect dissipates (Colvin & Block, 1994). Hence, when individuals are directed to make judgements in relation to a specific domain, their responses tend not to demonstrate a positive illusion.

It is also unclear as to what type of group the individual compares themselves with when making comparisons against a perceived other. Thus, it is possible that while the individual views themselves accurately, the comparison may be biased by the use of overly negative assumptions about the hypothetical comparison group (Cummins & Nistico, 2002). For example, an assumption that the average person has an average level of happiness at 50% of scale maximums (SM) underestimates the normal response, which is in fact close to 75% SM (Cummins & Nistico, 2002), and an average person

making this erroneous assumption may therefore conclude that they are happier than the average person.

A further method employed to identify positive illusions has been to compare an individual's assessment of their own performance against an experimenter's feedback about the person's performance. It was claimed by Taylor and Brown (1988) that when a person assesses their performance as better than the assessment provided by the experimenter, such a discrepancy indicates a positive illusion. Colvin and Block (1994), however, state that such reasoning is problematic as it relies on the participant and the researcher interpreting the experimental situation in exactly the same manner. Thus, a discrepancy may arise from different interpretations of the same situation. Furthermore, it is possible that the participant's response may be the more accurate one, and the experimenter may have demonstrated a negative bias. For example, the experimental situation and relating manipulations are likely to be a novel experience for the participant, who may therefore attribute their performance largely to these conditions. For the experimenter, on the other hand, the situation is normalised, and as a consequence, they assess the participant's performance as more reflective of the individual.

In line with these points, it has been argued that the term positive illusions is overly indicative of pathology when referring to such assessments, and can more aptly be described by the label of "positive cognitive biases" (Cummins & Nistico, 2002).

Normative Data as Definition of Mental Health

The key to Taylor and Brown's argument for the importance of positive irrational beliefs in the definition of positive mental health is that these beliefs are prevalent within the normal population. From this, they conclude that accurate perceptions are not required for mental health, otherwise most people would have to be classified as unhealthy (Taylor & Brown, 1988, 1994). However, such a view of mental health appears to be conceptually naïve. It implies that mental health is merely a question of whether one has pathology or not. This denies the complexity of the human condition, and life itself. Indeed, as noted earlier, mental health is best viewed as a continuum, or as a matter of degrees (Allport, 1960; Jahoda, 1958; Maslow, 1962). This can clearly be seen in conceptualisations of negative mental health, such as depression which is graded as mild, moderate and severe. Logically, it would follow that positive mental health could also be graded in such a manner.

Further, based on the conclusion that accurate perception is not required for mental health, Taylor and Brown refute the traditional models of mental health. However, the use of statistical normality as the criteria for mental health has been challenged. Jahoda (1958) states that normality is unsuitable for defining mental health as it presumes that the behaviours common to the so-called healthy population are all adaptive. If this were true, then societies would not have histories of behavioural health issues, such as smoking and obesity, nor problematic cultures around alcohol. Similarly, anger, and the irrational demands that are associated with it, are commonly found within the experience of the 'normal' population, yet while such experiences are manageable

for the average person, they are not generally considered helpful, or indicative of good mental health.

With this in mind, past descriptions of what constitutes mental health, generally coming from a more clinical background, can be said to define the optimum or ideal form of mental health. To expect this in a normal population would be to expect perfection, an expectation that is clearly unrealistic. For instance, just as physically normal individuals may often have characteristics such as being slightly overweight, high blood pressure or high cholesterol, and avoid being labelled as having poor physical health, such characteristics would still not be included in a description of what physical health actually is. Hence, the occurrence of positive illusions in the normal population is in fact expected, just as the experience of unhelpful negative emotions, such as anger and anxiety, is also expected within a normal, imperfect, population. Furthermore, use of normative data subsumes and masks the abilities of those who achieve to the highest standard. For instance, with the example of physical health, the attributes of those at an elite level of physical health would be subsumed within a normal sample, thereby masking in the average the endurance, strength, and immune system functioning of those individuals. The same is likely to be true in studies of mental health.

Thus, as Deiner and Seligman (2002) suggest, it may be through the study of the “supranormal” individual, rather than through the study of the normal individual, that the processes that contribute to positive mental health can best be demonstrated.

Reliance on Short Term, Correlational Data

A number of the studies utilised by Taylor and Brown (1988) as support for their theory relied on cross sectional, experimental data that was analysed via associative methods. For example, some of the studies cited involved merely a convenient measure of current mood, which was related to positive illusions. Hence, the correlational nature of this data precludes the determination of causation. In addition, while such measures can provide an accurate reflection of momentary psychological states, it is debatable whether such measures relate closely to mental health and its broader, more reliable representations in daily life (Colvin & Block, 1994; Colvin et al., 1995). For example, a person could experience satisfaction with their performance during an experiment, but may also experience ongoing stress outside of the experimental conditions, possibly indicative of poor mental health. These experiments, however, would only report the individual's satisfaction with their performance during the experiment, and would not capture other possible signs of poor mental health.

Comparison of Normal and Depressed Individuals

The comparison of depressed individuals with normal individuals was an important source of information for Taylor and Brown's (1988) initial proposal for mental health based upon positive illusions. This evidence has been criticised for two reasons. Firstly, in a later review of the same studies used by Taylor and Brown, an alternative conclusion was reached. Colvin and Block (1994) concluded that the evidence for a relationship between depression and accurate perceptions of self, control, and optimism was inconsistent. Second, Taylor and Brown also failed to account for

other forms of mental illnesses. This is important because an individual who suffers from a mental illness other than depression cannot be considered to be mentally healthy, and may still possess positive illusions which could even be linked to their illness. It has indeed been reported that mentally ill individuals who do not have depression can demonstrate positive irrational beliefs equal to or even greater than those of the normal population (Colvin & Block, 1994). For instance, narcissistic, histrionic, and obsessive-compulsive personality traits have all been associated with an exaggerated self-serving bias (McAllister, Baker, Mannes, Stewart, & Sutherland, 2002).

After this initial criticism, Taylor and Brown (1994) ameliorated their position on the accurate perception of depressed individuals somewhat, acknowledging that the research was inconclusive. Further to this, they claimed that the resolution of this matter is irrelevant to their thesis regarding mental health. Block and Colvin (1994), however, state that such a position is “untenable”, as mental health and mental illness have a reciprocal relationship and are conceptually related.

The foregoing criticisms lead to a conclusion that the methods used by Taylor and Brown (1988) were inadequate for supporting the hypothesis of mental health based upon positive irrational beliefs. Not only was their operationalisation of positive illusions and choice of comparison groups problematic, their decision to base their thesis upon data from the normal population also appears inappropriate. Some of these issues have implications for the theory underpinning the social psychological model. These, and other theoretical issues, are discussed in the following section.

Theoretical Criticisms

The Equating of Wellbeing to Mental Health

The social psychological model, as advanced by Taylor and Brown (1988) is largely dependent upon the idea that positive irrational beliefs provide for a higher level of happiness, or wellbeing, than accurate perceptions. From such positive affect they argue that other aspects of mental health flow, including the ability to care for others, and also the capacity for creative, productive work (Taylor & Brown, 1988). In essence, this implies that mental health can be considered to be synonymous with wellbeing.

Defining wellbeing as mental health leads to the conclusion that behaviours and thoughts promoting wellbeing are always adaptive. Based upon such criteria it could be argued that narcissistic individuals have good mental health, as their egocentric beliefs appear to create a high level of personal wellbeing, despite the many other problems they cause. Clearly, therefore, equating mental health to merely wellbeing, or happiness, is not a sufficient criterion. This issue was questioned many years ago by Jahoda (1958, p. 20), who asked, "What if happiness or wellbeing, satisfaction or contentment, freedom from conflict or tension is inappropriate in a life situation?". Does it follow that people who respond appropriately and experience a decline in happiness or wellbeing are unhealthy? Obviously not. Rather, it is those who maintain a high level of wellbeing that may be at risk of engaging in unhelpful behaviours. For instance, a belief that one can achieve beyond one's ability may lead to inappropriate persistence or attempts to control uncontrollable aspects of the environment, which could ultimately result in the individual 'burning out'. Hence, in such circumstances, a mentally healthy individual would experience a reduction in wellbeing, whereas someone who maintains a high level

of wellbeing via positive illusions could instead be said to be demonstrating poor mental health. Thus, the equating of mental health to wellbeing alone appears to be unsustainable.

Positive Illusions and Mental Health

The assertion that positive irrational beliefs promote better moods (Taylor & Brown, 1988) is reasonable, at least for the short term. It would seem intuitive that if a person thinks they have performed to a high standard they would feel a greater amount of satisfaction than if they believed they had performed to an average standard, regardless of the true level of performance. To label such a process as healthy, however, would seem premature, as by this criterion self-harming behaviours and substance use for the purpose of relieving emotional distress, could also be labelled as adaptive. Mental health is instead better viewed as having an enduring, long term nature. Thus, it is the longer term implications, and accumulated outcomes of positive irrational beliefs that are the most important.

Interestingly, even in his proposal for an “Optimal Margin of Illusion”, Baumeister (1989) acknowledges that illusions often make a poor basis for decision making. He states that, in general, such irrational beliefs require a process of self-correction via environmental feedback, through which they would become more accurate. Furthermore, Baumeister (1989) also suggested that positive irrational beliefs are problematic, as they “render the individual vulnerable to disconfirmation, which may be acutely unpleasant” (p. 185). The maintenance of positive irrational beliefs can therefore be seen as an ongoing threat to an individual’s wellbeing.

Adding to this, there is some evidence that positive illusions have only a limited ability to promote wellbeing. For instance, research by Boyd-Wilson, McClure and Walkey (2004) demonstrated that a self-enhancing bias was most strongly related to moderate levels of wellbeing, and that its influence was reduced in those with the highest levels of wellbeing. The study measured these variables through short surveys. Self-enhancing bias was assessed via trait ratings of self and others on a list of eight positive and eight negative traits, which were compared. This list had been previously selected from a pool of 149 traits as the most positive and most negative, and ratings had demonstrated a high reliability ($r = .98$) (Boyd-Wilson et al., 2004). The measures of wellbeing used included the Affectometer 2, for emotional experiences, and the SWLS, as a cognitive measure. It was concluded that “high wellbeing is more about being positive about the self than having positive illusions” (Boyd-Wilson et al., 2004, p. 8).

Similarly, Compton (1992) found, based on results from the Tennessee Self-Concept Scale (TSCS), that individuals can demonstrate a high level of self-esteem without demonstrating a high level of positive illusions. These variables were respectively based on the Total Esteem and the Defensive Positive scales of the TSCS. It was reported by Compton (1992) that the Defensive Positive scale was “an empirically derived measure of the tendency to give positive descriptions of self irrespective of objective reality” (p. 1343). Based on the two scales four groups were created, splitting participants at each scale’s mean score. The study also utilised the Beck Depression Inventory as a measure of depression. Further, additional findings indicated that those who did not demonstrate a high level of positive illusions and had high self-esteem were not depressed, neurotic, personality disordered or psychotic when compared to all of

those with low self-esteem. More importantly, this group also showed greater self-esteem, self-criticism and personality integration, in conjunction with lower psychoticism than those who had high self-esteem associated with a high levels of positive illusions (Compton, 1992). From these results it was concluded that those with high self-esteem that was not associated with a high level of positive illusions were functioning better than those in other groups (Compton, 1992). These findings suggest the relationship between positive irrational beliefs and mental health are more complex than suggested by the social psychological model, and that optimal levels of mental health may not in fact be associated with positive irrational beliefs.

There have also been studies that have contradicted Taylor and Brown's (1988) claim that positive illusions enhance social relationships. In a series of studies conducted by Colvin et al. (1995) following a group of individuals over a five year period, self-enhancing tendencies were compared with character observations made by independent assessors, friends, and peers. Across all three studies those who were characterised as having overly positive self-evaluations were described in a negative manner. While there were some differences between male and female presentations of these negatively evaluated behaviours, there were common themes of hostility, defensiveness, and brittle egos. Based on these findings, the authors concluded that psychological adjustment is not facilitated by overly positive self-evaluations.

In regard to other aspects of mental health, it has been revealed that positive irrational beliefs may have a negative influence. A study by Brookings and Serratelli (2006) tested the impact of positive illusions upon SWB and the ability for personal growth, which was operationalised through a short form of the Defining Issues Test of

moral reasoning. This required participants to read three scenarios and to rate the importance of twelve factors in making a moral decision for each. The top four designated factors for each scenario were then used to create an index of moral reasoning. The presence of positive illusions was derived from scores on the Balanced Inventory of Desirable Responding Self-deceptive Positivity subscale, which required participants to indicate their tendency to give positively biased self-reports, such as “I am fully in control of my own fate”, and also through the How I see Myself Questionnaire, which requires participants to compare themselves against the average college student on 21 different areas. SWB was measured using the SWLS and the Existential Anxiety Scale, a 32 item true-false questionnaire relating to feelings of apathy, emptiness, and tedium. Their data indicated that positive illusions correlated negatively with moral reasoning and that there was no evidence of a non-linear relationship between positive illusions and SWB. Consequently, the authors concluded that there was no support for an optimal margin of illusions (Brookings & Serratelli, 2006). However, these results need to be considered with caution, as they relied on a small, highly homogenous sample of female college students, and the authors also noted that the test of moral reasoning had a low reliability.

Further evidence questioning the longer term benefits of positive irrational beliefs was presented by Robins and Beer (2001). They conducted a series of studies investigating the relationship between self-enhancement bias, affect, measured via the Positive and Negative Affect Scale (PANAS), and narcissism, as measured by the Narcissistic Personality Inventory. The first study assessed, through a cross sectional study, the short-term consequences of self-enhancement bias. This study was based upon

a group task, after which participants were required to rate their contribution to the overall effectiveness of the group, to rate others' contribution to the group and to estimate how others would rate their contribution. Comparisons between self ratings and others ratings of self were used to provide an index of self-enhancement. Results indicated that those engaging in self-enhancement were associated with a rise in positive affect and also demonstrated a weak positive relationship with narcissistic traits (Robins & Beer, 2001).

The second study examined the longer-term consequences of self-enhancement. This study utilised a longitudinal sample of college students over a four year period. Over this period, the participants were measured on six occasions for their degree of academic self-enhancement, their wellbeing, measured by the PANAS, a standardised composite of Overall Life Satisfaction, and the Neuroticism scale from the NEO Five-Factor Inventory, and self-esteem (Rosenberg Self-Esteem scale). Academic self-enhancement was operationalised by comparing the individual's self-reports of perceived ability, as compared to other students and through estimates of results on standardised tests, against actual academic ability, demonstrated by their actual grades on those same tests. It was found that over the four year period the "self-enhancers", those over-estimating their performance, tended to experience a decline in both their wellbeing and self-esteem, when compared to those who had more accurate beliefs about their academic ability (Robins & Beer, 2001). Furthermore, "self-enhancers" did not demonstrate higher levels of achievement over this time, as indicated via actual academic performance and graduation status. Instead it was suggested that they may even have been more likely to disengage from the academic arena, and therefore not

graduate (Robins & Beer, 2001). This statement, however, was based on statistical data that only approached significance ($p = .09$), and was therefore not supported by the research. Furthermore, the results in regard to wellbeing, as measured by the PANAS, are limited as it only measures activated positive and negative affect (Cropanzano et al., 2003). Again, this research was also limited by the homogeneity of its sample group, and any causative conclusions were prohibited by the reliance on correlational statistics.

Finally, optimistic biases have been suggested to increase risks for a wide variety of issues. For instance, it has been claimed to increase complacency and inhibit precautionary behaviour for a range of health risks, including smoking and unprotected sex (Glanz & Yang, 1996).

Taken together, these studies indicate that the relationship between positive irrational beliefs and mental health is not as simple as that suggested by Taylor and Brown (1988). While there is little doubt that positive irrational beliefs promote positive wellbeing in the short-term, the longer-term outcome of these appears to be less beneficial for wellbeing and other aspects of mental health. With this in mind, it is worth reviewing the theory suggesting that a lack of positive illusions are associated with poor mental health.

Depressive Realism

The “depressive realism” literature has been used implicitly and explicitly to propose that accurate perceptions of self, of control, and of the future have a causative role in depression (Baumeister, 1989; Taylor & Brown, 1988). This is despite the evidence in support being largely correlational in nature (Taylor & Brown, 1988). Even

though Taylor and Brown (1994) recanted on their use of the “depressive realism” literature in support of their thesis that mental health is based upon positive illusions, this concept still needs to be addressed, as it maintained some influence (e.g. Baumeister, 1989). As noted earlier, in a review of the literature conducted by Colvin and Block (1994), it was found that the evidence for an association between depression and accurate perceptions is inconsistent. Taylor and Brown (1994) later concurred with this finding. While it is possible that depressed individuals view the world in a more accurate manner than the normal population, who generally rely on positive illusions, to claim that their accurate perceptions are what cause their depression remains speculative and unproven.

An alternative explanation, consistent with modern cognitive behavioural theories, is that rather than the accurate perceptions themselves contributing to the depression, it is instead the personalised meaning that the individual infers from these perceptions that contributes to the depression (Kinney, 2000). For example, it is not the recognition that one has failed at a task that contributes to depression, but rather the self-deprecating evaluations that are made from the event, such as “I am a failure” or “I am worthless”, which contribute to the person’s depression. Thus, according to such theory, a mentally healthy individual, who tends not to make such damning conclusions, would not have their wellbeing endangered by accurate perceptions.

Differentiation of Positive Illusions from Defence Mechanisms

It is claimed by Taylor and Brown (1994) that positive illusions are different from defence mechanisms, both conceptually and operationally. They base this on the

relationship between positive illusions and threatening circumstances. Taylor and Brown (1994) state that while defence strategies are inversely related to threatening information, positive illusions respond directly to threatening circumstances. For example, where a defence mechanism would deny or repress challenging information, a positive illusion would allow the individual to acknowledge the same information, but put an unwarranted spin on it.

This argument appears ill-founded, however, as the ultimate outcome of both strategies is the same, in that they distort reality. Accordingly, positive illusions have been reported to be based on maladaptive, irrational beliefs (Ellis, 1987; Kinney, 2000; Robins & Beer, 2001). For instance, Ellis (1987) argued that such illusions are superficial and prevent individuals from engaging in deeper, more adaptive behaviours. Similarly, Robins and Beer (2001) argued that self-enhancing positive illusions provide for a fragile, unrealistically high level of self-esteem and wellbeing, which is rigidly defended against thoughts of failure. In addition, it has been proposed that self-enhancing illusions develop from irrational beliefs that one's worth is based on achievements and competencies, and that one must have the approval of significant others (Kinney, 2000). Illusions of control, on the other hand, are said to arise from irrational beliefs that it is awful to experience ambiguity, situations one does not like, or a lack of control over events (Kinney, 2000). Optimistic illusions are likewise claimed to be based on a range of irrational beliefs, such as a belief that life is fair and just, or that all problems have a perfect solution (Kinney, 2000).

Chapter 4: Conclusion & Research Aims

From the previous chapters it can be seen that there are a number of concerns for the thesis, proposed by Taylor and Brown, that positive irrational beliefs foster mental health. The current study aims to address a number of these methodological and theoretical issues.

First, in regard to the measurement of positive irrational beliefs, the differential method utilised by Taylor and Brown (1988) is unreliable. While it can be said to measure the individual's cognitive bias, the data from this technique cannot determine whether such a bias is illusionary or realistic for each individual. Alternative methods that have used comparisons between an individual's self-reports and comparisons with friends, peers, or independent examiners are also limited by the fact that each person involved may base their reports on individual, self-selected criteria, possibly creating two sets of distinct, yet still valid data that may not be comparable. It is proposed that the most effective method for assessing whether such a bias is realistic or illusory is through the individual's endorsement of clearly irrational positive beliefs. For instance, such a scale would measure how strongly the individual identifies with ideal or absolute beliefs such as "I'm the best at everything I do; Nothing can stop me; I will succeed in everything I do; I need nobody in order to achieve my goals; Because I feel good, everything is good". The creation of such a scale will be the aim of the first study.

Second, a number of studies have found that positive irrational beliefs are associated with higher levels of SWB in the short term. Whether this can be equated to mental health is debatable. When studying mental health, long term outcomes are generally of greater importance than shorter term outcomes, as these outcomes reflect

the individual's resilience, their ability to cope with the stresses of life, and their ability to grow. The evidence for the longer term influence of positive irrational beliefs on SWB is inconclusive, however. Hence, the second study will investigate the relationship between positive irrational beliefs and mental health constructs, suggested to have trait-like characteristics that are relatively consistent, such as core affect (Davern, Cummins, & Stokes, 2007) and self-esteem (Rosenberg, 1965).

As noted in the previous chapters, many of the studies investigating relationships between positive irrational beliefs and mental health have used university or college student samples. Results from such groups are limited in their external validity. Not only may the maturity level of participants have influenced previous findings, the youth of the participants may also have reduced the likelihood that group members had developed a mental illness. The current study will attempt to address this by using data from a non-university based sample. These participants will be drawn from the longitudinal version of the Australian Unity index study.

Another reason for using the Australian Unity index data is the inclusion of the Personal Wellbeing Index. This scale has strong psychometric properties, with each of the items contributing unique variance to the measurement of SWB. This will address concerns regarding the use of SWB measures in the literature to date. While a number of studies have used the SWLS, which has also been shown to have strong properties for the study of SWB, the use of other measures of questionable validity, such as the Positive and Negative Affect Scale, has also been common.

Finally, it has been noted that the area of mental illness was largely neglected by Taylor and Brown in the formulation of their theory. While comparisons were made

between “normal” individuals and those with depression, their argument failed to account for other forms of mental illness. While Taylor and Brown (1994) claimed that this issue was not important to the resolution of their thesis, such a position appears unsustainable when considering mental health as a continuum. Thus, as stated by Block and Colvin (1994), these issues are linked. Moreover, it seems logical to assume that if something promotes mental health, it would also ward against mental illness. With this in mind, it would be difficult to maintain the argument for the facilitation of mental health through positive irrational beliefs if someone high for both these criteria also suffered from a mental illness. The current study will attempt to establish whether there is a relationship between SWB, positive irrational beliefs and a range of types of emotional distress.

Chapter 5: Study One

Aims & Hypotheses

Aim One:

The primary aim of Study One was to develop a tool for the direct assessment of positive illusions, or more accurately, positive irrational beliefs. This measure of positive irrational beliefs was based on Taylor and Brown's (1988) theory of positive illusions, which includes three forms of irrational beliefs. These are unrealistically positive views of the self, exaggerated perceptions of personal control, and unrealistic optimism for the future. As noted previously, unrealistically positive views of the self were further separated into two distinct groups. The created measure will be examined for its underlying factor structure.

- It was hypothesised that the underlying factor structure of the developed questionnaire will correspond to the theoretical principles upon which it was based.

Aim Two:

The secondary aim of Study One was to determine the relationship between demographic variables and the endorsement of positive irrational beliefs, using the newly developed questionnaire. The demographic variables to be examined were gender and age. While there is converging data from the study of optimistic bias regarding such demographic influences on optimism, the reviewed research on positive illusions did not

examine such associations. Hence, this aim was largely exploratory. However, since age is suggested to be related to wisdom, and since the traditional views of mental health (Jahoda, 1958; Maslow, 1962) hold that accurate perceptions are of utmost importance to wellbeing;

- It was hypothesised that endorsement of positive irrational beliefs will demonstrate an inverse relationship to age.

Aim Three:

The third aim of Study One was to examine the relationship between the newly developed positive irrational belief scale and subjective wellbeing. It was anticipated that current perceptions of oneself would generally be associated with one's current level of wellbeing.

- Hence, it was hypothesised that the positive irrational beliefs will demonstrate a positive relationship with subjective wellbeing, on a cross sectional basis.

Aim Four:

Finally, Study One aims to investigate whether the exclusion of those with low levels of wellbeing influences the relationship between positive irrational beliefs and wellbeing. Low levels of wellbeing are argued to be pathological, and indicative of a depressed mood state (Cummins, Gullone, & Lau, 2002). It has been reported that

people who experience depressed mood do not express the same level of positive irrational beliefs as those who are not depressed (Taylor & Brown, 1988). Thus, the inclusion of such individuals would only further contribute to the relationship between wellbeing and positive irrational beliefs. However, according to the homeostatic theory of wellbeing, depression is largely due to the impact of challenges that overwhelm the mechanisms that maintain a positive set point for wellbeing (Cummins et al., 2002). Thus, wellbeing will demonstrate a greater association with internal factors for those scoring above the depressed level of wellbeing than those scoring below.

- Hence, it was hypothesised, on a single cross sectional basis of a normal population, that the relationship between positive irrational beliefs and subjective wellbeing would be greater when those cases demonstrating pathological levels of wellbeing are removed from the sample.

Method

Participants

In total, 200 participants completed and returned the survey. The sample comprised 94 males (47%) and 106 females (53%). Participants were drawn from the general population, however, there was a bias towards younger adults and students.

Participants were requested to indicate their age from amongst seven categories. Each category, from the 18-25 age group through to the 76+ age group, had at least 1 representative within the sample. The 18-25 age group had the most participants (N = 90), while the 65-75 age group had the least (N = 1). One male did not indicate his age. The age groups were labelled as 1 through 7 to determine a mean and standard deviation. The average respondent belonged within the second age group ($\mu=2.01$), with a range from 26-35. The standard deviation was 1.36.

Table 1

Participants Age X Gender

	18-25	26-35	36-45	46-55	55-65	66-75	76+	Total
Male	40	25	11	9	6	1	1	93
%	43.0%	26.9%	11.8%	9.7%	6.5%	1.1%	1.1%	100.0%
Female	50	33	8	8	5	0	2	106
%	47.2%	31.1%	7.5%	7.5%	4.7%	0.0%	1.9%	100.0%
Total	90	58	19	17	11	1	3	199
%	45.2%	29.1%	9.5%	8.5%	5.5%	0.5%	1.5%	100.0%

Measures

Subjective wellbeing. Subjective wellbeing was measured using the Personal Wellbeing Index – Adult (PWI-A) (International Wellbeing Group, 2006). This scale consists of eight items that correspond with quality of life domains such as standard of living, health, achieving in life, relationships, safety, community-connectedness, future security, and spirituality/religion. Participants rate their satisfaction on an End Defined Scale, which is a continuum of meaning with phrases denoting the greatest level of dissatisfaction at one end and the greatest level of satisfaction at the other (Jones & Thurstone, 1955). In line with this, the scales of the PWI range from 0, “Not at all satisfied”, to 10, “Completely Satisfied”. These eight domain questions are theoretically developed to represent the first-level deconstruction of the global question: "How satisfied are you with your life as a whole?". The validity of the individual domains has been demonstrated through their contribution of unique variance to this global question, with the combination of unique and shared variance typically explaining between 30-60 percent of variance in “satisfaction with life as a whole” (International Wellbeing Group, 2006). The PWI has also demonstrated reliability with Cronbach alpha scores between .70 and .85 (International Wellbeing Group, 2006) and a test-retest reliability over a 1-2 week period with a correlation of 0.84 (Lau & Cummins, 2005).

The domain questions are also used to generate an overall measure of SWB on a scale from 0 to 100. This is created by determining the percentage of scale maximums (%SM). This statistic is created in a two-step process and can be used with any Likert scale data, which then allows for simple comparisons of data obtained from different

measures, proposed to measure the same construct. The first step requires the recoding of the scale to commence with zero (i.e. a scale from 1-5 would be recoded to be from 0-4). The second step then converts the data into a percentage by dividing the response score by the scale maximum (i.e. a score of 3 on a scale from 0-4 becomes $\frac{3}{4} \times 100 = 75\%SM$) (Cummins et al., 2002). For the PWI the domain scores, rated from 0-10, are converted to %SM (i.e. a score of 7 is calculated as $7/10 \times 100 = 70\%SM$), and then the average of the domain scores is calculated to create an overall index of the individual's wellbeing.

The question "How satisfied are you with your spirituality or religion?" was dropped prior to the calculation of the PWI and was not used in the data analysis due to the significant number of "not applicable" responses provided by participants. From the sample of 200, 29.5 percent (59 respondents) indicated such a response. Such an omission is supported by previous findings that the domain of 'Spiritual or religious wellbeing' has no unique contribution to the wellbeing index of Australian samples (Caras, 2003).

Positive Irrational Beliefs. The Positive Irrational Beliefs Scale (PIBS) is a newly created measure which aims to assess the three areas of positive illusions proposed by Taylor and Brown (1988), being self-enhancing illusions, illusions of control and optimistic illusions. The overarching area of self-enhancing illusions was further separated, theoretically, into two types of items; these were aggrandising illusions and illusions that reject an imperfect concept of oneself. This distinction was in line with previous research, such as that on affect (Diener & Emmons, 1984) and satisfaction

(Davern & Cummins, 2006), that has demonstrated that while the negative and positive aspects of a construct tend to be related, they are also generally independent factors. There were no such distinctions for the illusions of control or optimism. Primary sources assisting in the development of this scale were Taylor and Brown's (1988) paper on positive illusions and a "Dysfunctional positive inferences" scale created by Tiba and Szentagotai (2005). Items were developed based examples discussed in these papers. All statements were phrased in an absolute or ideal manner, so as to be unrealistic, and therefore irrational. Items were then selected based on surface validity in relation to the four proposed areas of illusion, with items thought to overlap across multiple types of illusions removed.

The developed scale consisted of 21 questions. Participants were asked to indicate how strongly they agreed with each of the statements on an end defined scale of 0, "Disagree Completely" to 10, "Agree Completely". For example, questions proposed to assess a self-aggrandising tendency included items such as, "I am the best at the things I do"; items proposed to assess a tendency to reject imperfection included statements such as, "I do not make mistakes"; statements proposed to assess illusions of control included, "I control all the events in my life"; while statements proposed to assess optimistic illusions included, "I expect only good things to happen to me" (see Appendix A for a complete list of the included items).

Procedure

Participants were provided with an information sheet outlining the purpose of the study (see Appendix A). They were then verbally informed that the study was, firstly, to

assess the utility of the newly created scale, and secondly, to compare how positive beliefs relate to wellbeing. Once consent to participate had been attained, they were provided with a copy of the questionnaire which included the two measures and two demographic items concerning gender and age. Participants were then asked to complete the questionnaire and to return it either in person or via mail. Most participants completed the questionnaire within a 10 minute period.

Results

Data cleaning commenced with a review of the descriptive statistics to ensure that all responses fell within the ranges of the relevant scales. All data were within-range. Further analysis was then undertaken to identify the presence of any univariate or multivariate outliers. Cook's distance, Mahalanobis distance and z-scores were calculated for all relevant scales. While these did identify the presence of several outliers, all such values were plausible responses and therefore were deemed appropriate. Thus, the outliers were included in all analyses to which they were relevant.

The seven questions comprising the Personal Wellbeing Index were subjected to principal axis factoring with and cases were excluded pairwise to minimise the impact of missing data. Table 2 presents the rotation matrix, together with the eigenvalues, percentage of variance after rotation, and the Cronbach's alpha associated with each factor. From the analysis, one factor emerged, as the scale authors intended.

Table 2

Factor Analysis of PWI items

	Factor 1
Your standard of living	0.68
Your health	0.60
What you are currently achieving	0.77
Your personal relationships	0.68
How safe you feel	0.74
Feeling part of your community	0.65
Your future security	0.71
Eigenvalue	3.34
% of variance	47.74
Cronbach's α	.74

A second principal component factor analysis was conducted on the 21 items contributing to the newly created Positive Irrational Beliefs Scale (PIBS). This utilised varimax rotation, and items were excluded pairwise to minimise the impact of missing data. The results of this analysis can be seen in Table 3.

Table 3

Factor analysis of PIBS items

	Factor 1	Factor 2	Factor 3	Factor 4
I am the best at the things I do	.24	.70	.15	.27
I am always successful at the things I do	.23	.79	.08	.26
Nothing stops me from achieving my goals	.22	.78	.17	.18
I am always right in the decisions I make	.49	.59	.07	.24
I am perfect	.69	.26	.23	.10
I do not make mistakes	.88	.16	.06	.17
I never misjudge situations	.76	.14	.15	.26
I do not fail at anything I choose to do	.72	.30	.11	.25
I never do anything wrong	.80	.22	.14	.14
When things don't go well, it is always someone else's fault	.66	.03	.27	.02
There is nothing I would like to change/improve about myself	.49	.06	.15	.42
I control all the events in my life	.42	.22	.19	.55
Things always go as I plan	.54	.13	.21	.60
I am responsible for everything that happens in my life	.11	.26	.16	.76
I control the environment within which I live	.14	.24	.07	.78
I can significantly influence chance events In the future...	.14	.17	.37	.51
My life will only get better	.00	.59	.37	.07
I expect only good things to happen to me	.14	.19	.80	.15
I expect only the best	.07	.34	.74	.17
I will always be lucky	.26	.19	.78	.14
I will not have to deal with unpleasant events	.33	-.04	.69	.16
Eigenvalue	4.80	3.08	2.91	2.81
% of variance	22.8	14.6	13.9	13.4
Cronbach's α	.92	.84	.84	.83

As demonstrated in Table 3, four factors emerged, however, using the criterion of a .4 factor loading, several items were complex, meaning they loaded on multiple factors. The analysis was repeated with these complex items removed and the results are presented in Table 4.

Table 4

Factor analysis of PIBS with complex items removed

	Factor 1	Factor 2	Factor 3	Factor 4
I am the best at the things I do	.27	.13	.73	.25
I am always successful at the things I do	.25	.06	.79	.26
Nothing stops me from achieving my goals	.24	.16	.76	.18
I am perfect	.70	.23	.25	.09
I do not make mistakes	.90	.07	.13	.16
I never misjudge situations	.78	.15	.11	.28
I do not fail at anything I choose to do	.74	.11	.28	.23
I never do anything wrong	.82	.14	.21	.11
When things don't go well, it is always someone else's fault	.65	.28	.03	-.02
I am responsible for everything that happens in my life	.15	.16	.27	.76
I control the environment within which I live	.19	.06	.23	.80
I can significantly influence chance events In the future...	.17	.36	.11	.63
My life will only get better	.02	.36	.62	.04
I expect only good things to happen to me	.15	.80	.22	.12
I expect only the best	.08	.74	.38	.11
I will always be lucky	.26	.78	.18	.15
I will not have to deal with unpleasant events	.33	.69	-.07	.22
Eigenvalue	4.04	2.78	2.68	2.05
% of variance	23.7	16.4	15.8	12.1
Cronbach's α	.90	.84	.81	.73

From the analysis, four factors again emerged. Factor 1 appears to comprise questions that concern the rejection of the fallibility, or imperfection, of the individual's

human nature. Thus it is labelled “Beliefs Rejecting Imperfection” (BRI). Conversely, Factor 3 comprises questions reflecting an enhanced belief in one’s ability to perform or achieve, and is thus labelled “Self-enhancing Beliefs” (SEB). Factor 2 comprises questions that regarded the individual’s expectations for their future, and is labelled “Irrationally Optimistic Beliefs” (IOB). Finally, Factor 4 comprises the questions assessing the individual’s perceptions of control over their surroundings and the events in their life. Thus, it is labelled “Irrational Beliefs of Control” (IBC).

For each of the four factors, an index score based upon the average of scale means was calculated. Percentage of scale maximum was calculated, to rescale results from 0-100. This was done by dividing each item response by its scale maximum, as scales were already based from zero (i.e. 0-10), and multiplying by 100 ($\%SM = \text{response score}/\text{scale maximum} \times 100$) (a full description of %SM is found in the Method section). Factor item scores from non-complex items were then averaged. A factor analysis was then conducted using the four factor index scores to determine whether there was a super-ordinate factor underlying the four types of positive irrational beliefs. The results are shown in Table 5.

Table 5
PIBS super-ordinate Factor Analysis

	Factor 1
SEB	.81
BRI	.79
IBC	.77
IOB	.77
Eigenvalue	2.47
% of variance	61.72
Cronbach’s α	.79

Thus, it can be seen that the four separate factors contribute to a single super-ordinate factor, which is labelled “Positive Irrational Belief Scale” (PIBS). An index score for this super-ordinate factor was also calculated in the same manner as the other factor index scores.

The mean and standard deviation for all the variables included within the study are presented in Table 6.

Table 6
Means and Standard Deviations for the PWI and PIBS factors

Variable	N	M	SD	Normative Scale Ranges (Cummins et al., 2008)
Life as a whole	200	73.65	14.53	
PWI items				
Standard of living	200	77.40	15.08	75.5 – 79.3
Health	198	72.12	19.08	73.9 – 76.1
Achieving	200	71.05	17.97	71.8 – 75.5
Personal relationships	200	73.90	20.52	76.9 – 81.5
Safety	200	79.85	18.58	75.2 – 81.5
Community	198	65.56	21.15	68.8 – 72.3
Security	200	70.40	20.86	68.1 – 73.6
PWI	200	72.90	13.09	73.6 – 76.5
PIBS Factor scores				
PIBS (Total scale)	200	47.06	16.23	
SEB	200	65.10	16.94	
BRI	200	35.68	21.55	
IBC	200	49.77	21.95	
IOB	200	44.05	21.51	

PIBS = Positive Irrational Belief Scale
BRI = Beliefs Rejecting Imperfection
IOB = Irrationally Optimistic Beliefs

SEB = Self-enhancing Bias
IBC = Irrational Beliefs of Control

The score for the PWI was below the normative population range, which is reported to be between 73.60 and 76.50 (Cummins et al., 2008). This is likely to be non-significant given that the sample only included 200 participants and the mean was 72.90 with a standard deviation of 13.09. Based on these statistics the normative range falls within one standard deviation of the sample mean. However, it is possible that the over representation of students within the sample reduced the mean PWI score, as the mean score from student populations has been shown to typically be below that of the general population (Cummins, 2003). Taking a more in depth view, the individual domains of “Health”, “Achieving”, “Personal Relationships”, and “Community” were all below their normative ranges. Again the distribution of these scores, as indicated by their standard deviations, suggests these differences were not significant.

Gender Based Differences

Gender differences have often been investigated in relation to optimistic biases. Such optimistic biases were first described by Weinstein (1980), who labelled these errors in judgement as unrealistic optimism, which is synonymous with the PIBS irrationally optimistic beliefs. Thus, exploratory ANOVAs were conducted to determine whether gender had any influence upon the indexes of the PWI or the PIBS.

The results indicated that gender did not have an effect on the PWI ($F(1,198) = 2.132, ns$). However, it is interesting to note that in terms of PWI mean scores, the value for males was 71.47, which is below the male-specific normative range (72.6 – 76.3). The mean score for females, on the other hand, is 74.17, which is within the female-

specific normative range (73.8 – 77.2). Thus it appears that males are mainly responsible for the below average normative score of this sample.

In order to assess the effect of gender upon the four subscales of the PIBS a MANOVA was conducted (Table 7).

Table 7
MANOVA results for PIBS X Gender

	Male			Female			F	Sig.
	N	Mean	SD	N	Mean	SD		
SEB	94	67.6	15.6	106	62.9	17.9	3.955	.048
BRI	94	39.9	22.9	106	31.9	19.7	7.023	.009
IBC	94	56.6	22.0	106	43.7	20.1	18.483	.000
IOB	94	50.6	20.4	106	38.2	20.9	17.908	.000

SEB = Self-enhancing Bias
IBC = Irrational Beliefs of Control
BRI = Beliefs Rejecting Imperfection
IOB = Irrationally Optimistic Beliefs

Using the Wilks' λ , the combined dependent variables were significantly influenced by gender ($F(4, 195) = 6.740, p < .01$). These results reflect a weak association between gender and the combined dependent variables ($\eta^2 = .12$). Across the four factors of the PIBS, males were found to score significantly higher than females, representing a greater endorsement of the irrational positive beliefs.

Age Based Differences

Wellbeing has been found to be relatively consistent across age groups in a number of countries (Diener et al., 1999), however there can be cultural influences. In Australia, normative data have demonstrated that older aged respondents (i.e. 76+) tend to report higher PWI means than middle aged groups (i.e. 46-55 years) (Cummins et al., 2008). Thus, if positive illusions are what maintain healthy wellbeing, as proposed by

Taylor and Brown (1988), it might be expected that positive illusions increase in older adults because, as people become older, they tend to be faced with objective declines in functioning, such as poorer health. Thus, an increase in positive illusions would be required to offset the objective decline in life domains and maintain a constant level of wellbeing. Accordingly, this would be even more pronounced in an Australian population where older individuals report higher levels of wellbeing than middle aged individuals. Alternatively, if positive illusions are a defence mechanism that deny the opportunity for growth and inhibit adaptation (Colvin et al., 1995), it is conceivable that they would weaken as individuals' age to allow for healthy adaptation.

In order to determine whether age had any influence upon the PWI an exploratory ANOVA was conducted. The 65-75 and 76+ age groups were omitted from this analysis as their sample sizes were considered too small (i.e. 1 and 3, respectively). The analysis indicated there was no significant effect of age on this index ($F(4,190) = 1.035, ns$).

A similar analysis was then undertaken to examine whether age influenced responses to the four factors to emerge from the PIBS questionnaire. This was a 4x4 MANOVA using age groups as the independent variable, and PIBS factor scores as the dependent variables. Again the oldest two age groups were omitted. According to the Wilks' λ , there was no combined effect of age on the four sub-factors of the PIBS scale, ($F(16, 572) = 1.497, p > .05$).

Gender X Age Based Differences in PIBS Factors

To determine whether there was an interaction effect between gender and age upon the PIBS total scores an exploratory 2x4 ANOVA was performed. The results are shown in Table 8.

Table 8

Age x Gender effect upon PIBS super-ordinate factor

	18-25	26-35	36-45	46-55	55-65	F	Sig.
Male							
N	40	25	11	9	6	.461	.764
Mean	53.52	48.65	52.30	47.91	52.42		
SD	14.09	17.04	14.84	25.61	13.28		
Female							
N	50	33	8	8	5	1.309	.272
Mean	44.75	40.81	49.17	42.71	32.59		
SD	14.54	15.12	13.46	16.17	16.80		
F	8.305	3.427	0.222	0.243	4.803		
Sig	.005	.069	.643	.629	.056		

Gender: (F (1,185) = 8.833, p < 0.01)

Age: (F (4,185) = 1.247, ns)

Gender x Age: (F (4,185) = 0.551, ns)

This analysis shows a significant gender effect, but no age effect or interaction. The gender effect is confined to the 18-25 year old age group, with higher scores for males. Based upon these findings, further analysis of each of the four sub factors of the PIBS was conducted to examine this relationship more closely.

The further analysis demonstrated that gender had a significant effect on BRI (F (1,185) = 3.950, p < .05), IBC (F (1,185) = 9.956, p < .01) and IOB (F (1,185) = 8.383, p

< 0.01), but not SEB ($F(1,185) = 2.382$, ns). Age did not have a significant effect upon any of the four factors, nor were any interaction effects found.

Relationship Between PWI and PIBS (including subscales)

Finally, the relationship between positive irrational beliefs (PIBS) and wellbeing (PWI) was examined. To determine the extent to which the PIBS factors predict scores on the PWI, a multiple regression analysis was conducted. The results show a non-significant relationship between the PIBS factors and the PWI ($F(4,195) = 2.383$, $p = .053$). The results did, indicate that SEB has a positive relationship with PWI, however, this relationship was very weak (see Table 9).

Table 9

Regression of PIBS factors with PWI

N = 200	PWI	PIBS	SEB	BRI	IBC		B	β	sr^2
PIBS	.05								
SEB	.18	.76					.21**	.27	4.48%
BRI	-.01	.85	.49				-.06	-.10	0.66%
IBC	.03	.74	.54	.47			-.04	-.06	0.25%
IOB	.03	.77	.49	.48	.47		-.02	-.03	0.06%
							$R^2 =$	.047	
							Adjusted $R^2 =$	.027	

* $p < 0.05$

** $p < 0.01$

Because it has been suggested that individuals scoring below 50 %SM on the PWI may be experiencing depression, or a pathological level of wellbeing (Cummins et al., 2002), a second regression analysis was conducted excluding those scoring at or

below 50 %SM (see Table 10). As a result, 12 participants were removed, giving an N = 188.

Table 10

Regression of PIBS factors with PWI (above 50%SM)

N = 188	PWI	PIBS	SEB	BRI	IBC	B	β	sr^2
PIBS	.04							
SEB	.22	.76				.22**	.38	8.60%
BRI	-.05	.86	.49			-.08*	-.19	2.20%
IBC	-.01	.74	.55	.45		-.07	-.15	1.39%
IOB	.05	.79	.51	.52	.50	.02	.03	0.06%
						$R^2 =$	.098	
						Adjusted $R^2 =$	.078	

* $p < 0.05$

** $p < 0.01$

This regression was found to be significant ($F(4,183) = 4.944, p < .01$). Thus, positive irrational beliefs do appear to share variance with wellbeing, for those individuals scoring above 50 on the PWI. For this group, SEB has a positive relationship with PWI, while BRI demonstrates a negative relationship. The total amount of variance accounted for in PWI, however, is still very weak, comprising less than 10 percent.

In line with the optimal margin of illusion, which holds that there is an adaptive level of positive illusions with either too much or too little being harmful (Baumeister, 1989), participants were separated into three levels of SWB as: a low wellbeing group with PWI scores ranging from 0-50, an average wellbeing group from with PWI scores from 51-80, and a high wellbeing group with PWI scores above 81. The descriptive statistics for these groups can be found in Table 11. A MANOVA was conducted to compare the data from these groups.

Table 11

PIBS Index scores for Low, Average and High Wellbeing Groups

PWI	SEB	BRI	IBC	IOB
Low (≤ 50)				
N	12	12	12	12
Mean	61.04	30.36	42.92	43.75
SD	21.41	22.89	22.11	32.52
Average (51-80)				
N	136	136	136	136
Mean	64.14	37.56	52.14	43.95
SD	16.98	21.07	21.67	20.26
High (81+)				
N	52	52	52	52
Mean	68.56	31.99	45.13	44.38
SD	15.46	22.21	21.99	22.15
F	1.656	1.655	2.584	.008
Sig	.194	.194	.078	.992

According to the Wilks' λ , there was a significant influence by level of wellbeing on the combined PIBS factors ($F(8,388) = 2.605, p < .01$). However, these results reflect a very weak association ($\eta^2 = .10$). Post-hoc analysis using Tukey's HSD tests were also performed. These show that there were no significant differences between the wellbeing groups, in terms of their endorsement of the individual PIBS factors. Thus, while there was a very small trend, in general, for changes in the combined PIBS scores in line with wellbeing, this appears negligible when investigating individual differences between the levels of wellbeing for each of the PIBS factors. Hence, those with high, average and low levels of subjective wellbeing appear to endorse each of the individual factors equally.

Discussion

This study investigated the use of the newly created Positive Irrational Belief Scale (PIBS). Of particular interest was its factorial structure and relationship to Subjective Wellbeing (SWB). The scale was shown to incorporate four factors representing different forms of positive irrational beliefs, which were also subsumed within one super-ordinate factor. The relationship between the PIBS and SWB was very weak, only appearing when those scoring above 50 %SM were removed from the analysis. Furthermore, there were no differences in endorsement strength of the individual PIBS factors, based on differing levels of SWB.

Such weak findings between the endorsement of positive irrational beliefs and SWB provides challenges for both Taylor and Brown's (1988) model of mental health and SWB, and to the traditional model of mental health (Jahoda, 1958; Maslow, 1962). With regard to demographic influences, while the endorsement of the positive irrational beliefs was shown to be relatively consistent across age groups, males show greater endorsement than females. These results will now be discussed.

The Positive Irrational Beliefs Scale

The factor analyses of the PIBS indicate that the scale has potential for the direct study of positive irrational beliefs. The measure is 'direct' in that it does not actively promote comparisons against an imagined 'average' other, as with conventional measurement instruments (Baumeister, 1989; Gana et al., 2004; Taylor & Brown, 1988; Taylor, Lerner, Sherman, Sage, & McDowell, 2003). The factor sequence, in terms of

ability to explain variance, was Beliefs Rejecting Imperfection (BRI – 23.7 percent), followed by Irrationally Optimistic Beliefs (IOB – 16.4 percent), Self-enhancing Beliefs (SEB – 15.8 percent), and finally, Irrational Beliefs of Control (IBC – 12.1 percent). Since these four factors all contributed to a super-ordinate factor, the factor analyses support the hypothesis that the PIBS structure would reflect its theoretical construction.

Relating the PIBS factor structure to previous research raises questions about the interpretation of previous findings. While numerous prior studies have assessed the types of positive irrational beliefs utilised in the PIBS, many have subsumed the various positive irrational beliefs (i.e. control, optimism, self-enhancing) into a single factor indicative of a tendency towards positive illusions (e.g. Boyd-Wilson et al., 2004; Compton, 1992; Taylor et al., 2003; Tiba & Szentagotai, 2005). For example, what authors often commonly refer to as a self-enhancing bias has often incorporated not only aggrandising beliefs, but also beliefs displacing responsibility for negative events (i.e. blaming others when events went poorly) (Taylor et al., 2003) or a tendency to reject unfavourable character traits (Boyd-Wilson et al., 2004; Boyd-Wilson, Walkey, & McClure, 2002). Hence, such measures appear to correspond not only with self-enhancing beliefs, but also with beliefs that reject an imperfect self image. The factor analyses indicate that while this is a valid approach, with all such beliefs contributing to a super-ordinate factor, examination of the different categories of the contributing positive illusions provides more information. This refinement of measurement is in line with research on other constructs, such as affect, showing that the deconstruction of constructs into dimensional factors has greater explanatory utility than assessment through a single construct (Cropanzano et al., 2003; Watson, Clark, & Tellegen, 1988).

A further proposed advancement on past research methodology relating to the PIBS is the instrument's design, which attempts to directly measure positive irrational beliefs. This is in contrast to the inferential method, used and discussed in the literature, generally under the title of positive illusions (i.e. Taylor & Brown, 1988; Taylor et al., 2003). The inferential method of assessing positive illusory beliefs requires individuals to rate themselves in comparison to an 'average' other. According to this method, a positive irrational belief is claimed to exist across a sample if the majority of people report that they are better than the imagined 'average' person (i.e. the average participant reports they believe they are happier, better off, more successful than the "average person"). Hence, based on this method, positive irrational beliefs can only be measured across a population, and not on an individual level, as it relies on the mean response of a sample. Finally, Taylor and Brown (1988, 1994) state that by comparing mean responses to scale mid-points (e.g. 5 on a scale of 0-10) the presence of positive irrational beliefs can be revealed. They suggest that means higher than the mid-point infer the presence of positive irrational beliefs, scores approximating the mid-point infer realistic beliefs, and that means below the mid-point infer negative self-perceptions. This operationalisation of positive irrational beliefs, however, has been criticised for confounding past research with a number of other factors.

One criticism offered by Colvin and Block (1994) is that the inferential method bundles together those who are expressing a positive irrational belief with those who are truly above average. They note that while not everyone can be above average, some individuals will in fact be above average on the factors measured, and that claims to be better than average can therefore be accurate. Thus, the relationships reported previously

between inferentially assessed positive irrational beliefs and other variables, such as SWB, are likely to be influenced by the inclusion of individuals who are accurately assessing they are above average.

In attempting to address this issue of report validity, researchers have compared reports from individuals against reports from others, such as a friend or an experimenter, or against measures of performance, such as university grades (e.g. Colvin et al., 1995; Robins & Beer, 2001). This, however, highlights a second issue with the comparative use of inferential assessments, being the comparison of subjective reports against each other or against objective standards.

Comparing responses to subjective questions against objective standards has been noted as a strategy that obfuscates the study of positive irrational beliefs. This is because objective standards can often provide an inappropriate point of comparison to subjective questions (Cummins & Nistico, 2002). When people answer subjective questions they are free to select the criteria by which they respond, which tends to be determined by their own values. For example, when assessing one's level of success compared to an 'average' other, a career oriented individual may select criteria relating to work, while a family oriented individual may select criteria based around their interpersonal relationships. Through responses based on such self-selected criteria, all respondents are able to relate to the life areas in which they may be better than average, and the assumption that the mean response to such questions should equate to an objective reality in the form of a scale mid-point is therefore inappropriate (Cummins & Nistico, 2002). Thus, it is possible that all reports of 'better than average' can be

accurate, to an extent, in response to the ambiguous questions previously used to assess positive irrational beliefs.

Building further upon this issue of self-selected response criteria, Cummins (2009) has proposed that in responding to general questions about oneself, people tend not to be overly reflective of their actual experiences, and instead select to assess their general mood state, which is biased towards being positive in those not experiencing psychopathology. If this is the case, it would again reinforce the notion that the objective norms should not be applied to individuals' subjective experiences.

Adding convergent support that the use of general comparative questions is inappropriate for the assessment of positive irrational beliefs, it has been found that when questions become more specific the "better off than most" effect disappears (Colvin & Block, 1994). This indicates that when individuals are given a specific comparison point to 'average' others, their answers tend not to reflect positive irrational beliefs. This may be due to a reduced potential for self-selected response criteria.

Hence, it appears that Taylor and Brown's (1988) application of objective standards, equating it to scale midpoints, does not assist with the identification of positive irrational beliefs. Due to the role of self-selection in response criteria to general questions comparing oneself to an 'average' other, sample means are able to move beyond their scales midpoint without being indicative of positive irrational beliefs. The attempts to rectify the problems with objective standards by comparing individuals' reports against those of a third party, however, are also confounded by the issue of self-selected response criteria. Such a process is problematic as the comparison of different

individuals' subjective reports is likely to be based on different criteria (Colvin & Block, 1994). Thus, a comparison of such subjective reports is also inappropriate.

Finally, a third problem for the inferential assessment of positive irrational beliefs can arise within the subjective experience of the individual, relating to the assumptions they make about 'average' others. For example, in regard to happiness, people can falsely assume that the average happiness of others approximates 50 %SM. Thus the individual may themselves apply objective norms to others subjective experiences. The true average, however, is close to 75 %SM (Cummins & Nistico, 2002). This is because, as previously mentioned, people tend to evaluate themselves based on internal standards. Thus, when comparing oneself against an 'average' other an individual may report a positive bias. This bias, however, may be based on an erroneous point of comparison, being an inaccurate evaluation of others. Consequently, such a bias is not inherently representative of an overly positive, or false, interpretation of oneself.

Thus, while inferential questions may measure the tendency for what Cummins and Nistico (2002) call a "positive cognitive bias", this does not necessarily equate to positive irrational beliefs. This distinction, however, appears largely absent in literature to date, as evidenced by the inferential assessment of positive irrational beliefs, and may have significantly influenced past findings. The 'direct' approach taken by the PIBS, on the other hand, attempts to solve the issues noted above, and to make a distinction between positive cognitive biases and positive irrational beliefs. It does this by removing the need for comparisons, either against an 'average' other or against criteria external to the individual, whether from an objective standpoint or from a second person's subjective standards. Instead individuals rate themselves in relation to absolute

items (e.g. “I am always successful”, “I never make mistakes”), which are impractical and therefore irrational. It is therefore worth noting that the direct assessment of positive irrational beliefs may provide distinct results from inferential methods which incorporate positive cognitive biases. Consequently, the PIBS may demonstrate different relationships to constructs, such as SWB, from what has been reported for inferential assessments.

Positive Irrational Beliefs and SWB

A central aim of this study has been to examine the claim that positive irrational beliefs are related to SWB. With the exception of self-enhancing beliefs, the results did not support the notion that higher positive irrational beliefs are associated with a greater level of SWB (Baumeister, 1989; Taylor & Brown, 1988). The lack of an association between the PIBS and the PWI indicates that even on a single cross-sectional basis, the endorsement of positive irrational beliefs does not relate to higher levels of SWB. Hence, there was little support for the hypothesised positive relationship between the PIBS and the PWI.

When the analysis was repeated with PWI scores less than 50 %SM removed, however, a significant effect was found. Such low levels of SWB can arguably be considered pathological, and associated with depression (Cummins et al., 2002). It has been demonstrated that 50 %SM is approximately two standard deviations below the mean for SWB reported by individuals, which therefore indicates individuals scoring below this point represent outliers, and such levels of SWB are also associated with depressed mood (Cummins et al., 2002). The emergence of a significant relationship

between the PIBS and PWI within this refined sample supports the hypothesis that the relationship between positive irrational beliefs and SWB is stronger when those experiencing pathological levels of SWB are removed.

This change in the relationship between PIBS and PWI can be explained by the homeostatic theory of SWB. This theory contends that individuals have a set point around which their level of SWB revolves, which is normally within the positive range of SWB (Cummins et al., 2002). It further proposes that movement away from this set point, such as when individuals become depressed, is generally caused by external factors that overwhelm the homeostatic system (Cummins, 2009; Cummins et al., 2002). Thus, when depressed individuals are removed from the sample, there will be an increased association between SWB and intrinsic factors, such as personal beliefs. Cummins (2002) has further suggested that this association is due to both SWB and personal beliefs being influenced by an underlying general, object free mood state, as an individual difference.

In relation to this study, the primary type of belief that appears to underlie the relationship between SWB and the PIBS in the refined sample are self-enhancing beliefs. These beliefs were shown to demonstrate significant correlations with the PWI in both regressions. However, these were weak, explaining only 4.5 and 7.5 percent of variance, respectively. This is consistent with previous research by Boyd-Wilson, McClure and Walkey (2004) who also found that positive irrational beliefs shared only a relatively small component of SWB variance. Thus, positive irrational beliefs do not appear to be associated with a reduction in pathological levels of SWB, and appear to

have only a very minor influence on the SWB of those not experiencing depressed mood.

Further adding to the above findings was the result of the MANOVA analysing the differences between those scoring within low, average, or high PWI groups. This found that there was a very weak overall trend towards increasing PIBS scores with increasing PWI scores. There were, however, no differences between these groups on any of the individual PIBS indexes, including the overall index. These results provide little support for Taylor and Brown's theory (1988) that positive illusions are necessary for good SWB or mental health.

More support for this conclusion is provided from the examination of individual response sets. Within the sample there were individuals present who demonstrated very strong agreement with the positive irrational beliefs, but scored poorly in terms of SWB. Conversely, there were also individuals who indicated a high level of disagreement with the positive irrational beliefs, but still reported a high level of SWB. With these results adding to the overall findings, it can be further proposed that the study also failed to provide support for Baumeister's (1989) 'optimal margin of illusion' hypothesis, which states that there is an optimal level of positive irrational beliefs, with both too much and too little being necessarily detrimental to wellbeing and mental health.

Comparison with past research

In relation to previous research on positive illusions and SWB, the results of this study resembled a study by Boyd-Wilson, McClure, and Walkey (2004). They found that there was no difference in self-enhancing bias, as measured by the tendency to rate

the self as better than others, between a group who judged themselves to be moderately happy and a group who judged themselves to be very happy, according to the Affectometer 2. They did find, however, that the moderately happy group reported a greater self-enhancing bias than the low happiness group. This is in contrast to the current finding that there is no difference in the PIBS factor scores and different groups based on PWI responses.

A further point of contrast arises from a comparison to Boyd-Wilson, Walkey, and McClure's (2002) earlier study that found individuals with moderate levels of SWB had more positive illusions than those with a high level of SWB. Their measure of SWB was somewhat unusual, however, being based on the Time Competence scale from the Personal Orientation Index. This scale measures an individual's capacity for a 'flow' state, which is an ability to live in the present without being unduly occupied with the past or future, rather than satisfaction or emotional states which are more commonly used to measure SWB. In both of these studies positive illusions were identified via a comparison of self trait ratings and other's trait ratings. Adding to the discrepancies within the literature, it was found by Brookings and Serratelli (2006) that self-reports of positive illusions, as identified by the Balanced Inventory of Desirable Responding Self-deceptive Positivity and How I See Myself Scale, were moderately correlated ($r = .40$) with SWB, when measured by the Satisfaction With Life Scale and the Existential Anxiety Scale. From a regression analysis, however, they did not find any evidence of a relationship between SWB and positive illusions, which they also claimed failed to support the 'optimal margin of illusion' hypothesis.

Hence, the results to date, on the relationship between SWB and positive illusions have demonstrated inconsistent findings, but it does appear that studies do not support the notion that positive irrational beliefs are required for optimal levels of SWB or mental health.

Theoretical Integration of Research Findings

Integrating these findings with the previous research leads to three possibilities. Firstly, as noted above, the direct assessment of positive irrational beliefs may be measuring a construct that is distinct from that measured through the indirect inferential methods. The second explanation could be that there is no relationship between positive irrational beliefs and SWB, and that other extrinsic and intrinsic factors have a greater influence on SWB. Thirdly, it is possible that positive irrational beliefs have a complex, non-linear relationship with SWB and mental health, being helpful in some situations and detrimental in others, with different forms of positive irrational beliefs having distinct influences on SWB.

In formulating a theory to explain the complexities of the research data to date, it has been proposed that the impact of positive irrational beliefs may be temporally dependent. For instance, in the short term the individual may receive a benefit, such as an enhanced mood state, however, this may be detrimental to other aspects of their mental health in the long term, such as a capacity for self-actualisation. It is therefore somewhat surprising that a single cross-sectional measure of positive irrational beliefs and SWB did not reveal a strong association. However, this does not discount the possibility that such beliefs provide for heightened, but fragile, SWB. For instance,

Robins and Beer (2001) found that while self enhancement is associated with increased self-esteem in the short term, it is also associated with reduced self-esteem over time. Based on these findings they hypothesised that self-enhancement may help individuals to regulate their affect for a time, but that this benefit lessens over time, as individuals may be forced to realise that their beliefs are untrue, and that this realisation may diminish their SWB and self-esteem.

The role of positive irrational beliefs have been explained through rational-emotive behaviour theory (REBT) (Ellis, 1987; Kinney, 2000). In line with REBT, positive irrational beliefs have been described as being a self-defence mechanism that protects the individual from acknowledging and experiencing their negative irrational beliefs, and corresponding emotions. While positive irrational beliefs may therefore provide some form of relief from the experience of very low SWB, they are not required for a strong sense of SWB. This can also be related to the homeostatic model of SWB, which is suggested to be driven by core affect (Davern et al., 2007). In this model the irrational negative beliefs can be conceptualised as threats that may overcome the homeostatic mechanisms that maintain the set point range for SWB. Thus if the individual is unable to process negative events in a rational manner, their mood at that time may indeed benefit from positive irrational beliefs which provide distance from the negative beliefs. However, this may have other consequences which negatively impact on the individual and also provide later threats to their SWB.

As an example of this, positive irrational beliefs have been shown to have a negative association with other aspects of mental health, often due to their relationship with narcissism. For example, Brookings and Serratelli (2006) found that positive

illusions show a negative relationship with personal growth, which may be a source of frustration and disappointment in the longer term. Also supporting this negative relationship between positive irrational beliefs and mental health was research by Colvin et al. (1995). They found that not only did self-enhancement impoverish growth and self-development, it also resulted in a less favourable impression on friends and acquaintances, and more interpersonal difficulties. The impact of such consequences on the individual would understandably influence SWB in a negative manner, and those high in positive irrational beliefs may therefore experience more variation to their SWB in response to these difficulties. This can be related to findings on SWB that have demonstrated that those with more variation in their experience of SWB tend not to report the highest levels of SWB over time, rather it is those with more stable and less extreme emotional experiences that have the better levels of SWB overall (Diener, 2000; Eid & Diener, 2004).

Finally, the separation of positive irrational beliefs into distinct categories revealed that not all such beliefs have a unified relationship with SWB. For instance, SEB had a positive relationship to SWB, while BRI had a negative relationship. Thus, the different forms of positive irrational beliefs may have competing influences on SWB, which may further complicate their relationship.

In conclusion, there does not appear to be simple linear relationship between positive irrational beliefs and SWB. Furthermore, different types of positive irrational beliefs do not demonstrate a consistent relationship with SWB. While there does appear to be a positive association between positive irrational beliefs and SWB in the short term, this is generally weak. Moreover, in the long term positive irrational beliefs have

been found to be associated negatively with SWB and other aspects of psychological and interpersonal functioning considered to pertain to mental health. Thus, it appears that other factors may have a stronger relationship to these variables.

Demographic Influences Upon the PIBS Responses

While the PIBS showed no effect of age overall, there was a higher endorsement of positive irrational beliefs by males. This difference was most pronounced in the youngest age group (i.e. 18-25 years). This gender bias is consistent with the literature on positive illusions (e.g. Boyd-Wilson, Walkey, McClure, & Green, 2000) and with the literature on risk taking behaviour and optimistic biases (Glanz & Yang, 1996; Moen & Rundmo, 2005; Weinstein, 1980). However, it also indicates that such positive biases are not just limited to the area of optimism.

In regard to age, the consistency of positive irrational beliefs across the groups was somewhat surprising and did not support the predicted decline with age predicted by traditional models of mental health (Jahoda, 1958; Maslow, 1962). Neither does it support the hypothesised increase in positive irrational beliefs that would be predicted to occur with Taylor and Brown's (1988) model. Furthermore, it also differs from previous findings by Ryff (1991).

In her study, Ryff measured 6 dimensions of SWB, being "self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life, and personal growth", of individuals classed as younger, middle, and older aged adults. She found that older adults tended to have a lower level of discrepancy between their ideal self and actual self-perceptions when compared to younger individuals. This was

primarily due to a reduction in their ideal self perceptions. In fact, their ideals tended to be less extreme than the younger groups across all 6 dimensions. Interestingly, Ryff (1991) also noted that many of the older individuals expected a future decline in all of the measured aspects of their functioning, including self-acceptance, meaning in life, and positive relationships.

Based on these findings she refutes the idea that optimism regarding the maintenance or improvement of future functioning is necessary for positive SWB. She instead identifies the ability to accept change as a characteristic of a mature, well-adjusted individual (Ryff, 1989). However, while optimism for these specific functions may reduce with age, it remains possible that older individuals may maintain a more general sense of optimism, which may be reflected in their beliefs about their capacity to adapt to changes in their life. Such non-object related optimism would be consistent with writings on core affect (Russell, 2003). Despite this, her research appears to support the notion that positive irrational beliefs decline with age, at least in regard to expectations for specific parts of one's future.

Ryff's findings correspond with other research showing that older individuals do not demonstrate a reduction in life satisfaction, despite the decline in objective resources as they age (Diener & Suh, 1998). Older individuals have even shown an increase in satisfaction across some life domains, such as relationships and community connectedness (Cummins et al., 2008). Together, these results may suggest that older individuals are more accepting of their limitations and do not have as many unrealistic expectations, or beliefs, about themselves or their lives, as greater discrepancies between such expectations and reality would likely result in greater dissatisfaction. Providing

convergent support for this theory, Ryff has suggested that the closer fit between actual and ideal self in older individuals also explains why older individuals criticise themselves less harshly than younger individuals, as reported by Dittman-Kholi (1990). The presence of such harsh criticism would likely correspond to reduced satisfaction.

The consistency of positive irrational beliefs across age groups in this study is inconsistent with the aforementioned studies and theories. A likely explanation could be the age distribution of the sample. As noted previously, the oldest age group was eliminated from the study due to the small number present in the sample. Interestingly, there was an overall trend towards a reduction in positive irrational beliefs in older adults despite the absence of the oldest age groups, but this was not supported statistically. Thus it is possible that with a larger sample including a greater number of older aged individuals, which would thereby give the analysis more power, a difference may be found. Such a difference would be in line with the findings discussed above.

Alternatively, the current results may indicate that the endorsement of positive irrational beliefs is a relatively stable and enduring trait, which could be based on personality or core affect. This may indicate that positive irrational beliefs are themselves distinct from one's ideals, and that judgments of satisfaction are made independently of such beliefs. Accordingly, the endorsement of positive irrational beliefs would have little to do with the processes of ageing, while also having little impact upon the development of self acceptance.

What could then explain the difference in findings between this study and earlier research is the individual's ability to work through initially irrational beliefs to a more realistic understanding of themselves or their circumstances, especially when faced with

contradictory information. Such an ability to restructure one's beliefs, also called secondary control (see Rothbaum, Weisz, & Snyder, 1982) could moderate the relationship between positive irrational beliefs and satisfaction/dissatisfaction. Thus, the results in this study and those mentioned above (Cummins et al., 2008; Diener & Suh, 1998; Ryff, 1991) may indicate that while the endorsement of positive irrational beliefs is relatively consistent, the ability to restructure one's expectations, ideals and positive irrational beliefs may develop with age and consequently be greater in older adults than younger adults.

It could therefore be suggested that there are no age differences in endorsement of positive irrational beliefs. This is inconsistent with both conventional theories of ageing and predictions based upon Taylor and Brown's (1988) model. There is, however, a gender difference, with males typically reporting a higher level of such beliefs. This is consistent with previous research investigating optimistic biases, which has now been shown to also extend to other forms of positive irrational beliefs.

Limitations

The ability to generalise the findings of the current study was limited by its sample. As previously noted, the sample was biased towards young adults, with a significant number presumably being students. Therefore it was not possible to assess trends in older groups of adults, or to make comparisons between these older groups with the younger groups. The implications of the findings are also limited by the nature of the study. A single cross-sectional use of the measures utilised does not indicate the longer term relationships of positive irrational beliefs with mental health. Thus,

longitudinal studies and broader assessments of functioning are required before a definitive answer can be reached in regard to the costs and benefits of positive irrational beliefs.

Summary

In sum, this study focused on the development of a scale to directly measure positive irrational beliefs. It emerged that while these beliefs can be used to create a single factor, there are distinct types of positive irrational beliefs. These were largely in line with those proposed by Taylor and Brown's (1988) model, which suggested that individuals have positive irrational beliefs relating to the self, to control and to optimism. However, this study demonstrates that beliefs relating to the self can be further separated into beliefs that enhance the individual and beliefs that reject imperfection about the individual. In comparing these factors to SWB, there was little evidence of an association supporting the notion that positive irrational beliefs promote SWB, and through it, mental health. While a relationship did emerge for a restricted sample containing only those suggested as having a 'normal' level of SWB, the different types of positive irrational beliefs did not contribute to this equally. Finally, it was shown that there were no differences between age groups for endorsement of positive irrational beliefs, at least between young and middle-aged adults, but that males do tend to endorse them to a greater degree.

Chapter 6: Study Two

Aims & Hypotheses

Aim One:

To review the factor structure of the refined Positive Irrational Belief Scale (PIBS) with a larger sample than that of Study One. From Study One, the PIBS was shown to have items representing four distinct types of positive irrational beliefs. These were self-enhancing beliefs, beliefs that reject one's imperfections, irrational beliefs of control and overly optimistic beliefs. Together the four sub-factors contributed to a super-ordinate factor. The PIBS will again be examined for its underlying factor structure.

- It was hypothesised that the underlying factor structure of the PIBS will correspond to that found in Study One.

Aim Two:

To review the influence of demographic variables upon responses to the PIBS. The demographic variables to be examined are once again gender and age. Based on the findings from Study One, it was hypothesised that:

- Males will report a greater endorsement of positive irrational beliefs.
- There will be no relationship between age and the strength of positive irrational beliefs.

Aim Three:

To examine the association between the PIBS, a direct measure of positive irrational beliefs, and both subjective wellbeing and core affect. Based on the results of Study One, it was hypothesised that:

- The relationship between the PIBS and subjective wellbeing will be very weak. This will be consistent for the entire sample, and for sub-samples with SWB within or above the normal range.

Core affect has been proposed to be the primary influence on SWB (Davern et al., 2007). Thus it was hypothesised that:

- The relationship between the PIBS and core affect will also be very weak;
- The relationship between subjective wellbeing and the PIBS will disappear once core affect is taken into account.

Aim Four:

To examine the relationship between the PIBS and several conditions indicative of poor mental health. These are depression, anxiety, and stress, as measured by the Depression Anxiety and Stress Scale (DASS) (Lovibond & Lovibond, 1995). As noted previously, Taylor and Brown (1988) suggest that positive irrational beliefs provide for mental health, and thereby protect against psychological dysfunction.

With regard to the experience of depression, themes of hopelessness and worthlessness are commonly associated with this condition, and are even included in DSM-IV-TR criteria (American Psychiatric Association (APA), 2002). At a conceptual level, the PIBS factors assessing perceptions of the self in the form of self-enhancing beliefs (SEB) and beliefs rejecting imperfection (BRI) appear to relate to an individual's perception of self worth, from which a sense of worthlessness emerges in depressed individuals (Kinney, 2000). Similarly, a loss of hope would appear to correspond with a loss of optimism. Thus it is possible that positive beliefs relating to the self (SEB and BRI) and optimism (IOB) will be of particular importance in the relationship between the DASS Depression Scale and the PIBS.

In terms of anxiety, difficulty tolerating uncertainty and a lack of control over events are common cognitive themes associated with the condition (Miceli & Castelfranchi, 2005; Nolen-Hoeksema, 2000). Consequently, it is proposed that beliefs of control will significantly figure in the relationship between the PIBS and the DASS Anxiety scale. Hence, it was hypothesised that:

- The three DASS sub-scales will be inversely related to endorsement of PIBS items.
- Beliefs relating to the self and optimism will explain the most variance in the relationship between the PIBS and the DASS Depression scale.
- Beliefs of control will explain the most variance in the relationship between the PIBS and the DASS Anxiety scale.

Aim Five:

To examine the relationship between the four factors of the PIBS and concepts that are theoretically linked. This will be done to examine the three key areas of positive illusions identified by Taylor and Brown (1988). These include unrealistically positive views of the self, exaggerated perceptions of personal control, and unrealistic optimism for the future. Hence, the PIBS factors will be compared against a measure of self-esteem, measures of control (primary, secondary, and relinquished control), and an established measure of optimism. In regard to these, it was hypothesised that:

- Self-esteem will have a positive relationship to the PIBS, which will be primarily based on self-enhancing beliefs and beliefs rejecting imperfection.
- Optimism will have a positive relationship to the PIBS, which will be primarily due to the contribution of overly optimistic beliefs.
- Reports indicative of primary control will be positively related to irrational beliefs of control.
- Reports of secondary control will be positively related to irrational beliefs of optimism.
- Reports of relinquished control will be inversely related to the PIBS.

Aim Six:

To compare the inferential measurement of irrational beliefs (e.g. Taylor & Brown, 1988) with the PIBS. The inferential measurement has been suggested to combine realistic positive bias with unrealistic, or pathological, illusory attitudes. It does

this by having the individual compare themselves against an imagined ‘average’ other. Sample means above the scale averages are then interpreted as being indicative of positive illusions. Such a process not only fails to test the validity of responses before assuming they are positively irrational, but can also be biased by an individual’s subjective points of comparison. This allows individuals to select a comparison point which is likely to be favourable to themselves. The PIBS, on the other hand, attempts to measure positive irrational beliefs directly, with no focus on comparative biases. Based on this difference, it was hypothesised that:

- While there will be some overlap between the inferential assessment of positive irrational beliefs and the PIBS, the relationship between them will be weak

Method

Participants

Participants were drawn from a sample from the longitudinal project of the Australian Unity Wellbeing Index. These participants were initially recruited from the general population for a cross sectional telephone survey. Here, participants are selected to represent the geographic distribution of the national population. Immediately following each telephone interview, individuals are given the opportunity to elect to join the longitudinal study. In this particular study, 2,128 questionnaires were mailed and 1,275 returned. Thus a response rate of 59.9 percent was achieved. Due to an error with the mail out, however, there were 32 (2.5 percent) participants who did not receive the demographic form, and as a result, age, and gender data for these individuals were not collected. Among the remaining participants there were 528 (41.4%) males and 715 (56.1%) females. The average age of respondents was 59.9 years of age, with a standard deviation of 14.0 years. The reported ages ranged from 19 through to 91 years.

Measures

The questionnaire included a total of 99 items. The measures relevant to the present study are detailed below, and a copy of the scale items is presented in Appendix B and the complete questionnaire is presented in Appendix C.

Subjective wellbeing. Subjective wellbeing was measured using the Personal Wellbeing Index – Adult (PWI-A) (International Wellbeing Group, 2006), as described in Study One. The items of the PWI demonstrated a Cronbach’s α of .88 in this study.

Positive irrational beliefs. Positive irrational beliefs were measured directly via the Positive Irrational Beliefs Scale (PIBS) developed in Study One. By having individuals indicate their level of endorsement of irrationally positive statements (i.e. “I am always successful at the things I do”, “I never make mistakes”), it is argued that the propensity for such beliefs can be directly measured (see Appendix B for a complete list of the included items).

The more commonly used inferential assessment of positive irrational beliefs was also assessed by a second set of questions. These items were drawn from examples presented in the literature (for examples see Taylor & Brown, 1988) and were selected to correspond with the same kinds of irrational beliefs assessed by the PIBS. Questions reflected the areas of optimism, self-aggrandisement, and rejection of imperfection. These were phrased to make the individual compare themselves against the ‘average’ person. For example, self-enhancing items included, “I am more successful than the average person”, beliefs rejecting imperfection included, “I make fewer mistakes than the average person”, and optimistic beliefs included, “In the future I will be happier than the average person”. No questions on control were included because the relevant items from past research typically related to the role of skills during a chance based experiential activity (e.g. throwing dice). Hence, it was not thought to be comparable to

the survey questions generated, as these are more general, and no experiential activities were included in the study.

According to Taylor and Brown (1988), such inferential questions infer the presence of positive irrational beliefs if the majority of people report that they are better than the “average” person (i.e. the average participant reports they believe they are happier, better off, more successful than the “average person”). Hence, the mean responses for these inferential questions are compared to their respective scale’s mid-points. Sample means above the mid-point are said to infer positive irrational beliefs, means approximating the mid-points infer realistic beliefs, and means below the mid-point reflect negative beliefs.

However, the inferential method has been criticised as providing a poor method for assessing positive irrational beliefs (for full details see Chapter 3). One of the more significant issues with this form of assessment is that it is based on two values, a rating of the self and a rating of an ‘average’ other. Thus, a change in either rating will influence any comparative judgments. Consequently, a sense of superiority can be derived from either a perception that the self is better, or a perception that the ‘average’ other is worse. This is further complicated by the failure of inferential assessments to take into account the possible validity of such comparisons.

These inferential items were included to enable a comparison between the indirect assessment of positive irrational beliefs and the direct measurement of such beliefs via the PIBS.

Core affect. The construct of core affect was measured through a series of four questions. These questions measured how happy, content, alert and unhappy the participant generally feels when they think about their life. Respondents use an end defined scale ranging from 0 (“Not at all”) to 10 (“Extremely”). This form of assessment of core affect is based on modeling conducted by Davern, Cummins, and Stokes (2007), which also suggests that core affect underlies wellbeing. The responses to the scales were integrated by averaging the percentage of scale maximums (described in Study 1: Method) to create an overall measure of core affect. The items measuring core affect had a Cronbach’s α of .89.

Control. A set of nine questions was used to measure primary, secondary and relinquished control, based on Band and Weisz’s (1988, 1990) model of coping. These items assess how the individual copes when faced with challenging situations, with all items being prefaced by the statement, “How much do you agree that when something bad happens.....”. The questions measure the individual’s use of the different forms of control (i.e. primary: “I use my skills to overcome the problem”, secondary: “I remind myself I am better off than others” and relinquished: “I spend time by myself”). Participants indicate the extent to which they agree that they act in these ways in response to negative events via end defined scales ranging from 0 (“strongly disagree”) to 10 (“strongly agree”). In the current study the three items contributing to primary control reported a demonstrated a Cronbach’s α of .70, while those representing secondary control had a demonstrated a Cronbach’s α of .81 and those contributing to relinquished control had a demonstrated a Cronbach’s α of .28.

Self-esteem. The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) comprises ten items, typically answered on a four point scale. However, the response scale was modified in the study to be an eleven point scale using the same end points. Thus item responses were provided on a scale ranging from 0 (“strongly disagree”) to 10 (“strongly agree”). Half of the items assess positive aspects of self-esteem (i.e. “on the whole I am satisfied with myself”, “I feel I have a number of positive qualities”), while the remaining items assess negative aspects of self-esteem (i.e. “I feel I do not have much to be proud of”, “I certainly feel useless at times”). The negative items are reverse scored, and then all ten are summed to create an overall score reflecting the individual’s self-esteem. This score was converted to a percentage of scale maximum.

The RSE has been commonly used in psychological literature since its development. It has consistently demonstrated good reliability. For example, Rosenberg (1965) reported it had a Cronbach’s α of .73 and Payne (1992) reported it had a Cronbach’s α of .75. In the current study the RSE demonstrated a Cronbach’s α of .88.

Optimism. The Life Orientation Test - Revised (LOT-R; Scheier, Carver, & Bridges, 1994) measures generalised optimism and pessimism via 6 questions. For the present study a shortened version consisting of the 3 items relating to optimism was used. Participants indicate the extent of their agreement with each of the 3 statements (e.g., “In uncertain times, I usually expect the best”) on an eleven point scale ranging from 0 (“strongly disagree”) to 10 (“strongly agree”). Results for the shortened LOT range from

0 to 30 were converted to a percentage of scale maximum score, with higher scores suggesting greater optimism.

The LOT-R has demonstrated good internal validity with a Cronbach's α of .78 and external validity with test-retest reliability ranging between .56-.79 over a 24 month period (Scheier et al., 1994). It has also been reported to have been found to correlate moderately with conceptually related scales assessing self-esteem, self-mastery, neuroticism and anxiety, which suggests the measure is a valid assessment of optimism (Scheier et al., 1994). In the current study the items from the LOT-R demonstrated a Cronbach's α of .86.

Mental Health. The Depression, Anxiety and Stress Scale short form (DASS-21; Lovibond & Lovibond, 1995) is a 21 item scale with sets of seven questions corresponding to the measurement of depression (i.e. "I couldn't seem to experience any positive feelings at all", "I felt that life was meaningless"), anxiety (i.e. "I felt close to panic", "I experienced trembling") and stress (i.e. "I found it difficult to relax", "I found myself getting agitated"). The participant is asked to rate how much each of the items applies to their experience over the previous week.

For this study the response scale was modified from the traditional four point scale to an eleven point end defined scale, which ranged from 0 ("Not at all") to 10 ("Extremely"). The seven items comprising each sub-scale of depression, anxiety and stress are summed to provide an overall score for each sub-scale which is multiplied by two, in accordance with the original scoring instructions (Lovibond & Lovibond, 1995). The traditional cut off scores for the severity levels were also modified to reflect the

change from a four point scale to an eleven point scale (converting score ranges from 0-42 to 0-140). The original cut-off scores were derived from the normative sample data described in the DASS manual (Lovibond & Lovibond, 1995). These and the converted 11 point ranges are presented below in Table 12.

Table 12

Converted severity ranges for the DASS

Severity ratings	Depression		Anxiety		Stress	
	4-point scale	11-point scale	4-point scale	11-point scale	4-point scale	11-point scale
Normal	0-9	0-30	0-7	0-23.3	0-14	0-46.7
Mild	10-13	30.1 – 43.3	7 - 9	23.31-30	14-18	46.71-60
Moderate	14-20	43.4 – 66.7	10-14	30.01-50	18-26	60.01-86.7
Severe	21-27	66.8 – 90	15-19	50.01-63.3	26-33	86.71-110
Extremely Severe	28+	90.1+	20+	63.31+	34+	110+

Henry and Crawford (2005) have demonstrated that the DASS-21 has good internal reliability. They found that the Depression subscale had a Cronbach's α of .88, while the Anxiety subscale had a Cronbach's α of .82, the Stress subscale had a Cronbach's α of .90, and the Total score had a Cronbach's α of .85. It was also reported that the DASS-21 has good convergent and divergent validity with similar measures of psychological distress, such as the Hospital Anxiety and Depression Scale (HADS) and the Personal Disturbance Scale (Henry & Crawford, 2005). In the current study the items contributing to the Depression scale reported a Cronbach's α of .92, the items comprising the Stress scale demonstrated a Cronbach's α of .90 and those contributing to the Anxiety scales had a Cronbach's α of .82.

Procedure

Participants were mailed a package containing the questionnaire, and a number of other documents. These included a form requesting demographic information, which related to gender, age, postcode, work status, marital status, with whom they lived, income, height, and weight. The demographic factors used in this study were age and gender. Participants completed the forms in their own time and returned them via mail in a reply paid envelope that was provided with the questionnaire package.

Results

Data cleaning commenced with a review of the descriptive statistics to ensure that all responses fell within the ranges of the relevant scales. All data were within-range. Further analysis was then undertaken to identify the presence of any univariate or multivariate outliers. Cook's distance, Mahalanobis distance and z-scores were calculated for all relevant analyses and scales.

While there were several outliers identified amongst responses to the Personal Wellbeing Index (PWI) and the Positive Irrational Beliefs Scale (PIBS), all such values were plausible responses and therefore were deemed appropriate. Thus, the outliers were included in all factor analyses to which they were relevant.

The seven questions comprising the PWI were subjected to principal axis factoring and cases were excluded pairwise to minimise the impact of missing data. Table 13 presents the factor matrix, together with the eigenvalues, percentage of variance after rotation, and the Cronbach's alpha associated with each factor. From the analysis, one factor emerged, as the scale authors intended.

Table 13

Factor analysis of PWI items

	Factor 1
Your standard of living	0.77
Your health	0.67
What you are currently achieving	0.81
Your personal relationships	0.74
How safe you feel	0.77
Feeling part of your community	0.79
Your future security	0.79
Eigenvalue	4.08
% of variance	58.31
Cronbach's α	.88

A second principal component factor analysis was conducted on the 19 items included in the PIBS. Again, this utilised varimax rotation, and items were excluded pairwise to minimise the impact of missing data. The results of this analysis can be seen in Table 14.

Table 14

Factor analysis of PIBS items

	Factor 1	Factor 2	Factor 3	Factor 4
I am the best at the things I do	0.19	0.19	0.80	0.11
I am always successful at the things I do	0.16	0.22	0.83	0.15
Nothing stops me from achieving my goals	0.17	0.28	0.76	0.20
I am perfect	0.68	0.27	0.29	0.11
I do not make mistakes	0.79	0.13	0.17	0.12
I never misjudge situations	0.78	0.12	0.24	0.18
I do not fail at anything I choose to do	0.67	0.13	0.35	0.17
I never do anything wrong	0.80	0.08	0.16	0.13
When things don't go well, it is always someone else's fault	0.65	0.01	-0.10	0.15
There is nothing I would like to change/improve about myself	0.43	0.01	0.16	0.40
I control all the events in my life	0.31	0.13	0.22	0.70
I am responsible for everything that happens in my life	0.10	0.15	0.11	0.81
I control the environment within which I live	0.10	0.13	0.13	0.79
I can significantly influence chance events In the future...	0.26	0.29	-0.01	0.46
My life will only get better	-0.06	0.66	0.32	0.14
I expect only good things to happen to me	0.10	0.84	0.21	0.15
I expect only the best	0.20	0.80	0.26	0.16
I will always be lucky	0.28	0.74	0.09	0.15
I will not have to deal with unpleasant events	0.56	0.40	-0.17	0.17
Eigenvalue	4.10	2.93	2.59	2.47
% of variance	21.56	16.40	13.64	12.64
Cronbach's α	.87	.85	.86	.76

As demonstrated in Table 14, four factors emerged, however, using the criterion of a .4 factor loading, one item was complex, loading on multiple factors. The analysis was repeated with this item removed and the results are presented in Table 15.

Table 15

Factor analysis of PIBS items (with cross loading items removed)

	Factor 1	Factor 2	Factor 3	Factor 4
I am the best at the things I do	0.19	0.19	0.81	0.11
I am always successful at the things I do	0.16	0.22	0.83	0.15
Nothing stops me from achieving my goals	0.17	0.29	0.76	0.19
I am perfect	0.68	0.27	0.29	0.11
I do not make mistakes	0.79	0.12	0.18	0.13
I never misjudge situations	0.78	0.10	0.25	0.19
I do not fail at anything I choose to do	0.67	0.12	0.36	0.17
I never do anything wrong	0.80	0.07	0.17	0.12
When things don't go well, it is always someone else's fault	0.65	-0.01	-0.10	0.15
I control all the events in my life	0.30	0.15	0.23	0.67
I am responsible for everything that happens in my life	0.11	0.14	0.12	0.82
I control the environment within which I live	0.11	0.11	0.15	0.81
I can significantly influence chance events In the future...	0.27	0.25	0.00	0.50
My life will only get better	-0.06	0.67	0.32	0.14
I expect only good things to happen to me	0.10	0.85	0.20	0.15
I expect only the best	0.21	0.80	0.26	0.16
I will always be lucky	0.28	0.74	0.09	0.16
I will not have to deal with unpleasant events	0.57	0.40	-0.17	0.17
Eigenvalue	3.95	2.89	2.60	2.35
% of variance	21.92	16.05	14.42	13.08
Cronbach's α	.88	.85	.86	.76

From the analysis, four factors again emerged, basically replicating the previous analysis in Study 1. Factor 1 again appears to comprise questions that concern the rejection of the fallibility, or imperfection, of the individual's human nature. Thus it is labelled "Beliefs Rejecting Imperfection" (BRI). Conversely, Factor 3 comprises questions reflecting an enhanced belief in one's ability to perform or achieve, and is thus labelled "Self-enhancing Beliefs" (SEB). Factor 2 comprises questions that regarded the individual's expectations for their future, and is labelled "Irrationally Optimistic Beliefs"

(IOB). Finally, Factor 4 comprises the questions assessing the individual's perceptions of control over their surrounds and the events in their life. Thus, it is labelled "Irrational Beliefs of Control" (IBC).

However, there were several differences in the composition of the factors. Unlike the earlier study, the item "I control all the events in my life" did contribute to IBC. In addition, the item "I will not have to deal with unpleasant events" changed from IOB to BRI, while the item "My life will only get better" switched from SEB to IOB. All other items demonstrated a consistent contribution to one factor.

It was decided that the results of the above factor analysis would be used in preference to those from the previous study. This decision was based on the larger sample size of the present study and the applicability of the solution to this sample.

For each of the four factors, an index score based upon the average of scale means was calculated. Percentage of scale maximum was calculated, to rescale results from 0-100. This was done by dividing each item response by its scale maximum, as scales were already based from zero (i.e. 0-10), and multiplying by 100 ($\%SM = \text{response score}/\text{scale maximum} \times 100$) (a full description of %SM is found in Chapter 5: Method section). Factor item scores from non-complex items were then averaged. A factor analysis was then conducted using the four factor index scores to determine whether there was a super-ordinate factor underlying the four types of positive illusions. The results are shown in Table 16.

Table 16

Factor analysis of PIBS factors

	Factor 1
SEB	.77
BRI	.77
IBC	.76
IOB	.78
Eigenvalue	2.38
% of variance	59.40
Cronbach's α	.77

It can therefore be seen that the four separate factors contribute to a single super-ordinate factor, which is again labelled "Positive Irrational Belief Scale" (PIBS). An index score for this super-ordinate factor was also calculated in the same manner as the other factor index scores.

The mean and standard deviation for all the variables relating to the PIBS and the PWI are presented in Table 17.

Table 17

Descriptive statistics for Life as a whole, PWI and PIBS factors

Variable	N	Mean	Std Dev.	Normative Ranges
Life as a whole	1275	75.89	16.71	
PWI				
Standard of living	1275	77.66	16.82	75.5 – 79.3
Health	1269	70.99	19.24	73.9 – 76.1
Achieving	1263	69.90	19.46	71.8 – 75.5
Personal relationships	1271	76.10	21.01	76.9 – 81.5
Safety	1272	79.64	17.18	75.2 – 81.5
Community	1275	71.94	19.34	68.8 – 72.3
Security	1254	70.39	19.94	68.1 – 73.6
PWI	1275	73.82	14.49	73.6 – 76.5
PIBS Factor scores				
PIBS (Total scale)	1272	39.11	15.83	
SEB	1270	56.64	20.40	
BRI	1271	20.69	18.05	
IBC	1271	38.09	21.65	
IOB	1271	48.38	21.60	

PIBS = Positive Irrational Belief Scale
 BRI = Beliefs Rejecting Imperfection
 IOB = Irrationally Optimistic Beliefs

SEB = Self-enhancing Bias
 IBC = Irrational Beliefs of Control

The overall average score for the PWI was within the normative population range, which is reported to be between 73.60 and 76.50 (Cummins et al., 2008). However, the individual domains of “Achieving” and “Health” were below their normative ranges, while the remaining items were all within their normative ranges. The distribution of these domains, as indicated by their standard deviations, suggests that this difference is not significant for the current sample. However, it is possible that this may be a reflection of the age of the sample. With the average age being approximately 60 years many of the participants are in their later years and are therefore more likely to be experiencing problems with their health relating to their advancing age. Such health problems may also impact on an individual’s ability to engage in activities through

which they perceive their achievements. Many participants would also be over the retirement age, and depending on their adjustment to this stage of their life, may be dissatisfied with what they are currently achieving in life.

Next, analyses of gender and age differences were undertaken to determine whether the PIBS operated in a similar manner to that identified in the first study, and also whether the changes in factor structure or the difference in mean age had any influence on such interactions.

Gender Based Differences

Exploratory ANOVAs were conducted to determine whether gender had any influence upon the indexes of the PWI or the PIBS. The results indicated that gender did not have an effect on the PWI ($F(1,1241) = 0.210$, ns). The means for males and females were both within their respective normative ranges, with males scoring 73.7 (normative range: 72.6 – 76.3) and females 74.1 (normative range: 73.8 – 77.2). With regard to the PIBS, there was a gender difference ($F(1,1239) = 11.34$, $p < .01$). Males reported a mean score of 40.9, which was higher than the female mean of 37.8.

As a result of this difference on the PIBS, a MANOVA was conducted on the four PIBS sub-factors (Table 18).

Table 18

Gender based descriptive statistics for PIBS factors

	Male			Female			F	Sig.
	N	Mean	SD	N	Mean	SD		
SEB	525	57.7	20.0	712	55.9	20.7	2.209	.137
BRI	525	23.6	18.9	712	18.5	17.2	25.012	.000
IBC	525	40.0	21.7	712	36.4	21.5	8.528	.004
IOB	525	47.1	21.1	712	49.4	22.0	3.479	.063

SEB = Self-enhancing Bias
 IBC = Irrational Beliefs of Control
 BRI = Beliefs Rejecting Imperfection
 IOB = Irrationally Optimistic Beliefs

Using the Wilks' λ , the combined dependent variables were significantly influenced by gender ($F(4, 1232) = 12.75, p < .01$). These results reflected a very weak association between gender (male, female) and the combined dependent variables ($\eta^2 = .04$). On the factors of BRI and IBC males were found to score significantly higher than females, indicating that they tended to show a greater endorsement of these types of positive irrational beliefs. This confirms the result found in Study 1.

Age Based Differences

An exploratory ANOVA was conducted to determine whether the results of the PWI were influenced by age. The analysis was not significant ($F(71, 1171) = 1.053, ns$). Similarly, a MANOVA was conducted to assess whether the age of participants effected endorsement of the items contributing to the four factors of the PIBS. There was no effect of age upon any of these (SEB: ($F(71, 1165) = 0.880, ns$), BRI: ($F(71, 1165) = 1.258, ns$), IBC: ($F(71, 1165) = 1.244, ns$), IOB: ($F(71, 1165) = 0.963, ns$))

Gender X Age Based Differences in PIBS Factors

To determine whether there were any interaction effects between gender and age upon the PIBS scores an exploratory ANOVA was performed. Again this demonstrated a significant effect by gender ($F(1, 1104) = 6.543, p < 0.05$), but not by age ($F(4, 1104) = 0.965, ns$). There was no significant interaction between these factors ($F(4, 1104) = 1.180, ns$).

Relationship Between PWI and PIBS (including subscales)

To determine the extent to which the PIBS factors share variance with the PWI a multiple regression analysis was conducted. This shows a significant relationship between the PIBS factors and the PWI ($F(4, 1263) = 41.617, p < .01$).

Table 19

Regression of PIBS factors with PWI

N = 1268	PWI	PIBS	SEB	BRI	IBC	B	β	sr^2
PIBS	.18							
BRI	.03	.79				-.14**	-.18	2.06%
SEB	.26	.78	.45			.14**	.20	2.72%
IBC	.11	.81	.50	.41		.00	.00	0.00%
IOB	.28	.64	.44	.52	.44	.17**	.25	3.95%
							$R^2 = .116$	
							Adjusted $R^2 = .114$	
* $p < 0.05$		** $p < 0.01$					Unique variance = .087	
							Shared Variance = .029	

On further examination, SEB and IOB were both positively related to PWI, while BRI was negatively related to it. IBC did not demonstrate any influence on PWI.

To further explore the relationship between the PIBS and PWI, a regression analysis was also conducted on those reporting a PWI of less than 50 %SM. This was not significant ($F(4,106) = 0.606, ns$).

From these analyses, it can be seen that the contribution of the PIBS factors to PWI is very weak. While SEB and IOB show a positive contribution to PWI, BRI has a negative contribution. This is consistent regardless of whether the sample excludes those experiencing a pathological level of wellbeing ($PWI \leq 50$). Similarly, the lack of a relationship between PWI and PIBS in the low wellbeing group also indicates there is not a linear relationship between reduced wellbeing and the presence, or lack thereof, of positive irrational beliefs. Thus, it appears that positive irrational beliefs provide a minimal contribution to a cross sectional measure of wellbeing.

The relationship between wellbeing and positive irrational beliefs was further tested, to determine whether the current sample supported Baumeister's (1989) optimal margin of illusion theory. This theory holds that there is an optimal range in which positive irrational beliefs contribute to mental health and wellbeing, and that those levels above and below this range are detrimental. In testing this hypothesis, participants were separated into three levels of SWB as: a low wellbeing group with PWI scores ranging from 0-50, an average wellbeing group from with PWI scores from 51-80, and a high wellbeing group with PWI scores above 81. This was to determine whether there were any differences in endorsement of PIBS factors across the levels of wellbeing. The descriptive statistics for these groups can be found in Table 21. A MANOVA was conducted to compare the data from these groups.

Table 21

PIBS Index scores for Low, Average and High Wellbeing Groups

PWI	PWI	PIBS	SEB	BRI	IBC	IOB
Low (≤ 50)						
N	111	111	111	111	111	111
Mean	41.37	33.93	45.35	19.93	35.63	38.40
SD	8.73	13.84	20.16	15.39	19.42	18.87
Average (51-80)						
N	717	717	717	717	717	717
Mean	70.50	38.02	54.71	20.83	36.97	45.77
SD	8.73	14.99	19.20	17.48	20.35	19.76
High (81+)						
N	440	440	440	440	440	440
Mean	87.31	42.08	62.53	20.68	40.43	55.05
SD	4.76	16.90	20.59	19.58	23.83	23.22
F		15.845	41.034	0.119	4.276	40.447
Sig		.000	.000	.887	.014	.000

SEB = Self-enhancing Bias

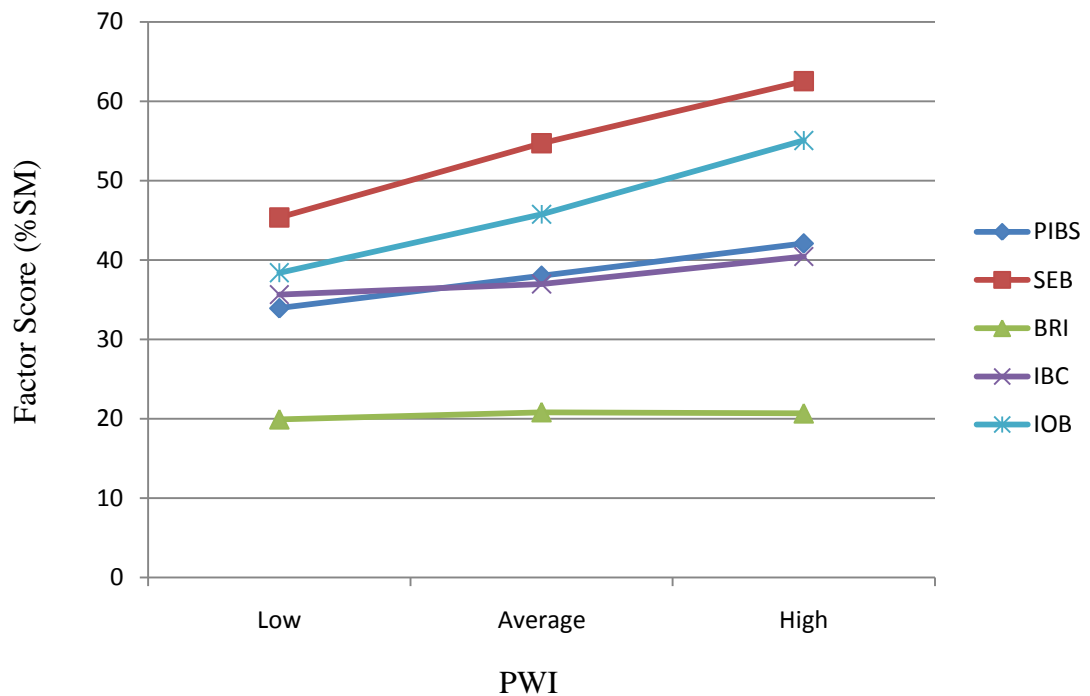
BRI = Beliefs Rejecting Imperfection

IBC = Irrational Beliefs of Control

IOB = Irrationally Optimistic Beliefs

While the mean and standard deviation of the PWI for the PWI groups is included in Table 21, this was not included in the MANOVA. Using the Wilks' λ , the combined dependent variables were significantly influenced by the grouping of PWI scores ($F(8, 2524) = 18.39, p < .01$). These results reflected a weak association between the PWI groups (low, average, high) and the combined dependent variables ($\eta^2 = .11$). Significant differences were shown to exist between the wellbeing groups on the superordinate PIBS factor and also on the sub-factors of SEB, IBC and IOB. From post-hoc analysis using Tukey's HSD tests, increased endorsement of PIBS, SEB and IOB corresponded with increases in PWI responses. IBC was distinct in that the group with a high level of wellbeing only demonstrated a significant difference above the average wellbeing group, in regard to endorsement of such beliefs. These results are depicted in Figure 1.

Figure 1. Mean PIBS Index scores for Low, Average and High Wellbeing Groups



From this analysis it can be seen that endorsement of SEB and IOB tends to show incremental increases that correspond to rising levels of wellbeing. This was also reflected in the overall PIBS factor. For IBC, there was no difference between the ‘low’ wellbeing group and either the ‘average’ or ‘high’ wellbeing groups. The ‘high’ wellbeing group did, however, show a greater level of endorsement for IBC than the ‘average’ group. Endorsement of BRI, on the other hand, was unique in that it does not appear to have any relationship to levels of reported wellbeing. Thus, the different types of positive irrational beliefs have a variety of relationships to wellbeing.

Relationship Between PIBS and Core Affect

It has been suggested in the literature that SWB is primarily driven by core affect (Davern et al., 2007), thus it was of interest to assess the relationship between it and the PIBS to determine whether there were any similarities. The first analysis performed to test this relationship was a multiple regression using the three positive affect components (alert, happy, content) of core affect.

Table 22

Regression of PIBS factors with Core Affect (alert, happy, content)

N = 1264	Core affect	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.26							
BRI	.07	.79				-.14**	-.17	1.97%
SEB	.33	.78	.45			.18**	.25	4.16%
IBC	.17	.81	.49	.41		.03	.04	0.12%
IOB	.33	.64	.44	.52	.44	.18**	.26	4.26%
						R ² =	.162	
						Adjusted R ² =	.159	
*p<0.05		**p<0.01		Unique variance = .105				
				Shared Variance = .057				

The regression analysis demonstrates that the PIBS factors do relate to core affect ($F(4, 1260) = 60.744, p < .01$). As shown in Table 22, SEB and IOB have a positive relationship with core affect, while BRI has an inverse relationship. When combined, the factors explain approximately 16 percent of the variance in core affect, with both SEB and IOB both individually contributing just over 4 percent of the variance.

The analysis was repeated, this time including the negative affect component (unhappy) of core affect. This was reverse scored and then incorporated into the overall core affect score.

Table 23

Regression of PIBS factors with Core Affect (with “unhappy” reverse scored)

N = 1264	Core affect	PIBS	SEB	BRI	IBC	B	β	sr ²	
PIBS	.23								
BRI	.06	.79				-.14**	-.17	1.98%	
SEB	.31	.78	.45			.17**	.24	3.75%	
IBC	.14	.81	.49	.41		.01	.02	0.02%	
IOB	.32	.64	.44	.52	.44	.18**	.26	4.49%	
						R ² =	.150		
						Adjusted R ² =	.147		
*p<0.05	**p<0.01							Unique variance =	.102
								Shared Variance =	.048

The regression analysis demonstrates that the PIBS factors were again related to core affect ($F(4, 1260) = 55.379, p < .01$). Interestingly, the relationships and percentage of variance explained were largely the same as for the previous analysis.

In line with the suggestion that core affect is the primary factor underlying wellbeing (Davern et al., 2007) a MANCOVA was conducted. This was to determine whether differences in PIBS factors attributed to PWI scores could be explained by the influence of core affect. Hence, the PIBS factors were entered as the dependent variables, with PWI entered as the independent variable and core affect (3 item version) entered as the covariate.

Using the Wilks' λ , the results showed that the combined dependent variables were significantly influenced by core affect ($F(4, 1183) = 15.745, p < .01$). These

results reflected a weak association between core affect and the combined dependent variables ($\eta^2 = .05$). Based on Wilks' λ there was no relationship between PWI and the four PIBS factors ($F(4, 4730) = 1.037, p = ns$). The individual relationships between the four PIBS factors and both PWI and core affect are presented in Table 24.

Table 24

MANCOVA statistics for PWI and Core Affect

	N	Mean	SD	PWI		Core Affect	
				F	Sig.	F	Sig.
SEB	1265	20.7	18.1	.96	.54	12.95	.00
BRI	1265	56.6	20.4	1.11	.26	46.71	.00
IBC	1265	38.1	21.6	.76	.94	25.20	.00
IOB	1265	48.3	21.6	.92	.68	39.75	.00

SEB = Self-enhancing Bias
 IBC = Irrational Beliefs of Control
 BRI = Beliefs Rejecting Imperfection
 IOB = Irrationally Optimistic Beliefs

It therefore appears that the relationship between the PWI and the PIBS factor is dependent upon core affect.

Relationship Between PIBS and the DASS

It is suggested in the traditional models of mental health that unbiased, realistic perceptions are required for mental health. Within this framework, it is purported that illusory beliefs are therefore a sign of poor mental health (Jahoda, 1958; Maslow, 1962). Thus, it was of interest to compare the endorsement of positive irrational beliefs via the PIBS to a well established, and used, measure of aspects of mental distress. For this purpose the Depression, Anxiety and Stress Scale (DASS) was selected.

Depression

To determine the extent to which the PIBS factors share variance with the depression scale of the DASS a multiple regression analysis was conducted. This shows a significant relationship between the PIBS factors and the depression scale ($F(4, 1264) = 41.617, p < .01$) (see Table 25).

Table 25

Regression of PIBS factors with DASS Depression Scale

N = 1267	Depression scale	PIBS	SEB	BRI	IBC	B	β	sr^2	
	PIBS	-.10							
	BRI	.05	.79			.17**	.23	3.38%	
	SEB	-.23	.78	.45		-.15**	-.23	3.58%	
	IBC	-.02	.81	.49	.41	.04*	.06	0.26%	
	IOB	-.22	.64	.44	.52	.44	-.14**	-.23	3.38%
						$R^2 =$	.114	
						Adjusted $R^2 =$	.112	
*p=0.05	**p<0.01	Unique variance = .106							
		Shared Variance = .008							

From the above table it can be seen that, SEB and IOB have a negative relationship with depression, on a cross sectional basis. BRI and IBC on, the other hand, have a positive relationship with reports of depression. The individual and collective contribution of these to the depression scale, however, is very weak, accounting for roughly 12 percent of the variance in the reports of depression from the DASS.

Further analysis of the distinction between different levels of depression, according to the DASS, was also conducted via a MANOVA. For this, participants were separated into groups based on their DASS depression reports. Groupings were based on the scales normative severity ranges. The analyses allowed for the examination of

whether different severities of depression correspond to particular levels of endorsement for the various positive irrational beliefs.

Table 26

PIBS Index scores for Different levels of Depression

Depression	PWI	PIBS	SEB	BRI	IBC	IOB
Normal						
N	925	925	925	925	925	925
Mean	78.29	39.62	58.54	20.05	38.06	50.67
SD	11.30	15.97	20.48	18.20	21.95	21.81
Mild						
N	83	83	83	83	83	83
Mean	69.10	39.46	56.47	23.27	37.17	46.78
SD	11.19	14.64	18.27	18.50	19.26	20.39
Moderate						
N	142	142	142	142	142	142
Mean	63.27	38.75	52.96	22.63	39.92	42.45
SD	13.89	15.11	17.96	17.45	21.44	18.09
Severe						
N	82	82	82	82	82	82
Mean	56.40	35.96	48.05	21.70	37.26	40.27
SD	14.58	15.61	19.61	16.90	21.95	19.36
Extremely Severe						
N	35	35	35	35	35	35
Mean	49.13	32.28	40.76	21.78	34.07	33.36
SD	18.14	14.51	21.07	18.32	17.69	22.66
F		2.746	12.544	1.220	0.625	12.980
Sig		.027	.000	.300	.645	.000
SEB = Self-enhancing Bias				BRI = Beliefs Rejecting Imperfection		
IBC = Irrational Beliefs of Control				IOB = Irrationally Optimistic Beliefs		

Using the Wilks' λ , the combined dependent variables were significantly influenced by the level of depression reported by individuals ($F(16, 3847) = 7.813, p < .01$). These results reflect a weak association between level of depression and the combined dependent variables ($\eta^2 = .09$). As shown in Table 26, significant differences were shown to exist between the levels of depression on PIBS, SEB, and IOB. Post-hoc

analysis using Tukey's HSD tests was also performed. This shows that for SEB and IOB the 'Normal' group endorsed such beliefs to a greater degree than the 'Moderate', 'Severe' and 'Extremely Severe' groups. The 'Mild' groups on SEB and IOB also tend to endorse such beliefs more so than the 'Extremely Severe' group, while in SEB this was also true for the 'Moderate' group.

Anxiety

To determine the extent to which the PIBS factors share variance with the anxiety scale of the DASS a multiple regression analysis was conducted. This shows a significant relationship between the PIBS factors and the anxiety scale ($F(4, 1264) = 19.002, p < .01$).

Table 27

Regression of PIBS factors with DASS Anxiety Scale

N = 1268	Anxiety scale	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.00							
BRI	.12	.79				.13**	.22	3.31%
SEB	-.11	.78	.45			-.09**	-.17	1.88%
IBC	.03	.81	.49	.41		.02	.04	0.11%
IOB	-.09	.64	.44	.52	.44	-.06**	-.12	0.87%
						$R^2 =$	.057	
						Adjusted $R^2 =$	.054	

* $p < 0.05$

** $p < 0.01$

Table 27 shows that that SEB and IOB had a negative relationship with anxiety, whereas BRI demonstrated a positive relationship. Similarly to depression, however, the

individual and collective contribution of positive irrational beliefs to the anxiety scale is very weak, accounting for less than 6 percent of variance.

Further analysis of the distinction between different levels of anxiety, according to the DASS, was also conducted via a MANOVA. Participants were categorised according to the normative severity ranges for the anxiety scale.

Table 28

PIBS Index scores for Different levels of Anxiety

Anxiety	PWI	PIBS	SEB	BRI	IBC	IOB
Normal						
N	922	922	922	922	922	922
Mean	77.12	39.10	57.79	19.63	37.87	49.21
SD	12.35	15.66	20.40	18.05	21.68	21.91
Mild						
N	87	87	87	87	87	87
Mean	69.75	39.49	56.05	22.67	37.93	48.62
SD	15.07	16.65	19.95	18.03	23.75	20.87
Moderate						
N	140	140	140	140	140	140
Mean	66.82	38.29	53.81	22.42	37.10	45.98
SD	14.92	17.07	21.49	18.34	22.52	20.76
Severe						
N	54	54	54	54	54	54
Mean	58.61	36.03	47.28	21.65	38.29	40.37
SD	12.15	10.94	16.06	13.64	15.68	16.99
Extremely Severe						
N	64	64	64	64	64	64
Mean	59.23	42.35	54.32	29.00	42.70	47.50
SD	19.11	16.47	19.55	18.70	19.91	22.32
F		1.297	4.521	4.862	0.824	2.667
Sig		.269	.001	.001	.510	.031

SEB = Self-enhancing Bias

BRI = Beliefs Rejecting Imperfection

IBC = Irrational Beliefs of Control

IOB = Irrationally Optimistic Beliefs

Using the Wilks' λ , the combined dependent variables were significantly influenced by the level of anxiety reported by individuals ($F(16, 3847) = 4.302, p <$

.01). Again, these results reflect a weak association between level of anxiety and the combined dependent variables ($\eta^2 = .05$). Significant differences were shown to exist between the levels of anxiety on SEB, BRI and IOB (see Table 28). Post-hoc analysis using Tukey's HSD tests was also performed. In relation to SEB and IOB, the 'Normal' anxiety group demonstrate a greater level of endorsement than only the 'Severe' group. Conversely, for BRI the 'Normal' group shows a significantly reduced level of endorsement than the 'Extremely Severe' group.

Stress

To determine the extent to which the PIBS factors share variance with the stress scale of the DASS a multiple regression analysis was conducted. This shows a significant relationship between the PIBS factors and the stress scale ($F(4, 1263) = 18.362, p < .01$) (see Table 29).

Table 29

Regression of PIBS factors with DASS Stress Scale

N = 1267	Stress scale	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	-.08							
BRI	.02	.79				.10**	.13	1.17%
SEB	-.16	.78	.45			-.10**	-.15	1.45%
IBC	-.02	.81	.49	.41		.04	.06	0.23%
IOB	-.17	.64	.44	.52	.44	-.11**	-.18	2.06%
						R ² =	.056	
						Adjusted R ² =	.053	
*p<0.05		**p<0.01				Unique variance = .049		
						Shared Variance = .007		

Once again, while the PIBS factors demonstrated a significant relationship with the DASS Stress Scale, the variance explained was very weak. The factors SEB and IOB are shown to have had an inverse relationship to the DASS Stress scale, while BRI had a positive relationship to reports on the DASS Stress scale.

Further analysis of the distinction between different levels of stress, according to the DASS Stress scale normative ranges, was also conducted via a MANOVA.

Table 30

PIBS Index scores for Different levels of Stress

Stress	PWI	PIBS	SEB	BRI	IBC	IOB
Normal						
N	964	964	964	964	964	964
Mean	77.24	39.50	57.90	20.52	38.00	49.83
SD	12.19	16.09	20.59	18.56	22.05	21.85
Mild						
N	110	110	110	110	110	110
Mean	66.14	38.36	53.82	20.74	38.61	47.89
SD	15.64	15.65	19.90	17.37	21.46	21.19
Moderate						
N	122	122	122	122	122	122
Mean	62.44	38.72	53.85	22.82	38.89	41.62
SD	14.72	13.94	18.14	15.82	19.61	18.29
Severe						
N	63	63	63	63	63	63
Mean	59.49	34.91	47.46	19.14	36.94	40.81
SD	16.63	14.31	19.73	16.16	19.50	20.56
Extremely Severe						
N	8	8	8	8	8	8
Mean	48.54	35.99	52.92	22.50	32.19	37.81
SD	14.74	13.92	18.72	13.57	18.15	21.81
F		1.423	5.350	0.582	0.254	6.614
Sig		.224	.000	.676	.907	.000

SEB = Self-enhancing Bias

BRI = Beliefs Rejecting Imperfection

IBC = Irrational Beliefs of Control

IOB = Irrationally Optimistic Beliefs

Wilks' λ indicates that the combined dependent variables were significantly influenced by the level of stress reported ($F(16, 3847) = 3.574, p < .01$). These results reflect a very weak association between level of stress and the combined dependent variables ($\eta^2 = .04$). Significant differences were shown to exist between the levels of depression on SEB and IOB (Table 30). Post-hoc analysis using Tukey's HSD tests was also performed. For SEB the 'Normal' group again shows a higher endorsement of such beliefs to the 'Severe' group. In regard to IOB, however, the 'Normal' stress group shows higher scores than the 'Moderate' and 'Severe' groups.

In review of these analyses, it can be seen that while the relationship between the PIBS factors and the DASS scales was very weak, there was a relatively clear pattern. SEB and IOB demonstrated a negative relationship with the severity of depression, anxiety, and stress. The converse was true for BRI, which showed a positive relationship. For the IBC factor, there was no relationship with the Stress and Anxiety scales. There was a minimal positive contribution of IBC to the Depression scale.

Relationship Between PIBS and Control

The literature on positive illusions has claimed both positive influences (Taylor & Brown, 1988) and negative (Colvin & Block, 1994) on coping and adaptation. It was therefore of interest to assess the relationship between endorsement of positive irrational beliefs, via the PIBS, with different forms of coping, or control. The three forms that this study assessed were primary control, secondary control and relinquished control (Band & Weisz, 1988, 1990; Rothbaum et al., 1982). A multiple regression analysis was

conducted for each of the different types of control, using the PIBS factors as predictors (see Table 31).

Table 31

Regression of PIBS factors with Primary Control

N = 1262	Primary Control	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.08							
BRI	-.09	.79				-.07**	-.26	4.38%
SEB	.22	.78	.45			.07**	.27	4.92%
IBC	.03	.81	.49	.41		-.00	-.02	0.02%
IOB	.15	.64	.44	.52	.44	.03**	.13	1.08%
						R ² =	.102	
						Adjusted R ² =	.099	

*p<0.05

**p<0.01

The regression between primary control and the PIBS factors shows that there was a significant relationship between these variables ($F(4, 1257) = 35.511, p < .01$). Contributing to this relationship were BRI, SEB and to a lesser extent IOB. While SEB and IOB were positively related to primary control, BRI was negatively related to it. Surprisingly IBC, comprising overly positive beliefs that one can influence their environment, did not demonstrate a relationship to the use of primary control. The tendency for SEB to be positively related to the use of primary control makes intuitive sense, as the more someone believes in their abilities, even if the belief is unrealistic, the more likely they are to try to use those abilities to make changes. Likewise, the negative relationship between BRI and primary control is also understandable. Those who reject less than perfect aspects of themselves would be unlikely to acknowledge their errors and would therefore be less likely to act to change their circumstances.

Table 32

Regression of PIBS factors with Secondary Control

N = 1261	Secondary Control	PIBS	SEB	BRI	IBC	B	β	sr ²
	.19							
PIBS								
BRI	.01	.79				-.06**	-.22	3.21%
SEB	.24	.78	.45			.04**	.16	1.76%
IBC	.14	.81	.49	.41		.01	.05	0.20%
IOB	.30	.64	.44	.52	.44	.07**	.29	5.45%
						R ² =	.133	
						Adjusted R ² =	.131	
*p<0.05	**p<0.01					Unique variance =	.106	
						Shared Variance =	.027	

In regard to secondary control, the regression analysis (Table 32) again found a relationship between this form of coping and the PIBS factors ($F(4, 1256) = 48.287, p < .01$). The ability of the PIBS factors to explain the variance within reported use of secondary control was also similar to that of primary control. The relationship with IOB and SEB was again positive, but IOB explained greater amount of variance this time. BRI had a negative relationship with this form of coping. The combined variance explained by these factors approximates 13 percent.

Unlike primary control, the failure for IBC to relate to this form of coping is not surprising. Psychological coping in relation to unpleasant events would not be expected to relate to one's perceived capacity to influence future circumstances which are outside of one's control. In a sense, secondary control concerns psychological coping with an event that has already happened, while IBC would tend to relate to future events. Optimism could understandably have a larger influence upon secondary coping, as one form of secondary coping is to focus on the time limited nature of an unpleasant event and to think about how the situation may improve in the future.

Table 33

Regression of PIBS factors with Relinquished Control

N = 1261	Relinquished Control	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.15							
BRI	.19	.79				.05**	.19	2.30%
SEB	.06	.78	.45			-.01	-.02	0.03%
IBC	.12	.81	.50	.41		.01	.05	0.19%
IOB	.05	.64	.44	.52	.44	-.01	-.04	0.11%
						R ² =	.037	
						Adjusted R ² =	.034	
*p<0.05	**p<0.01					Unique variance =	.026	
						Shared Variance =	.011	

Finally, in regard to the reported use of relinquished control, the PIBS factors once again demonstrated a significant relationship ($F(4, 1257) = 12.121, p < .01$), via the regression analysis (Table 33). While significant, this relationship was very weak, however, explaining less than 4 percent of the variance. The primary factor contributing to this relationship was BRI, which was the only individual factor to have a significant relationship with relinquished control, which was in a positive direction. Conceivably, this may be explained by the suggested outcomes of such beliefs, which include abdication of responsibility to others, and even the blaming of others for the occurrence of unpleasant events (Colvin et al., 1995), which is akin to the “do nothing” approach to the coping of those who utilise relinquished control.

Relationship Between PIBS and the Rosenberg Self Esteem Inventory

It was proposed that positive irrational beliefs relating to the self would also relate to an individual’s self-esteem. Thus the Rosenberg Self-Esteem Inventory was

included to analyse any such relationship. To test the existence of a relationship between self-esteem and positive irrational beliefs a multiple regression analysis was conducted. This showed a significant relationship between the PIBS factors and the self-esteem scale ($F(4, 1263) = 76.205, p < .01$).

Table 34

Regression of PIBS factors with the Rosenberg Self-Esteem Inventory

N = 1267	Self-Esteem	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.27							
BRI	.08	.79				-.14**	.03	1.74%
SEB	.41	.78	.45			.31**	.02	10.01%
IBC	.13	.81	.50	.41		-.03	.02	0.12%
IOB	.32	.64	.44	.52	.44	.15**	.02	2.68%
						$R^2 =$	.205	
						Adjusted $R^2 =$	.202	
*p<0.05	**p<0.01					Unique variance =	.145	
						Shared Variance =	.060	

Table 34 demonstrates that SEB and IOB factor scores from the PIBS have a positive relationship with self-esteem, as measured by the Rosenberg Self-Esteem Inventory. The BRI factor had a negative relationship to self-esteem. When combined, the unique and shared variances from the PIBS factors have a significant, but weak relationship with self-esteem. SEB was again predominant amongst these, contributing approximately 10 percent of the variance on its own. Although it was weak, it was also the strongest so far.

Relationship Between PIBS and the Life Orientation Test

As noted previously, optimistic beliefs were included amongst the positive irrational beliefs. Hence, the items on the PIBS were analysed in relation to a commonly used measure of optimism, the Life Orientation Test. This was performed via a regression analysis.

Table 35

Regression of PIBS factors with the Life Orientation Test

N = 1266	LOT	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.32							
BRI	.11	.79				-.20**	-.19	2.30%
SEB	.37	.78	.45			.21**	.23	3.33%
IBC	.20	.81	.50	.41		.00	.00	0.00%
IOB	.48	.64	.44	.52	.45	.39**	.44	12.58%
						R ² =	.276	
						Adjusted R ² =	.273	
*p<0.05	**p<0.01					Unique variance = .182		
						Shared Variance = .094		

The regression analysis indicates that there is a relationship between reports on the LOT and the PIBS ($F(4, 1261) = 120.003, p < .01$). As shown in Table 35, the SEB and IOB factors from the PIBS are shown to have a positive relationship while BRI had a negative relationship. Unsurprisingly, the factor contributing the greatest variance to reports on the LOT is IOB, which comprises the positive irrational beliefs relating to optimism. However, the individual contribution of this factor was still weak. Similarly the combined contribution of the four PIBS factors was weak to moderate.

Comparison of PIBS and Indirect Assessment of Positive Irrational Beliefs

Much of the research to date on positive irrational beliefs, commonly termed positive illusions, has been conducted using inferential methods of assessing such beliefs (e.g. Taylor & Brown, 1994; Taylor et al., 2003). These indirect assessments have often been conducted by asking participants to compare themselves against an ‘average’ person. The presence of positive irrational beliefs has then been determined on a population basis by the average reports of the participants involved. The presence of positive irrational beliefs was then inferred if the majority of participants reported a positive comparison against the conceptualised ‘average’ person. For instance, if most people believed they were happier, more content or more likely to have a better future than the average person, such perceptions were used as evidence of illusions. However, the usefulness of these inferential methods for assessing the presence of positive illusions has been questioned in the literature (i.e. Colvin & Block, 1994; Cummins & Nistico, 2002). It was therefore of interest to assess the relationship between the PIBS and a set of inferential questions proposed to elicit positive irrational beliefs.

The questions devised for the inferential assessment were modelled closely on those mentioned in the literature by prominent authors such as Taylor and Brown (1988, 1994). They were chosen on the basis of their presence in the past literature and on their face validity in comparison to the PIBS items. Hence, the questions included in the survey represented three of the PIBS factors, being self-enhancement, the rejection of negative aspects of the self, and optimism. Thus, the first analysis conducted was a factor analysis, to determine whether the questions demonstrated a similar factor matrix to the PIBS items. The results are presented in Table 36.

Table 36

Factor analysis of inferential items

	Factor 1
I am better than the average person	.77
I am more successful than the average person	.84
I am happier than the average person	.79
I fail less often than the average person	.86
I make fewer mistakes than the average person	.84
I have fewer problems than the average person	.77
I will have a better future than the average person	.85
In the future...	.66
I will have fewer health problems than the average person	.77
I will be happier than the average person	.77
Eigenvalue	5.72
% of variance	63.50
Cronbach's α	.93

There was only one factor to emerge from this analysis. This factor was quite strong and explained 63.5 percent of the variance in responses to the set of inferential questions. Thus, despite the common theoretical underpinnings of the PIBS and the inferential questions, the inferential questions cannot be separated in the same manner as the PIBS. However, it remains possible that the inferential questions may resemble a single factor of the PIBS or the super-ordinate factor.

Based on the factor analysis, an index score was created for the inferential questions. This was done in the same manner as the factor scores for the PIBS. Next, the inferential items were assessed on their own. According to Taylor and Brown (1988), when a respondent is asked to compare themselves against an "average person" the overall mean for the population can be used to infer the presence of irrationally

positive beliefs in the members of the sample. In line with this, it was proposed that if people think in a realistic manner, the average participant would report a belief that they do not expect themselves to be different from the average person. This would be reflected by a sample mean corresponding to the mid-point of a scale upon which participants are asked to rate themselves against the average person. A mean higher than the mid-point is therefore claimed to be indicative of an irrationally positive bias, across the sample. Hence, each of the means for the inferential questions was compared to the mid-point (mid-point =5) of their scales. The results are presented in Table 37.

Table 37

Descriptive and t-test statistics for inferential items

Item	N	Mean	Std	t	Sig
I am better than the average person	1269	4.10	2.72	-11.79	.000
I am more successful than the average person	1267	4.34	2.70	-8.69	.000
I am happier than the average person	1268	5.41	2.56	5.75	.000
I fail less often than the average person	1267	4.40	2.58	-8.29	.000
I make fewer mistakes than the average person	1268	4.07	2.58	-12.89	.000
I have fewer problems than the average person	1268	4.63	2.71	-4.80	.000
I will have a better future than the average person	1263	4.95	2.66	-.62	.539
In the future...					
I will have fewer health problems than the average person	1269	4.32	2.72	-8.96	.000
I will be happier than the average person	1271	5.60	2.53	8.51	.000
Inferential index	1271	46.50	20.96	-5.949	.000

Surprisingly, many of the means for these items were below the scale mid-points of 5. Only the two statements in regard to happiness, in the present and in the future, were above their scale mid-points, and therefore infer a positive bias. The item in regard

to the individuals' future expectations showed no difference from the mid-point, and thus no bias. The remaining six items all demonstrated beliefs that the average member of the sample believes themselves to be worse than the "average person". Similarly, this negative bias is again reflected in the overall index for the inferential questions.

The factor score was then compared to the four PIBS factors to ascertain whether there was any relationship between the PIBS and the inferential assessment of positive irrational beliefs. To assess the relationship to the PIBS factors a regression analysis was conducted.

Table 38

Regression of PIBS factors with the inferential factor index

N = 1266	Inferential factor index	PIBS	SEB	BRI	IBC	B	β	sr ²
PIBS	.52							
BRI	.42	.79				.21**	.18	2.22%
SEB	.42	.78	.45			.18**	.17	2.00%
IBC	.39	.81	.50	.41		.13**	.13	1.21%
IOB	.43	.64	.44	.52	.44	.19**	.20	2.59%
						R ² =	.286	
						Adjusted R ² =	.284	
*p<0.05	**p<0.01	Unique variance = .080						
		Shared Variance = .206						

This regression revealed a relationship did exist between the inferential assessment questions and the PIBS ($F(4, 1262) = 126.676, p < .01$). The four PIBS factors explained just under 29 percent of the variance within the inferential factor index. The unique variance contributed by the factors was very small, but there was a considerable amount of shared variance. This implies that the factors equally contributed

to this relationship, and that the inferential assessment may best relate to the super-ordinate PIBS factor, rather than any of the four sub-ordinate factors.

Discussion

This study investigated the relationship between different forms of positive irrational beliefs and other constructs related to mental health, on a cross sectional basis. Initially, however, it reviewed the factor structure of the Positive Irrational Belief Scale (PIBS), to determine whether it maintained its structure with the new sample. Secondly, it investigated the relationship of the PIBS to Subjective Wellbeing (SWB) and core affect. While the PIBS factors demonstrated consistent relationships with these constructs, the relationships tended to be very weak. Furthermore, the individual factors did not demonstrate a unified influence, as suggested in the literature (Taylor & Brown, 1988, 1994), and instead had distinct influences on these constructs.

Comparisons were then made between the four PIBS factors and constructs of mental health which were theoretically thought to be related. These included self-esteem, different forms of coping (i.e. primary, secondary and relinquished control), and optimism. While the relationship between these variables and the PIBS factors was somewhat stronger, they were still weak.

Furthermore, the study also assessed the relationship between the PIBS factors and indicators of poor mental health in the form of depression, anxiety and stress. Again, the PIBS was found to only have a weak association with these indicators of psychological distress.

Finally, the PIBS was compared against inferential forms of assessment of positive irrational beliefs that have traditionally been used in the literature. This analysis did reveal that the PIBS and the inferential form of assessment, while having some overlap, tend to measure different constructs. Further details of these results and their

implications in regard to the previous literature and research findings on positive irrational beliefs will be discussed in the following section.

The Positive Irrational Beliefs Scale

The PIBS factor analyses once again found that the scale consisted of four distinct factors. These were largely the same as those found in Study One, and thereby confirmed the previous findings. The factors were again found to represent self-enhancing beliefs (SEB), beliefs rejecting imperfection (BRI), irrational beliefs of control (IBC) and irrationally optimistic beliefs (IOB). There were a few changes in item loadings, however, from Study One. In this study “I control all the events in my life”, which had previously been found to cross load with BRI and IBC, was found to uniquely load with the latter.

Two other items also shifted across factors. “In the future my life will only get better” moved from SEB to IOB, and “In the future I will not have to deal with unpleasant events” shifted from IOB to BRI. These changes may have been due to age differences between the two samples. The sample of this study had a mean age of 59.9 years, whereas the mean age of the sample for Study One was between 26-35 years. This increase in age may have created a shift in how respondents answered these items. For example, when considering their future, younger individuals may be less likely to consider declines in areas such as physical ability that can be associated with ageing, and this may impact upon their optimism for the future. Older individuals, on the other hand, are likely to be much more aware of this. As a result, older adults who consider such

factors may be less likely to demonstrate a process of denial consistent with beliefs rejecting imperfection.

Despite the changes noted, the factor sequence of the PIBS, in regard to their ability to explain variance was the same as in Study One. Explaining the greatest proportion of variance was BRI (21.92 percent), followed by IOB (16.05 percent), SEB (14.42 percent) and finally IBC (13.08 percent). Moreover, the four factors again contributed to a super-ordinate factor comprising a positive irrational beliefs scale. Thus the hypothesis, in regard to the consistency of the underlying factor structure of the PIBS across the two studies was largely supported.

This study therefore reinforces the implications of Study One that in regard to the study of positive irrational beliefs, it is possible to separate such beliefs into different categories. Such results provide greater detail than the traditional approach, which has frequently seen various forms of positive irrational beliefs subsumed into single factors (Boyd-Wilson et al., 2004; Taylor et al., 2003; Tiba & Szentagotai, 2005).

Furthermore, previous authors have subsumed a variety of factors into measures of positive irrational beliefs. For example, Taylor et al. (2003) used the How I See Myself scale which combines how the individual identifies with both positive and negative traits into what they called self-enhancement. Boyd-Wilson et al. (2004) and Colvin et al. (1995) have also used such a strategy to measure self enhancement. Others, such as Brookings and Serratelli (2006) have used the Balanced Inventory of Desirable Responding, Positivity subscale to measure a tendency for positive illusions. This scale incorporates elements of control, self-enhancement, and a tendency to reject imperfections about the self. While the super-ordinate result indicates such measures

may be reliable, the separation of positive irrational beliefs into distinct categories obviously provides for greater detail by which to study validity.

Evidence for this claim resides in the failure to make a distinction between the different forms of positive irrational beliefs in the past which has possibly led to inappropriate comparisons between findings. For example, Compton (1992) used the Defensive Positive scale from the Tennessee Self Concept Scale to represent positive illusions. This scale tends to represent BRI alone. Others, as noted above, have used various mixtures of the different types of positive irrational beliefs. Hence, direct comparisons between the findings of the various studies may be invalid, as the different forms of positive irrational beliefs do not have a single uniform relationship with other aspects of mental health. As an example in regard to SWB, this present research demonstrated that self-enhancing beliefs have a positive relationship, while beliefs rejecting imperfections have a negative relationship. This issue for comparing research could be resolved by more careful delineation of the various forms of positive irrational beliefs.

A distinction amongst the beliefs traditionally suggested to represent self-enhancement has also been proposed by Sedikides and colleagues (e.g. Alicke & Sedikides, 2009; Sedikides & Gregg, 2008). They proposed that beliefs traditionally incorporated into the study of self-enhancement can be characterised as being *self-enhancing* and *self-protecting*. Self-enhancing beliefs, according to their definition, are designed to promote oneself and one's prospects, while self-protecting beliefs attempt to prevent one from falling below one's accepted standards (Sedikides & Gregg, 2008). The separation of self-enhancing beliefs into the factors SEB and BRI in the current

research appears to be in line with these definitions. SEB represents those beliefs that advance one's view of them self (e.g. "I am always successful at the things I do"), whereas BRI represents beliefs that attempt to distance oneself from perceptions of unsatisfactory performance (e.g. "I never make mistakes"), and suggests that the individual's ideals are their standards.

A further issue in comparing results of the literature on positive irrational beliefs is the variety of methodologies used to assess them. The most common strategies have depended upon comparative evaluations to infer the presence of positive irrational beliefs. Here, researchers have relied upon sample level strategies in which they have asked participants to rate themselves against an 'average' other, from which they reported the presence of positive irrational beliefs if the majority of the sample identified as being better than the imagined 'average' other (e.g. Baumeister, 1989; Boyd-Wilson et al., 2004; Boyd-Wilson et al., 2002; Brookings & Serratelli, 2006; Gana et al., 2004; Taylor & Brown, 1988; Taylor et al., 2003). As noted previously (see Chapter 3: Methodological Criticisms) these inferential assessments of positive irrational beliefs have a number of problems. In summary, the major problem is that a self bias can arise from seeing the self as better, or by seeing the 'average' other as worse. Clearly, these are very different causes that have major implications for the meaning of particular results.

In attempts to resolve this problem, some researchers have used assessments at an individual level. These strategies have assessed for positive irrational beliefs by comparing participants' self reports against assessments made by another person, such as a friend or independent examiner, or against objective standards like actual academic

performance (Colvin et al., 1995; Robins & Beer, 2001). However, these techniques have their own problems. Proxy evaluations of another person's SWB is demonstrably an invalid technique, due to the subjective nature of the criteria selected (for a review see Cummins, 2002). Moreover the essential understanding derived from SWB homeostasis is that there will be no simple relationship between objective standards and subjective evaluations of those standards. The PIBS, on the other hand, attempts to bypass these comparative issues by creating a direct method for assessing positive irrational beliefs.

In summary, the theoretical factor structure of the PIBS was once again supported. This allows for the separation of positive irrational beliefs into four factors. Such a separation provides for greater specificity in studying the endorsement of such beliefs, and their relationship to other factors. Furthermore, the 'direct' design of the PIBS is suggested to overcome some of the shortcomings of previously used inferential methods for assessing positive irrational beliefs.

Positive Irrational Beliefs and Subjective Wellbeing

A major aim of this study was to investigate the relationship between the PIBS and SWB. Furthermore, it sought to establish the influence of core affect upon such a relationship.

The initial investigation of the relationship between the PIBS and SWB, through the PWI, demonstrated that there is a weak positive relationship between the two variables. However, the factors from the PIBS did not uniformly relate to SWB. SEB and IOB were both found to demonstrate positive relationships to SWB, while BRI had a

negative relationship. IBC, on the other hand, did not correlate with SWB. Together the contribution from the PIBS factors accounted for less than 12 percent of the variance in SWB.

Further analysis was then conducted on split PWI samples using a cut value of 50 %SM. This value was chosen, as scores below this have been argued to be pathological, and indicative of depressed mood in particular (for a review see Cummins et al., 2002).

From the analysis of those scoring above 50 %SM, a significant relationship was again found between the PIBS and SWB. The individual factors of the PIBS again demonstrated the same pattern of influence as found for the entire sample, but the overall amount of variance explained was somewhat less, being under 10 percent. The analysis of those scoring below 50 %SM was not significant.

This change can be explained by the homeostatic theory of SWB, which proposes that movement of SWB to below normal levels is generally due to the influence of external factors, such as a lack of financial security (Cummins, 2009; Cummins et al., 2002). Hence, at low levels of SWB, there is a reduced influence on SWB from internal factors, such as personal beliefs. Altogether, the results support the hypothesis that there would be a weak relationship between SWB and the PIBS, at least when the sample is restricted to people with SWB within the normal range.

The emergence of a relationship between the PIBS and SWB for the entire sample in this study was contrary to the results of Study One, which did not find a significant relationship for its entire sample. Such a difference may have been due to the larger sample size, which provides greater power in the statistical analysis. The average

age of the samples may have also contributed to the difference in findings. The average age of participants in this study was 59.9 years, while in Study One it was between 26-35 years. It has been found that younger adults typically report lower levels of SWB (Cummins et al., 2008), and that this is often associated with the influence of external factors such as study (Cummins, 2003) and raising of children (Cummins, 2009). Thus, in accordance with the homeostatic model of SWB, the lack of association between the PIBS and SWB may have been the result of external variables impacting upon the experiences of younger adults. In comparing the restricted samples above 50 %SM, however, the results appear to be largely the same. This provides further support for the explanation offered through the homeostatic model of SWB.

With regard to the wider literature, the finding that positive irrational beliefs and SWB are only weakly associated has also been demonstrated by a number of authors, in regard to both affect and life satisfaction (Boyd-Wilson et al., 2004; Gana et al., 2004; Robins & Beer, 2001). A stronger relationship was found by Brookings and Serratelli (2006) who did report a moderate correlation between positive irrational beliefs and SWB, as measured through an index created by combining results from the Satisfaction With Life Scale and the Existential Anxiety Scale. However, this still only accounted for 16 percent of variance. The summing of the two scales was also raises questions about the validity of the methodologies for these studies. This procedure is problematic as one scale measured a cognitive component of SWB and the other measured an emotive component, and they were reported to only have a moderate correlation ($r = .53$) between them. Overall then, these results reinforce Boyd-Wilson et al.'s (2004) conclusion that positive irrational beliefs relate to only a small component of SWB.

A further aim of the study was to examine claims made in the ‘Optimal Margin of Illusion’ theory (Baumeister, 1989). Consequently, further analysis of the relationship between the PIBS and SWB was conducted to determine whether different levels of SWB corresponded to different levels of positive irrational beliefs. From this, it was demonstrated that the different SWB groups (low, average, high) scored differently on the super-ordinate PIBS factor. Movement from the low to average to high groups corresponded to successive significant increases in the super-ordinate PIBS factor.

However, again, this relationship accounted for only a small proportion of the variance. Moreover, the changes associated with movement between the SWB groups were based largely on SEB and IOB, which demonstrated the same degree of difference between successive SWB groups. While IBC also demonstrated a significant increase between the average and high wellbeing groups, no other differences were found between the SWB groups. BRI showed no change. Thus, it can be clearly seen that there are a variety of relationships between the different forms of positive irrational beliefs and levels of SWB. These results are in contrast to those from Study One, which failed to find any differences when moving from one level of SWB to another.

The incremental increases in positive irrational beliefs found in this study are in contrast to previous research by Boyd-Wilson et al. (2004, 2002). In their 2002 study, they found that positive illusions demonstrated a non-linear relationship with ‘flow states’, as measured by the ability to live in the present, plan effectively for the future and be attached to the past through happy memories, rather than bitterness or regret. The scale used to measure such a flow state was the Time Competence scale. Furthermore, flow state was equated to SWB, based on the idea that a preoccupation with either the

past or future is maladaptive, and that inner wellbeing consists of an absorption in the present moment (Boyd-Wilson et al., 2002). This was supported by research that had demonstrated correlations between present orientation and measures of life satisfaction and general happiness (Boyd-Wilson et al., 2002). The results of Boyd-Wilson et al.'s (2002) study indicated that those living in the present to a moderate level had a higher level of positive illusions than those who were measured as living in the present to either a high or low level. In their 2004 study, however, no difference in self-enhancing bias was found between moderately happy and very happy participants, as measured by the Affectometer 2.

In both of the Boyd-Wilson et al. (2004, 2002) studies, self-enhancing bias was measured by having participants rate how strongly they identified with positive and negative characteristics. This was then compared to how participants perceived others rate in regard to the same characteristics. Such a methodology is not only inferential in nature, but also combines self-enhancing beliefs and beliefs rejecting negative aspects of the self. The combination of these two factors may have contributed to the difference in findings from those demonstrated in the current study. Interestingly, in the 2002 study, the difference in positive illusions between the low and moderate Time Competent groups was due to higher self ratings, while the difference between the medium and high Time Competent groups was due to more positive ratings of others. By integrating these findings with those of the current study, it appears that positivity about the self is associated with increased SWB, in regard to satisfaction and affect, while positivity about others also provides for a higher level of ability to live in the present.

In summary, the results of this study together with the findings from previous research, confirm the hypothesis that there is a relatively consistent, but weak association between SWB and positive irrational beliefs, in the normal population. This appears to be mainly driven by positive irrational beliefs that relate to optimism and self enhancement.

Beliefs of control, while demonstrating some incremental increases with SWB, do not appear to have any explanatory power for changes in SWB. Beliefs rejecting an imperfect self concept, on the other hand, while staying relatively consistent across the different levels of SWB, appear to have an inverse relationship with SWB.

Thus, while beliefs relating to optimism and self-enhancement support Taylor and Brown's (1988) assertion that positive irrational beliefs promote SWB, on a cross sectional basis, the overall relationship between positive irrational beliefs and SWB appears to be more complicated than they proposed. This also appears true for Baumeister's (1989) optimal margin of illusion theory. The current study also indicates that approaches to measuring positive irrational beliefs in the past that subsumed the different forms of beliefs into a single factor (e.g. Boyd-Wilson et al., 2004; Compton, 1992; Taylor et al., 2003; Tiba & Szentagotai, 2005) have likely been somewhat insensitive. This is particularly true for those that have combined self-enhancing beliefs and beliefs rejecting imperfection.

A possible explanation for this difference between SEB and BRI has been offered by Sedikides and colleagues (Alicke & Sedikides, 2009; Sedikides & Gregg, 2008) in their description of self-enhancing and self-protecting beliefs. They suggest that self-protective mechanisms are typically "more elaborate, dramatic and difficult to

maintain than self-enhancing ones”, which generally represent only “a minor discrepancy between perceived and objective self-components” (Alicke & Sedikides, 2009, p. 14). Inherent to this description is the relationship between these two types of beliefs and accurate feedback. Sedikides and colleagues proposed that self-enhancement tends to be relatively mundane, and can often be overcome simply by pointing out the facts, whereas self-protection tends to involve more extreme self-deception that can be difficult to overcome (Alicke & Sedikides, 2009). Furthermore, they suggest that self-enhancing beliefs are more “tactical” than self-protective beliefs, which are more “candid” due to a basis on deeper, more intense motivations (Sedikides & Gregg, 2008).

Positive Irrational Beliefs, Subjective Wellbeing and Core Affect

It has been suggested that core affect is the predominant factor driving SWB (Davern et al., 2007). Core affect, as described by Russell (2003) is a neurophysiological mood state that is object free and relates to how the individual senses themselves in an abstract manner. On this basis, Russell distinguished it from emotions, claiming that it is not reactionary, or based on any perception or cognition. It can be argued, however, from a cognitive-behavioural perspective that the abstract sensing of oneself is still a perception, and that such a mood state therefore corresponds to abstract core beliefs, which are highly stable schema (Beck & Weishaar, 2005; Beck, 1995; Ellis, 1994). Adding further to the description of core affect, it has been suggested that homeostatic mechanisms generally maintain it at a positive level (Davern et al., 2007; Russell, 2003). Building on this, Cummins (2009) proposed a model underlying SWB that he titled

‘Homeostatically Protected Mood’. Thus, it was of interest to examine the relationship between core affect and the PIBS.

The structure of core affect is based primarily on how alert, happy, content and unhappy the individual feels in general (Davern et al., 2007). There are however, arguments in the literature on affect which suggest that positive and negative affect should be assessed independently and not combined into the one construct (see Cropanzano et al., 2003; Watson et al., 1988). In response to this, two versions of core affect were constructed. The first consisted of how alert, happy and content the individual feels, while the second also incorporated a reverse scoring of how unhappy the individual feels. The exploratory analysis conducted with these two versions of core affect demonstrated very similar relationships to the PIBS. The constructs explained 16.2 percent and 15 percent of variation in the PIBS factors, respectively. These findings supported the hypothesis that there would be a weak relationship between the PIBS and core affect. Furthermore, both versions of core affect demonstrated a positive relationship with the super-ordinate PIBS factor. They also demonstrated positive relationships with SEB and IOB, a negative relationship with BRI, and no relationship with IBC. This is also in line with the relationship between SWB and the PIBS.

To test the hypothesis that core affect underlies SWB, further analysis was conducted to determine whether either of the factors dominated the relationship to the PIBS, or whether they uniquely contributed to the relationship. This revealed that core affect drives the relationship with the PIBS, as all relationships between SWB and the PIBS became non-significant once covariance was accounted for. This supports the previous research by Davern et al. (2007) upon which they had based their theory.

PIBS and Indicators of Mental Health

Taylor and Brown (1988) not only related the influence of positive irrational beliefs to SWB, but to mental health more generally. They proposed that such beliefs are required for good mental health. Thus, it was of interest to investigate the relationship between the PIBS and other constructs that are associated with mental health. Those included related to both good and poor aspects of mental health, measuring depression, anxiety, stress, self-esteem, optimism and coping strategies.

The PIBS and the DASS

From the inception of their theory, Taylor and Brown (1988) reported that individuals with depression tend to demonstrate weaker positive irrational beliefs. While Taylor and Brown (1994) claimed that this did not imply a loss of positive irrational beliefs results in depression, they did maintain that such beliefs are required for positive mental health. As identified by Block and Colvin (1994), however, mental health is a continuum, from poor to good. Thus, aspects of poor mental health and good mental health are conceptually linked, and a complete separation of these is untenable. If positive illusions do provide for good mental health, they should therefore help ward against aspects of poor mental health. Hence, it was hypothesised that aspects of poor mental health, such as depression, anxiety and stress, would be inversely related to the PIBS.

Based on criteria in the DSM-IV-TR (APA, 2002), it was proposed for this study that positive irrational beliefs relating to the self (SEB and BRI) and optimism (IOB) would explain the most variance in their relationship with depression.

The results provided mixed support for this hypothesis. While an overall relationship was found between the PIBS and depression, this only accounted for 12 percent of the variance between the two scales. Furthermore, the sub-factors did not demonstrate a unified relationship to depression. While SEB and IOB were negatively related to depression, BRI demonstrated a positive association, and IBC had no relationship. Follow up analyses were also conducted, with the aim of comparing endorsement of the positive irrational beliefs with different severity levels of depression. For SEB and IOB, there were significant increases in scores from the 'Normal' to any of the groups scoring at or above the 'Moderate' level. The 'Mild' group also scored significantly higher than the 'Extremely Severe' group. There was no change in endorsement of BRI with increasing levels of severity for depression. This indicates that those reporting little or no depression tend to report a greater endorsement of positive irrational beliefs relating to optimism and self-aggrandisement, while endorsement of beliefs rejecting imperfections in oneself appear not to vary with reported levels of depression.

Hence, while not all associations were in the predicted direction for depression, the three contributing types of positive irrational beliefs were in line with predictions. This has implications for the 'depressive realism' debate. It indicates that there may be different types of irrational beliefs that depressed individuals engage in when compared to non-depressed individuals. Thus, while Taylor and Brown (1988), in support of their

model, suggested the 'depressive realism' literature indicates that individuals with depression may be more realistic than those not experiencing depression, this does not appear to be the case for all irrational beliefs.

In terms of anxiety, due to the prominence of cognitions relating to a lack of tolerance for uncertainty and for not having control (Miceli & Castelfranchi, 2005; Nolen-Hoeksema, 2000), it was hypothesised that IBC would have a central role in the relationship between the PIBS and anxiety.

Again, support for this hypothesis was mixed. The relationships between the PIBS and anxiety mirrored those of depression, however, they explained less than 6 percent of the variance in this case. From the post-hoc analysis based on anxiety severity levels, it was demonstrated that the 'Normal' group endorsed SEB and IOB to a greater extent than the 'Extremely Severe' group. The opposite was true for BRI. These results suggest that those not reporting any anxiety tend to endorse overly optimistic and self-aggrandising beliefs to a greater extent, and beliefs rejecting an imperfect self concept to a lesser to degree than those experiencing the highest levels of anxiety

The lack of influence by IBC on the association with anxiety did not support the proposed importance of such beliefs in the relationship between the PIBS and anxiety. This may be because it can be distressing for some individuals not to have control, while for others it may be distressing to have control, as it provides extra pressure to maintain such control, whether real or perceived. Consequently, while a general assessment of the relationship between the anxiety and beliefs of control, such as that performed in this study, may not identify an association, sub samples may be found to relate to such beliefs in distinct patterns (e.g. adjustment anxiety vs. performance anxiety).

Finally, in regard to the stress scales, the PIBS again demonstrated a significant relationship. The individual relationships between the PIBS sub-factors and the stress scale basically replicated those of the anxiety scale, again demonstrating mixed support for the predicted relationship between the PIBS and the DASS. On the post-hoc analysis relating to stress severity, the 'Normal' group was shown to score higher than those scoring in the 'Severe' or the 'Extremely Severe' group for SEB. For IOB, the 'Normal' group scored higher than those in the 'Moderate' stress group or above. There were no differences for BRI across the different stress severity levels. Such findings suggest that self-enhancing and overly optimistic beliefs tend to be endorsed more by those with a normal level of stress than those with a moderate level, or above, level of stress. As with depression, beliefs rejecting imperfection about oneself appear not to vary with peoples reports of stress.

In summary, the PIBS demonstrated a consistent relationship with the various forms of emotional distress measured by the DASS. As noted previously, it is logical to expect that an enhanced perception of oneself and a high level of optimism will provide for a positive emotional state, which will of course work against forms of emotional distress, such as depression, anxiety and stress. The positive relationship between BRI and the three DASS scales, and the lack of influence from IBC, however, is contrary to that hypothesised. It also appears contrary to Taylor and Brown's (1988) theory. The positive relationship between BRI and these forms of emotional distress, can likely be explained by the view that such beliefs are a negative defence mechanism (Ellis, 1987; Kinney, 2000; Robins & Beer, 2001). In line with this view, it is possible that such beliefs inhibit helpful cognitions, emotions and behaviours, and may reflect an

underlying belief that the person needs to avoid mistakes, or be perfect, to be worthwhile (Kinney, 2000). This then reflects a low sense of self-worth, which would likely relate to depression.

The PIBS and Self-Esteem

Taylor and Brown (1988) proposed that self-esteem would be positively related to the PIBS factors. Self-esteem, as defined by Rosenberg (1965) is a favourable or unfavourable attitude toward the self, reflecting self-worth. Hence, it was proposed that the PIBS factors relating to how individuals view themselves (SEB and BRI) play a central role in such a relationship.

The predicted interactions between the PIBS and self-esteem received mixed support. An overall relationship was found to exist between the two scales, which accounted for just over 20 percent of the variance. This was dominated by SEB, which uniquely contributed 10 percent, in a positive direction. BRI, on the other hand, demonstrated a negative relationship to self-esteem. Thus, the different types of beliefs relating to the individuals self concept did not have the same relationship to self-esteem. In regard to IOB, there was also a positive relationship, while IBC had no association with self-esteem.

Previous research on the relationship between self-esteem and positive irrational beliefs by Robins and Beer (2001) had found a positive relationship between the two. In their study positive irrational beliefs were measured by the discrepancy between perceived academic ability in students and actual academic performance, which they labelled as a self-enhancement bias. On a longitudinal basis, however, they found that

this self-enhancement bias was negatively associated with changes in self-esteem. From this they concluded that while positive irrational beliefs may be protective of self-esteem and mental health, in the short term, they may be maladaptive in the long term (Robins & Beer, 2001).

Adding to this, Compton (1992) found that positive irrational beliefs are not necessary for high self-esteem. He grouped individuals on the basis of whether they reported high or low scores on measures of self-esteem and positive irrational beliefs. From this he found that there were individuals who corresponded to all four possible categories. Thus there were individuals with high self-esteem and low positive irrational beliefs, and individuals with high positive irrational beliefs and low self-esteem. He then compared these groups, and found that the two groups with high self-esteem scored at an equivalent level in regard to depression, which was less than that of the low self-esteem groups. He found, however, that between the high self-esteem groups, the group with a low level of positive irrational beliefs scored better on scales measuring psychoticism, personality integration, and capacity for healthy self criticism than the group with high positive irrational beliefs.

Together, the research to date on the relationship between positive irrational beliefs and self-esteem does not support Taylor and Brown's (1988) assertion that there is a unified positive association between the two that promotes mental health. Once again, the relationship appears to be dependent on the types of positive irrational beliefs measured. Furthermore, the longer term relationship appears to be negative.

The PIBS and coping styles

The way people cope with stressful situations has been a significant focus in psychological literature (e.g. Folkman, 1984; Heckhausen & Schulz, 1995; Rothbaum et al., 1982; Weisz, Rothbaum, & Blackburn, 1984), having an obvious relationship to the concept of mental health. Hence, it was of interest to examine the relationship between types of control and the PIBS. Based on Band and Weisz's (1988, 1990) model of control, three forms of control were measured. These were primary control, secondary control and relinquished control. Primary control is a form of coping aimed at changing objective circumstances. Secondary control is aimed at modifying the personal psychological impact of objective circumstances. Relinquished control, on the other hand, is neither trying to change circumstances nor adjust to them. Thus, with these definitions in mind, it was thought that primary control would show a positive relationship to irrational beliefs of control, while secondary control would relate positively with overly irrational beliefs. Alternatively, relinquished control was proposed to be negatively related to all forms of positive irrational beliefs.

In regard to primary control, there was an overall relationship to the PIBS, however, the hypothesised relationship with IBC was not supported. Primary control did, however demonstrate positive relationships with SEB and IOB, and a negative relationship with BRI. The same pattern was shown for secondary control, which did support the hypotheses, and IOB did contribute the most variance to this relationship. In contrast to predictions, relinquished control demonstrated an overall relationship with the PIBS that was based on a positive relationship with BRI. This was the only sub factor with which it had an individual relationship. The findings for relinquished control

need to be interpreted with caution, however, as its scale had a low reliability ($\alpha = .28$). Furthermore, all relationships between the PIBS and the three forms of control were very weak.

Thus, once again the relationship between positive irrational beliefs and mental health appears somewhat more complex than suggested by Taylor and Brown (1988). Both primary and secondary control are generally considered necessary for the healthy management of life stressors (Band & Weisz, 1988; Gould, 1999), and enhancement of them has also been shown to reduce depression (Weisz, Thurber, Sweeney, Proffitt, & LeGagnoux, 1997). Relinquished control is generally considered unhealthy (Band & Weisz, 1988). The positive relationships between SEB and IOB with both primary and secondary control would appear logical, as the greater the individuals perception in their abilities and the more optimistic they are, the more they are likely to believe they can cope with stressful situations, whether by changing them or tolerating them. The lack of a relationship between IBC and control strategies, and primary control in particular, is surprising. This would indicate that the presence, or lack thereof, of such beliefs does not influence the forms of coping individuals use. It may also indicate that the influence of IBC on coping is through other positive irrational beliefs, such as those relating to optimism.

Finally, the pattern of relationships demonstrated by BRI across the three coping styles indicates that this form of positive irrational beliefs is associated with a reduced capacity for healthy coping, and therefore mental health. This can possibly be explained by the outcomes of such beliefs, which have been suggested to include abdication of responsibilities, and the blaming of others for the negative events (Colvin et al., 1995).

Understandably, this would be in opposition to primary and secondary control, which involve making efforts to change either one's circumstances or oneself, and are in line with relinquished control.

The PIBS and optimism

Optimism has been linked to a range of aspects of mentally healthy functioning, including mood, perseverance, to effective problem solving, and even long life (Peterson, 2000). Its opposite, pessimism, has been implicated in aspects of poor mental health, such as depression and social estrangement, and has also been related to mortality (Peterson, 2000). Furthermore, hopelessness, a construct associated with a lack of optimism, is even incorporated into definitions of depressive disorders (APA, 2002). An optimistic bias, however, has also been suggested to be problematic, inhibiting a range of helpful behaviours (Glanz & Yang, 1996). Thus it was of interest to study the relationship between positive irrational beliefs and optimism. It was hypothesised that the PIBS would have a positive relationship with optimism, and that this would naturally be based on IOB.

The results supported the predictions, with the PIBS demonstrating an overall relationship to optimism. This was the strongest relationship discovered, accounting for approximately 28 percent of the variance between the two measures. Furthermore, the importance of IOB to this relationship was also supported, with IOB contributing the largest amount of unique variance. In regard to the other sub-factors, SEB demonstrated a positive relationship with optimism, BRI demonstrated a negative relationship and IBC had no relationship.

It is somewhat surprising that the reported relationships were not stronger, as the presence of optimistic biases have been robustly reported in the literature (Weinstein, 1980), and have been suggested to be widely prevalent (Taylor & Brown, 1988). The weak-moderate association between irrationally optimistic beliefs and optimism indicates, however, that the two may exist largely independently of one another. This is contrary to the claims made by Taylor and Brown (1988), that an overly optimistic view of the future is required for the promotion of mental health, and corresponding behaviours. Such beliefs can instead be seen as only contributing a minor influence on actual levels of optimism.

Summary

The PIBS was demonstrated to have relationships with a variety of measures corresponding to aspects of mental health. The relationships that were found were highly consistent, however, the PIBS factors did not have a unified contribution to these relationships. SEB and IOB, tended to be associated with aspects of good mental health, while also showing negative relationships to aspects of poor mental health. These findings do provide some support for Taylor and Brown's (1988) model of mental health. The opposite was true for BRI, which suggests that they are dysfunctional. This could indicate that such beliefs are part of a self-defence mechanism that attempts to protect the individual from further emotional distress (Ellis, 1987; Kinney, 2000). IBC did not contribute to any of the relationships with the various measures representing mental health

It remains possible that SEB and IOB may still be linked to other aspects of adjustment in a negative manner. From recent componential efforts to measure self-enhancement the effect of self-enhancement on adjustment has largely been shown to be variable, depending on how it is measured. For instance, Kurt & Paulhus (2008) found that the traditional method of measuring self-enhancement, by better than average social comparisons, demonstrated positive relationships with personal adjustment, when measured through wellbeing, depression, anxiety, and self-esteem. The relationship changed, however, when self-peer discrepancy ratings were used to measure self-enhancement and trait variance was controlled. It emerged that self-enhancing individuals demonstrated a negative association with aspects of interpersonal adjustment, based on items measuring their propensity for getting along with others, according to both self-reports and reports by peers. Self-enhancement was also negatively associated with peer ratings of personal adjustment, while self-ratings were positively associated with such personal adjustment (Kurt & Paulhus, 2008).

Similarly, Kwan, John, Robins and Kuang (2008) examined the relationship between self-enhancement and aspects of maladjustment, such as low resiliency narcissism and defensiveness. In their study they attempted to factor out confounding not only confounding influences from the individual's ability level, but also that arising from the degree to which people evaluate others and themselves in a positive light. They found that self-enhancement was positively related to maladjustment, and did not have any beneficial qualities once these confounds were removed.

As noted, the PIBS is designed to measure positive irrational beliefs by having individuals rate themselves on objectively unrealistic, or absolute, items. However, such

findings provide a cautionary reminder that participant's responses to the PIBS may still be confounded by other factors.

Comparison of the PIBS to an Inferential Assessment of Positive Irrational Beliefs

As it has been previously noted, the PIBS attempts to provide a direct method for assessing positive irrational beliefs. This is in contrast to the methods used throughout the literature that have relied on inferential assessments of such beliefs. The purpose of this current method was to avoid the limitations suggested to be associated with the traditional methods (see Chapter 3: Methodological Criticisms). It was therefore of interest to compare how the PIBS related to indirect assessment of positive irrational beliefs. Based on the criticisms raised, it was hypothesised that while there will be some overlap between the two methods of assessment, the relationship will be weak.

While the inferential questions included were designed to reflect three of the PIBS factors (being BRI, SEB and IOB), the inferential questions did not demonstrate the same factor structure, as all questions contributed to a single factor. This may indicate that inferential assessments correspond more closely to the overall super-ordinate PIBS factor, rather than the sub-factors. From subsequent analyses, there was some support for this. The PIBS and the inferential items were found to be related, and while each of the four sub-factors contributed to this relationship, the majority of variance was shared, rather than unique. Overall, however, the relationship still only explained less than 30 percent of the variance between the two measures. This indicates that while there is some commonality between direct and indirect assessments of positive irrational beliefs, there are differences between them. Such differences support

the arguments that inferential methods incorporate other factors, such as comparative biases (Cummins & Nistico, 2002) and the beliefs of those who accurately perceive themselves to be above average (Colvin & Block, 1994), which may not be indicative of true positive irrational beliefs, or illusions.

Recent developments in the literature, published since the current study commenced, are generally supportive of the current results. Similar to the current findings, it has been reported that individuals that believe themselves to be better than the average are more likely to be overconfident (Kurt & Paulhus, 2008; Larrick, Burson, & Soll, 2007; Moore & Healy, 2008). According to Larrick, Burson and Soll (2007), this relationship need not be positive, however, as task difficulty can lead to a negative relationship. They reported that overconfidence appears to occur to a greater extent on harder tasks, as compared against an objective standard (i.e. they over estimate their chance of doing well on a task), while at the same time people can rate themselves as worse than average (i.e. they rate the chance of others doing well on the same task as better than theirs). For easy tasks, they reported that the opposite tends to occur. That is, people tend to report under-confidence (i.e. underestimating the chance they will do well on the task), but at the same time estimate they are better than average (i.e. estimating they are more likely to do well on the task than others). Hence, as tasks go from easy to hard, people were found to move from being underconfident to being overconfident. At the same time they reported that their estimations of expected performance against average others moves from being better to being worse.

Building on these findings, Moore and Healy (2008) proposed that the relationship between self-enhancement and better than average self estimations is not

only confounded by task difficulty, but also by the overlapping of three distinct factors. These they identified as *overestimation* – which is the overestimation of one’s actual abilities, *overplacement* – the belief that one is better than others, and *overprecision* – being excessively certain regarding the accuracy of one’s beliefs. They demonstrated that self estimates and self placements were negatively related, in the context of changing task difficulty, replicating Larrick, Burson and Soll’s findings. From this they concluded that, people have imperfect knowledge of themselves, but even more imperfect knowledge of others. Furthermore, they claimed that as a result of this imperfect knowledge, people’s beliefs tend to regress toward prior expectations, and this happens even more for beliefs about others than for the self (Moore & Healy, 2008). So when people predict their own performance level, they do so more precisely than they can for others. However, they still expect the performance of others will be in the same direction as their own. As a result, when they underestimate their chance of doing well, they tend to further underestimate the chance others will do well, resulting in a better than average comparison for themselves. Conversely, when they overestimate their performance, they even further overestimate the performance of average others, resulting in a worse than average comparison for themselves.

These results suggest that the better than average approach is an inefficient and sometimes incorrect assessment of overconfidence. In addition, not only does overplacement not accurately reflect over estimation, the use of overestimation as a method for assessing self-enhancement may also be inappropriate, as stated earlier. These models also demonstrate that self-estimation approximates the objective measures, and that overestimations occur as tasks become more difficult. This difficulty,

as suggested by Moore and Healy (2008), may instead represent imperfect knowledge, rather than a tendency to self-enhance.

Alternatively, attempts have been made to partial out variance by controlling for confounding influences on measures of self-enhancement. Kurt and Paulhus (2008) compared better than average ratings of self and discrepancy ratings, between the individual and other people), for individuals to assess their validity in measuring self-enhancement across 22 traits. They also summed items on the self-rated and peer-rated measures to create an overall trait composite, which they used in an attempt to control variance. They found that using self-report trait variance from self-report assessments removed both valid and enhanced components of responses, and removed all predictive power of the index. Removing the trait variance estimated by peer-ratings from the self-assessment was instead said to leave only the self-enhancement component of the measure. Consequently, it was claimed that self-reports against an “average other” taps reality more than distortion, and that self-peer rating discrepancy measures are a more “defensible” operationalisation of self-enhancement (Kurt & Paulhus, 2008).

In a similar manner Kwan et al. (2008) compared self-enhancement as measured through better than average reports, self-insight reports (comparing self ratings against ratings by others), and through a Social Relations Model (SRM). With the SRM, they calculated an index for self-enhancement by subtracting average ratings of others (i.e. how positively the person views people in general), average ratings by others (i.e. how positively the person is rated by other people in general) from reported self-perceptions for the same task or attribute. From their study they found that better than average ratings tend to be confounded by how positively the person is viewed by others, which

could be construed as an indicator of their actual ability or performance level. Self-insight ratings, on the other hand, were confounded by how positively the person rated people in general. This indicates that if a person rates people quite positively in general, including themselves, it is more likely that another person will comparatively rate their performance or ability level as lower. This would be a comparative error in subjective reasoning then, and not self-enhancement. Through calculating the SRM, Kwan et al. (2008) claimed to remove these confounds.

While less likely, the use of these trait measures are still subject to possible methodological errors, however. They are still based on comparisons of subjective judgements made by multiple individuals. Hence, they can, and it may even be likely, that they are based on individually based criteria that are not directly comparable. For instance, those making peer ratings must also accurately perceive the individuals level of performance. This is important for both Kwan et al.'s (2008) SRM equation to work and for Kurt and Paulhus' (2008) model. Comparison of the PIBS against such assessments of positive irrational beliefs was outside the scope of this research unfortunately. It would, however, be of interest for further study.

In examining the inferential assessment of positive irrational beliefs further, responses were also examined in line with Taylor and Brown's (1988) suggested strategy for identifying positive irrational beliefs. This required the sample mean for each item to be compared against its scale mid-point. Interestingly, this revealed that only two of the nine inferential items had means above their scale mid-point, while one had no difference, and six were below. The two items that did have means above the mid-point both related to happiness, either in the present or in the future. Furthermore,

the mean for the inferential index was also below its scale's mid-point. Such results, with the exception of those relating to happiness, are in stark contrast to the findings from a number of studies reported by Taylor and Brown (1988, 1994) in support of their proposed model for mental health.

A factor possibly contributing to this difference is age. Taylor and Brown (1994) acknowledge that a number of the studies used in support of their theory are based on students, and this trend has continued in the literature (e.g. Kurt & Paulhus, 2008; Robins & Beer, 2001; Taylor et al., 2003), whereas the average age of this sample ($\mu = 59.9$) was much older. With age, individuals may develop greater awareness of factors outside themselves, including other people, and this may reduce the tendency for a comparative bias towards the self. This would be similar to the findings of Boyd-Wilson et al. (2002) which showed that those with the highest levels of 'time competence' had fewer inferentially assessed positive irrational beliefs due to a higher rating of others. In other words, while demonstrating an equally favourable view of the self as those with a moderate level of 'time competence, this group demonstrated less of a comparative bias as they had a more favourable view of an 'average' other.

It therefore appears that while the inferential methods for assessing positive irrational beliefs may provide a measure of comparative bias, this bias only has a weak-moderate overlap with endorsement of clearly irrational, or illusory, positive beliefs.

PIBS and Demographic Variables

The relationship between the PIBS and demographic variables of age and gender were much the same as for Study One, when examined individually. However, in this

study the combined influence of these variables on the PIBS did not demonstrate a relationship, whereas it did in Study One. Moreover, in Study One it was found that the effect of gender was largely confined to the youngest age group (18-25 years). This difference is possibly a result of a demographic difference between the samples. The sample of this study was somewhat older ($\mu = 59.9$, $SD = 14.0$) than that of Study One, which was biased towards younger adults with approximately 75 percent of its sample being between 18 and 35 years. This would be consistent with Ryff's (Ryff, 1989, 1991; Ryff & Singer, 1998) research which found that with increasing age individuals tend to report a closer fit between their actual and ideal selves. However, while Ryff found this change to primarily occur with older aged individuals, the contrast between the two studies may indicate that there is also a significant change for males during their early adulthood. Hence, as males move through the earliest stages of adulthood they generally reduce their tendency for positive irrational beliefs to a level equivalent to that of older males.

Conclusions

The results tend to provide support for a number of the theories discussed in Study One. First, it does appear that the direct and indirect assessments of positive irrational beliefs, while related, are also significantly linked to other factors. This may therefore account for differences between these studies and previous research, with past research measuring a comparative bias, as suggested by Cummins and Nistico (2002). It would therefore appear that such a bias is common in the general population, based on

the past research. Consequently, the question of whether this can be extended to include positive irrational beliefs may require further study.

Secondly, the finding that positive irrational beliefs have only a weak relationship with SWB, and other aspects of mental health, is consistent with a number of previous studies. The fact that part of this relationship was based on a negative association with some forms of positive irrational beliefs, however, indicates that if there is a causative relationship, it is more complex than that suggested by Taylor and Brown (1988).

As suggested by Study One, and past research findings, a possible explanation for this complex relationship is that such beliefs may act as a defence mechanism. According to this theory, positive irrational beliefs may protect the individual from experiencing other cognitions and emotions in the present that would reduce their SWB, but these have negative consequences for the individual in the long term (Colvin & Block, 1994; Ellis, 1987; Kinney, 2000). This theory has been supported by findings that positive irrational beliefs tend to be associated with long term declines in SWB (Robins & Beer, 2001), with pathological personality traits (McAllister et al., 2002), reduced personal growth (Brookings & Serratelli, 2006), and are related to an increased propensity for behaviours detrimental to social interactions (Colvin et al., 1995).

Another factor which may influence the relationship between positive irrational beliefs, SWB and mental health may be the degree to which they are challenged by an individual's life. Baumeister (1989) acknowledges that the disconfirmation of such beliefs poses a threat to individual's levels of SWB. It would be conceivable that beliefs rejecting imperfection about oneself would be constantly challenged by day to day life,

whereas self enhancing and irrationally optimistic beliefs may be challenged less frequently. This could possibly explain the variation in the relationships between the mental health constructs and the three significant PIBS factors found throughout this study. Furthermore, this may provide for an overall level of SWB that is fragile and prone to greater variation, which is again in line with the theory that positive irrational beliefs are a self defence mechanism.

In a review by Kurt and Paulhus (2008), it was also identified that research has suggested there may be a difference between state and trait manifestations of self-enhancement. They also reported that the effects of self-enhancement may depend on the time of assessment, with benefits appearing in the short-term, and costs in the long term. In regard to overall adjustment, and mental health, however the longer term net outcome is likely to be more indicative of the effects of positive irrational beliefs. Hence, it is possible that over different time courses the relationship between the PIBS and measures of SWB and mental health may vary.

Limitations, Clinical Applications and Suggestions for Future Research

As with Study One, this study was limited by the nature of its design. The study was of a cross-sectional design and as a result the analyses that were undertaken were unable to shed light on possible causal relationships. Furthermore, from a theoretical perspective, a cross sectional study provides a poor measure of a concept such as mental health, which is typically considered to be an enduring trait with dynamic relationships between its different facets. Thus, longitudinal studies are required to better understand the ongoing impact of positive irrational beliefs on mental health. These may indicate

that the short term relationships between positive irrational beliefs and aspects of mental health change over time, as was previously found by Robins and Beer (2001).

Adding to this, the measures used to represent aspects of mental health are not suggested to be exhaustive. There undoubtedly are areas not covered by this study that have different relationships to positive irrational beliefs. It would therefore be worthwhile for future research to examine the relationship between positive irrational beliefs and other concepts which are considered to be both functional and dysfunctional, in regard to mental health. Furthermore, when positive aspects of mental health have been discussed in the literature (e.g. Jahoda, 1958; Maslow, 1962), it is the optimal condition that is most frequently described, not the average. Thus, while some attempts to compare groups scoring in different ranges on the measures of mental health were made, the study was still largely normative. It would be of interest to compare endorsement of positive irrational beliefs between groups considered to have an average level of mental health and one considered to be elite.

The results of this study and any further research into the area of positive irrational beliefs may have implications for the clinical practice of psychology. A better understanding of these beliefs, and how they relate to mental health, may prove beneficial in identifying potentially helpful and harmful beliefs, and therefore in informing treatment. Such developments could particularly help to enhance cognitive interventions for various mental health issues, such as depression and anxiety. It could even lead to developments in the prevention of mental health issues if some positive irrational beliefs are implicated as precursors for psychological distress. While in terms

of positive psychology, this area of research may also help individuals in moving beyond the 'norm', and in pursuing their best possible level of mental health.

Finally, this study was limited by its sample. The sample was self-selected based on individuals' desires to partake in repeated cross sectional studies examining SWB. This self-selection criterion may therefore limit the ability to generalise findings to the wider community, as the willingness to opt in to the series of studies may bias the sample towards individuals with a particular set of characteristics. Furthermore, there may be cultural differences between countries on how individuals respond to the PIBS. Thus, further examination of the issues discussed would benefit from cross-cultural studies with samples that represent the 'normal' population.

Chapter 7: Summary & Conclusions

This thesis set out to investigate Taylor and Brown's (1988) proposed model of mental health. In reviewing literature from the field of social psychology, they suggested that positive illusory, or irrational, beliefs can be beneficial for the promotion of wellbeing and mental health. They identified in particular three different types of beliefs which they thought contributed to the promotion of mental health. These were unrealistically positive views of the self, illusions of control and unrealistic optimism. It was also clarified in a later article (Taylor & Brown, 1994) that this did not mean that all positive irrational beliefs are beneficial. This model received support within the literature, with others such as Baumeister (1989) proposing further developments. In his article, Baumeister (1989) proposed that there is an 'optimal margin of illusion', with optimal functioning requiring a slight to moderate positive distortion in one's perceptions of self and the world, with difficulties arising from either too much or too little.

These models have been criticised for both methodological and theoretical reasons. Much of the research used to support Taylor and Brown's (1988) model measured the presence of positive irrational beliefs through inferential methods. Such methods of assessment are argued to confound positive irrational beliefs for a number of reasons, including issues with comparative biases and the mixing of objective and subjective realities. Theoretically, Taylor and Brown's (1988) model has also been criticised for taking what is primarily a hedonic approach to mental health. Their model has been questioned in regard to the longer term influences of such beliefs and also in

regard to how they relate to other aspects of functioning in a mentally healthy person (Colvin & Block, 1994).

Study One set out to develop a direct measure for assessing positive irrational beliefs, to overcome the problems associated with indirect, inferential, assessments. Furthermore, it attempted to establish whether the areas of positive irrational beliefs suggested by Taylor and Brown (1988) can be distinguished from one another, and how these different types of beliefs relate to SWB. Study Two set out to further establish how the types of positive irrational beliefs relate to SWB and core affect, and also to a number of other concepts linked to mental health. In addition, the new direct measure was also compared to inferential assessments of positive irrational beliefs.

From the two studies it was consistently found that four types of positive irrational beliefs were included within the PIBS. It was shown that positive distortions relating to the self could be separated into two separate types. These were beliefs that enhance oneself and beliefs that reject imperfections about the self. In addition to these, irrational beliefs of control and irrationally optimistic beliefs were also shown to be unique factors. Together, these four types of beliefs demonstrated consistent relationships to other measures relating to mental health, including SWB, in an 'average' population. Typically these relationships were weak, with optimism and self-esteem having the strongest relationships with positive irrational beliefs. The four types of positive irrational beliefs, however, did not have a unified relationship to the aspects of mental health. On a cross sectional basis, self enhancing beliefs and overly optimistic beliefs were positively related to good mental health, while beliefs rejecting imperfection were negatively related to good mental health, and irrational beliefs of

control were not associated with good mental health. Finally, the results indicated that the direct and indirect assessments of positive irrational beliefs had only a weak-moderate association.

It can therefore be concluded that the two studies provided little support for Taylor and Brown's (1988) model of mental health. There was support for the role of self-enhancing beliefs and irrationally optimistic beliefs in mental health, however, the actual contribution of these to such a relationship was, in general, very weak. The relationships between beliefs rejecting an imperfect self-concept and irrational beliefs of control with mental health differ markedly from those suggest by Taylor and Brown. In fact, it appears that beliefs rejecting imperfection are associated with poor mental health. While these relationships were also typically weak, this would suggest that there is also some support for the idea that at least some positive irrational beliefs are a defence mechanism used to protect a fragile sense of SWB.

It is also suggested by these studies that future research can be enhanced by distinguishing between different forms of positive irrational beliefs. Adding to this, it appears that direct assessments of positive irrational beliefs may have a greater utility for identifying the presence of such beliefs in adults of all ages than indirect assessments.

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Appendix A: Study One Plain Language Statement

**DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT AND CONSENT FORM**



TO: Participants

Plain Language Statement

Date: 15/05/08

Full Project Title: Positive Illusions Questionnaire Pilot Study

Principal Researcher: Prof. Robert Cummins

Student Researcher: James Collard

Associate Researcher(s):

This Plain Language Statement and Consent Form is 3 pages long. Please make sure you have all the pages.

1. Your Consent

You are invited to take part in this research project.

This Plain Language Statement contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible all the procedures involved in this project so that you can make a fully informed decision whether you are going to participate.

Please read this Plain Language Statement carefully. Feel free to ask questions about any information in the document. You may also wish to discuss the project with a relative or friend or your local health worker. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, you will be asked to sign the Consent Form. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

You will be given a copy of the Plain Language Statement and Consent Form to keep as a record.

2. Purpose and Background

The purpose of this project is to develop a questionnaire for the direct measurement of positive illusions that may be used by individuals in their day to day life. Positive illusions are beliefs or thoughts that are overly positive, and persist despite possible contradictory evidence. For instance, people may have unrealistically positive self-evaluations, believing they are always

right and never make mistakes, or they may have exaggerated perceptions of control and mastery, believing they can influence events such as the role of dice, or they may have unrealistic optimism, believing they will never experience misfortune in their future.

Previous research has shown that these types of positive illusions may play a positive role in promoting well-being and mental health. The measures used to assess for the presence of these positive illusions, however, have relied upon inferential processes and this has led to debate about whether these earlier studies did in fact measure positive illusions. Hence, a direct measure of positive illusions is required to resolve this debate.

Thus, this study attempts to develop such a direct questionnaire. It examines the validity of a newly created questionnaire in assessing for the presence of such illusions by asking individuals to indicate how strongly they agree or disagree with statements designed to assess such illusions. Examples of the items included are, "I am always successful at the things I do", "I never make mistakes", "Things always go as I plan", and "In the future, I expect only good things to happen to me".

The development of this questionnaire is the first component of a research project I am conducting as part of the requirements for a Doctor of Psychology (Health).

A total of 200 people will participate in this project.

You are invited to participate in this research project because we require a random sample of participants from the general public to help establish whether the measure we have developed does directly assess for positive illusions.

The results of this research may be used to help researcher James Collard to obtain a Doctor of Psychology (Health) degree.

3. Funding

This research is completely funded by Deakin University.

4. Procedures

Participation in this project will involve the completion of a short questionnaire. It is estimated that the questionnaire should not take longer than 5 mins to complete.

5. Possible Benefits

Possible benefits include advanced understanding of the role of positive illusions in well-being and mental health, which may in the future help to enhance psychological interventions targeting well-being and mental health. We cannot guarantee or promise that you will receive any benefits from this project.

6. Possible Risks

The study provides no foreseeable risks to participants. Participation in the study is voluntary and can therefore be suspended or withdrawn at any time in accordance with the participant's wishes. For instance, if the questionnaire was to cause any distress to a participant, they would be free to withdraw.

7. Privacy, Confidentiality and Disclosure of Information

Any information obtained in connection with this project and that can identify you will remain confidential. It will only be disclosed with your permission, subject to legal requirements. If you

give us your permission by signing the Consent Form All participants' information will be de-identified and response forms will be coded in a way that cannot be traced back to individual participants. Thus, in any publication, information will be provided in such a way that you cannot be identified. Finally, in accordance with Deakin University policy, data will be stored for a minimum of 6 years after the date of publication. This data will be stored in a locked filing cabinet.

8. Results of Project

It is planned that the results of the study will be presented through a dissertation required for the completion of the Doctor of Psychology degree. If you would like a copy of the results from this project contact:

Professor Robert Cummins
 School of Psychology, Faculty of Health, Medicine, Nursing and Behavioural Sciences
 221 Burwood Highway
 Burwood, 3125
 Ph: (03) 9244 6845

9. Participation is Voluntary

Participation in any research project is voluntary. **If you do not wish to take part you are not obliged to.** If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. If you choose to withdraw at any stage, any information obtained from you will not be used. Due to the de-identification process, however, it will not be possible to identify which responses were provided by individual participants once they are returned to the experimenter, and it will therefore not be possible to withdraw your specific information after this stage.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with Deakin University.

Before you make your decision, a member of the research team will be available to answer any questions you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

If you decide to withdraw from this project, please notify a member of the research team or complete and return the Revocation of Consent Form attached. This notice will allow the research team to inform you if there are any health risks or special requirements linked to withdrawing.

10. Ethical Guidelines

This project will be carried out according to the *National Statement on Ethical Conduct in Human Research* (2007) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethics aspects of this research project have been approved by the Human Research Ethics Committee of Deakin University.

11. Complaints

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

Secretary HEAG-H
Dean's Office
Faculty of Health, Medicine, Nursing and Behavioural Sciences
Deakin University
221 Burwood Highway
Burwood, Victoria 3125
Telephone: 9251 7174
Email: hbs.research@deakin.edu.au.

Please quote project number HEAG-H 71_08.

12. Reimbursement for your costs

You will not be paid for your participation in this project.

13. Further Information, Queries or Any Problems

If you require further information, wish to withdraw your participation or if you have any problems concerning this project (for example, any side effects), you can contact the principal researcher. The researchers responsible for this project are:

Professor Robert Cummins
School of Psychology, Faculty of Health, Medicine, Nursing and Behavioural Sciences
221 Burwood Highway
Burwood, 3125
Ph: (03) 9244 6845

Appendix B: Study One Questionnaire

Demographic questions

Please indicate your gender and age

Gender Male Female

Age 18–25 26–35 36–45 46–55 56–65 65–75 76+

Personal Wellbeing Index - Adult (International Wellbeing Group, 2006)

Thinking about your own life and personal circumstances, please circle the number that best represents how satisfied you are with your life.

How satisfied are you with...	Not At All Satisfied	Completely Satisfied
1 Your life as a whole?	0	10
2 Your standard of living?	0	10
3 Your health?	0	10
4 What you are currently achieving in life?	0	10
5 Your personal relationships?	0	10
6 How safe you feel?	0	10
7 Feeling part of your community?	0	10
8 Your future security?	0	10
9 Your spirituality or religion? or (if you have no spiritual or religious beliefs) <input type="text" value="na"/>	0	10

Positive Irrational Beliefs Scale

Please indicate how strongly you agree or disagree with each of the following statements, indicating your level of agreement/disagreement by marking a corresponding number on the scale from 0 to 10, where 0 is "Disagree completely" and 10 is "Agree completely".

How strongly do you agree or disagree with each of the following statements?	Disagree Completely	Agree Completely
10 I am the best at the things I do	0	10
11 I am always successful at the things I do	0	10
12 Nothing stops me from achieving my goals	0	10

	Disagree Completely	0	1	2	3	4	5	6	7	8	9	10	Agree Completely
13	I am always right in the decisions I make	0	1	2	3	4	5	6	7	8	9	10	
14	I am perfect	0	1	2	3	4	5	6	7	8	9	10	
15	I do not make mistakes	0	1	2	3	4	5	6	7	8	9	10	
16	I never misjudge situations	0	1	2	3	4	5	6	7	8	9	10	
17	I do not fail at anything I choose to do	0	1	2	3	4	5	6	7	8	9	10	
18	I never do anything wrong	0	1	2	3	4	5	6	7	8	9	10	
19	When things don't go well, it is always someone else's fault	0	1	2	3	4	5	6	7	8	9	10	
20	There is nothing I would like to change/improve about myself	0	1	2	3	4	5	6	7	8	9	10	
21	I control all the events in my life	0	1	2	3	4	5	6	7	8	9	10	
22	Things always go as I plan	0	1	2	3	4	5	6	7	8	9	10	
23	I am responsible for everything that happens in my life	0	1	2	3	4	5	6	7	8	9	10	
24	I control the environment within which I live	0	1	2	3	4	5	6	7	8	9	10	
25	I can significantly influence chance events (ie the roll of dice)	0	1	2	3	4	5	6	7	8	9	10	
In the future...													
26	My life will only get better	0	1	2	3	4	5	6	7	8	9	10	
27	I expect only good things to happen to me	0	1	2	3	4	5	6	7	8	9	10	
28	I expect only the best	0	1	2	3	4	5	6	7	8	9	10	
29	I will always be lucky	0	1	2	3	4	5	6	7	8	9	10	
30	I will not have to deal with unpleasant events	0	1	2	3	4	5	6	7	8	9	10	

Appendix C: Study Two Questionnaire

Demographic question

Below you will find some questions that refer to your life circumstances. We know you have completed a similar set in the past, and we have these data on file, but would appreciate confirmation of your current situation.

1 Your Gender Male Female

Positive Irrational Beliefs Scale

How strongly do you agree or disagree with each of the following statements?		Disagree Completely									Agree Completely	
72	I am the best at the things I do	0	1	2	3	4	5	6	7	8	9	10
73	I am always successful at the things I do	0	1	2	3	4	5	6	7	8	9	10
74	Nothing stops me from achieving my goals	0	1	2	3	4	5	6	7	8	9	10
75	I am perfect	0	1	2	3	4	5	6	7	8	9	10
76	I do not make mistakes	0	1	2	3	4	5	6	7	8	9	10
77	I never misjudge situations	0	1	2	3	4	5	6	7	8	9	10
78	I do not fail at anything I choose to do	0	1	2	3	4	5	6	7	8	9	10
79	I never do anything wrong	0	1	2	3	4	5	6	7	8	9	10
80	When things don't go well, it is always someone else's fault	0	1	2	3	4	5	6	7	8	9	10
81	There is nothing I would like to change/improve about myself	0	1	2	3	4	5	6	7	8	9	10
82	I control all the events in my life	0	1	2	3	4	5	6	7	8	9	10
83	I am responsible for everything that happens in my life	0	1	2	3	4	5	6	7	8	9	10
84	I control the environment within which I live	0	1	2	3	4	5	6	7	8	9	10
85	I can significantly influence chance events (ie the roll of dice)	0	1	2	3	4	5	6	7	8	9	10
In the future...												
86	My life will only get better	0	1	2	3	4	5	6	7	8	9	10
87	I expect only good things to happen to me	0	1	2	3	4	5	6	7	8	9	10
88	I expect only the best	0	1	2	3	4	5	6	7	8	9	10
89	I will always be lucky	0	1	2	3	4	5	6	7	8	9	10
90	I will not have to deal with unpleasant events	0	1	2	3	4	5	6	7	8	9	10

Personal Wellbeing Index - Adult (International Wellbeing Group, 2006)

Thinking about your own life and personal circumstances, please **circle** the number that best represents how satisfied you feel with your life.

How satisfied are you with...	Very Dissatisfied	Neutral	Completely Satisfied
1 your life as a whole?	0 1 2 3 4 5 6 7 8 9 10		
2 your standard of living?	0 1 2 3 4 5 6 7 8 9 10		
3 your health?	0 1 2 3 4 5 6 7 8 9 10		
4 what you are currently achieving in life?	0 1 2 3 4 5 6 7 8 9 10		
5 your personal relationships?	0 1 2 3 4 5 6 7 8 9 10		
6 how safe you feel?	0 1 2 3 4 5 6 7 8 9 10		
7 feeling part of your community?	0 1 2 3 4 5 6 7 8 9 10		
8 your future security?	0 1 2 3 4 5 6 7 8 9 10		
9 your spirituality or religion? or (If you have no spiritual or religious beliefs)	0 1 2 3 4 5 6 7 8 9 10		

na

Core affect items

Please indicate how each of the following describes your feelings when you think about your life in general.

	Not At All	Extremely
17 How content do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	
18 How happy do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	
19 How alert do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	
20 How unhappy do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	

Primary, secondary and relinquished control items

How much do you agree that when something bad happens...

	Disagree Completely	Neutral	Agree Completely
46 I ask others for help or advice.	0 1 2 3 4 5 6 7 8 9 10		
47 I look for different ways to improve the situation.	0 1 2 3 4 5 6 7 8 9 10		
48 I use my skills to overcome the problem.	0 1 2 3 4 5 6 7 8 9 10		
49 I remind myself that something good may come of it.	0 1 2 3 4 5 6 7 8 9 10		
50 I remind myself that I am better off than some others.	0 1 2 3 4 5 6 7 8 9 10		
51 I remember that the situation will improve if I am patient.	0 1 2 3 4 5 6 7 8 9 10		
52 I don't do anything, as nothing can help.	0 1 2 3 4 5 6 7 8 9 10		
53 I spend time by myself.	0 1 2 3 4 5 6 7 8 9 10		
54 I just let my feelings out so others know how I feel.	0 1 2 3 4 5 6 7 8 9 10		

Rosenberg Self Esteem scale (Rosenberg, 1965)

How much do you agree with the following statements?		Disagree Completely	Neutral						Agree Completely			
55	On the whole, I am satisfied with myself.	0	1	2	3	4	5	6	7	8	9	10
56	At times I think I am no good at all.	0	1	2	3	4	5	6	7	8	9	10
57	I feel that I have a number of good qualities.	0	1	2	3	4	5	6	7	8	9	10
58	I am able to do things as well as most other people.	0	1	2	3	4	5	6	7	8	9	10
59	I feel I do not have much to be proud of.	0	1	2	3	4	5	6	7	8	9	10
60	I certainly feel useless at times.	0	1	2	3	4	5	6	7	8	9	10
61	I feel that I'm a person of worth, at least on an equal plane with others.	0	1	2	3	4	5	6	7	8	9	10
62	I wish I could have more respect for myself.	0	1	2	3	4	5	6	7	8	9	10
63	All in all, I am inclined to feel that I am a failure.	0	1	2	3	4	5	6	7	8	9	10
64	I take a positive attitude toward myself.	0	1	2	3	4	5	6	7	8	9	10

Life Orientation Test – revised items (Scheier et al., 1994)

How much do you agree with the following statements?		Disagree Completely	Neutral						Agree Completely			
65	In uncertain times, I usually expect the best.	0	1	2	3	4	5	6	7	8	9	10
66	I'm always optimistic about my future.	0	1	2	3	4	5	6	7	8	9	10
67	Overall, I expect more good things to happen to me than bad	0	1	2	3	4	5	6	7	8	9	10

Inferential positive irrational belief items

How strongly do you agree or disagree with each of the following statements?													
91	I am better than the average person	0	1	2	3	4	5	6	7	8	9	10	
92	I am more successful than the average person	0	1	2	3	4	5	6	7	8	9	10	
93	I am happier than the average person	0	1	2	3	4	5	6	7	8	9	10	
94	I fail less often than the average person	0	1	2	3	4	5	6	7	8	9	10	
95	I make fewer mistakes than the average person	0	1	2	3	4	5	6	7	8	9	10	
96	I have fewer problems than the average person	0	1	2	3	4	5	6	7	8	9	10	
97	I will have a better future than the average person	0	1	2	3	4	5	6	7	8	9	10	
In the future...													
98	I will have fewer health problems than the average person	0	1	2	3	4	5	6	7	8	9	10	
99	I will be happier than the average person	0	1	2	3	4	5	6	7	8	9	10	

Depression, anxiety and stress scale (DASS-21; Lovibond & Lovibond, 1995)

How much did these statements apply to you over the past week?		Not At All									Extremely	
21	I found it hard to wind down.	0	1	2	3	4	5	6	7	8	9	10
22	I was aware of dryness of my mouth.	0	1	2	3	4	5	6	7	8	9	10
23	I couldn't seem to experience any positive feeling at all.	0	1	2	3	4	5	6	7	8	9	10
24	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion).	0	1	2	3	4	5	6	7	8	9	10
25	I found it difficult to work up the initiative to do things.	0	1	2	3	4	5	6	7	8	9	10
26	I tended to over-react to situations.	0	1	2	3	4	5	6	7	8	9	10
27	I experienced trembling (eg, in the hands).	0	1	2	3	4	5	6	7	8	9	10
28	I felt that I was using a lot of nervous energy.	0	1	2	3	4	5	6	7	8	9	10
29	I was worried about situations in which I might panic and make a fool of myself.	0	1	2	3	4	5	6	7	8	9	10
30	I felt that I had nothing to look forward to.	0	1	2	3	4	5	6	7	8	9	10
31	I found myself getting agitated.	0	1	2	3	4	5	6	7	8	9	10
32	I found it difficult to relax.	0	1	2	3	4	5	6	7	8	9	10
33	I felt down-hearted and blue.	0	1	2	3	4	5	6	7	8	9	10
34	I was intolerant of anything that kept me from getting on with what I was doing.	0	1	2	3	4	5	6	7	8	9	10
35	I felt I was close to panic	0	1	2	3	4	5	6	7	8	9	10
36	I was unable to become enthusiastic about anything	0	1	2	3	4	5	6	7	8	9	10
37	I felt I wasn't worth much as a person	0	1	2	3	4	5	6	7	8	9	10
38	I felt that I was rather touchy	0	1	2	3	4	5	6	7	8	9	10
39	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3	4	5	6	7	8	9	10
40	I felt scared without any good reason	0	1	2	3	4	5	6	7	8	9	10
41	I felt that life was meaningless	0	1	2	3	4	5	6	7	8	9	10

Appendix D: Australian Unity Wellbeing Index Questionnaires

Demographic questionnaire

Dear Friend of the Australian Centre on Quality of Life

Below you will find some questions that refer to your life circumstances. We know you have completed a similar set in the past, and we have these data on file, but would appreciate confirmation of your current situation.

1 Your Gender Male Female

2 Your age

3 Your postcode

4 Please indicate from the list who lives with you. (tick whichever boxes apply)

No one, you live by yourself One or more children

Your partner One or both of your parents

One or more adults who are neither your partner nor your parent

5 Please indicate which of the following categories apply to you at the present time.

Never married Separated but not divorced Married

Divorced De facto or living together Widowed

6 Please indicate which of the following categories best applies to you at the present time. Are you in...

Full-time paid employment Full-time home or family care Full-time retired

Full-time study Semi-retired Unemployed

Full-time volunteer

7 Please indicate whether any of the following part-time categories applies to you at the present time. Are you...?

In part-time paid employment A part-time volunteer In part-time study

8 Please indicate your household's total annual income before tax.

Less than \$15,000 \$15,000 to \$30,000 \$31,000 to \$60,000

\$61,000 to \$100,000 \$101,000 to \$150,000 \$151,000 to \$250,000

\$251,000 to \$500,000 More than \$500,000

9 Please indicate your height and weight.

cm kg

or

feet inches stone pounds

Complete list of items measured



Australian Unity Wellbeing Index

Thank you for your involvement in this survey. This is a confidential questionnaire so please ensure that you do not write your name, or any other comments that will make you identifiable. By completing the questionnaire you are consenting to take part in this research as explained in the Plain Language Statement enclosed. The intention of this project is to investigate different aspects of life satisfaction in Australia.

Please read each question and response option carefully before answering the questions and make sure that you have provided an answer for every question.

SECTION A PERSONAL WELLBEING

Thinking about your own life and personal circumstances, please **circle** the number that best represents how satisfied you feel with your life.

How satisfied are you with...	Very Dissatisfied	Neutral	Completely Satisfied
1 your life as a whole?	0 1 2 3 4 5 6 7 8 9 10		
2 your standard of living?	0 1 2 3 4 5 6 7 8 9 10		
3 your health?	0 1 2 3 4 5 6 7 8 9 10		
4 what you are currently achieving in life?	0 1 2 3 4 5 6 7 8 9 10		
5 your personal relationships?	0 1 2 3 4 5 6 7 8 9 10		
6 how safe you feel?	0 1 2 3 4 5 6 7 8 9 10		
7 feeling part of your community?	0 1 2 3 4 5 6 7 8 9 10		
8 your future security?	0 1 2 3 4 5 6 7 8 9 10		
9 your spirituality or religion? or (If you have no spiritual or religious beliefs) <input type="text" value="na"/>	0 1 2 3 4 5 6 7 8 9 10		

SECTION B LIFE IN AUSTRALIA

How satisfied are you with...	Very Dissatisfied	Neutral	Completely Satisfied
10 life in Australia?	0 1 2 3 4 5 6 7 8 9 10		
11 the economic situation in Australia?	0 1 2 3 4 5 6 7 8 9 10		
12 the state of the natural environment in Australia?	0 1 2 3 4 5 6 7 8 9 10		
13 the social conditions in Australia?	0 1 2 3 4 5 6 7 8 9 10		
14 government in Australia?	0 1 2 3 4 5 6 7 8 9 10		
15 business in Australia?	0 1 2 3 4 5 6 7 8 9 10		
16 national security in Australia?	0 1 2 3 4 5 6 7 8 9 10		

SECTION C HOW YOU GENERALLY FEEL

Please indicate how each of the following describes your feelings when you think about your life in general.	Not At All	Extremely
17 How content do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	
18 How happy do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	
19 How alert do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	
20 How unhappy do you generally feel?	0 1 2 3 4 5 6 7 8 9 10	

ARC 16

SECTION D OVER THE PAST WEEK

How much did these statements apply to you over the past week?

	Not At All	Extremely
21 I found it hard to wind down.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
22 I was aware of dryness of my mouth.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
23 I couldn't seem to experience any positive feeling at all.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
24 I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion).	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
25 I found it difficult to work up the initiative to do things.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
26 I tended to over-react to situations.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
27 I experienced trembling (eg, in the hands).	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
28 I felt that I was using a lot of nervous energy.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
29 I was worried about situations in which I might panic and make a fool of myself.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
30 I felt that I had nothing to look forward to.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
31 I found myself getting agitated.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
32 I found it difficult to relax.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
33 I felt down-hearted and blue.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
34 I was intolerant of anything that kept me from getting on with what I was doing.	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
35 I felt I was close to panic	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
36 I was unable to become enthusiastic about anything	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
37 I felt I wasn't worth much as a person	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
38 I felt that I was rather touchy	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
39 I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
40 I felt scared without any good reason	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10
41 I felt that life was meaningless	0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10

SECTION E EVENTS IN YOUR LIFE

42 Thinking back on your life, what is the highest level of happiness you have ever experienced?

No Happiness Complete Happiness

0 1 2 3 4 5 6 7 8 9 10

43 Has anything happened to you recently causing you to feel happier or sadder than normal? Please tick as appropriate

Yes, happier Yes, sadder No—Please skip to Coping With Life (Item 46)

(If Yes) On a scale from 0 to 10, how strong would you rate this influence?

Very Weak Very Strong

0 1 2 3 4 5 6 7 8 9 10

44 Which areas of your life have been strongly influenced by this event? Please tick **all areas** that have been affected.

Standard of living Relationships Achieving in life

Health Personal safety Connection to your community Future security

45 Now please tick the **one single** life area that has been **most strongly affected**.

Standard of living Relationships Achieving in life

Health Personal safety Connection to your community Future security

SECTION F COPING WITH LIFE

How much do you agree that when something bad happens...		Disagree Completely	Neutral						Agree Completely			
46	I ask others for help or advice.	0	1	2	3	4	5	6	7	8	9	10
47	I look for different ways to improve the situation.	0	1	2	3	4	5	6	7	8	9	10
48	I use my skills to overcome the problem.	0	1	2	3	4	5	6	7	8	9	10
49	I remind myself that something good may come of it.	0	1	2	3	4	5	6	7	8	9	10
50	I remind myself that I am better off than some others.	0	1	2	3	4	5	6	7	8	9	10
51	I remember that the situation will improve if I am patient.	0	1	2	3	4	5	6	7	8	9	10
52	I don't do anything, as nothing can help.	0	1	2	3	4	5	6	7	8	9	10
53	I spend time by myself.	0	1	2	3	4	5	6	7	8	9	10
54	I just let my feelings out so others know how I feel.	0	1	2	3	4	5	6	7	8	9	10

SECTION G MORE ABOUT YOURSELF

How much do you agree with the following statements?		Disagree Completely	Neutral						Agree Completely			
55	On the whole, I am satisfied with myself.	0	1	2	3	4	5	6	7	8	9	10
56	At times I think I am no good at all.	0	1	2	3	4	5	6	7	8	9	10
57	I feel that I have a number of good qualities.	0	1	2	3	4	5	6	7	8	9	10
58	I am able to do things as well as most other people.	0	1	2	3	4	5	6	7	8	9	10
59	I feel I do not have much to be proud of.	0	1	2	3	4	5	6	7	8	9	10
60	I certainly feel useless at times.	0	1	2	3	4	5	6	7	8	9	10
61	I feel that I'm a person of worth, at least on an equal plane with others.	0	1	2	3	4	5	6	7	8	9	10
62	I wish I could have more respect for myself.	0	1	2	3	4	5	6	7	8	9	10
63	All in all, I am inclined to feel that I am a failure.	0	1	2	3	4	5	6	7	8	9	10
64	I take a positive attitude toward myself.	0	1	2	3	4	5	6	7	8	9	10

SECTION H WHAT YOU EXPECT TO HAPPEN

How much do you agree with the following statements?		Disagree Completely	Neutral						Agree Completely			
65	In uncertain times, I usually expect the best.	0	1	2	3	4	5	6	7	8	9	10
66	I'm always optimistic about my future.	0	1	2	3	4	5	6	7	8	9	10
67	Overall, I expect more good things to happen to me than bad	0	1	2	3	4	5	6	7	8	9	10

SECTION I THE KIND OF PERSON YOU ARE

How much do you agree with the following statements?		Disagree Completely	Neutral						Agree Completely			
68	I see myself as extraverted and enthusiastic.	0	1	2	3	4	5	6	7	8	9	10
69	I see myself as anxious and easily upset.	0	1	2	3	4	5	6	7	8	9	10
70	I see myself as reserved and quiet.	0	1	2	3	4	5	6	7	8	9	10
71	I see myself as calm and emotionally stable.	0	1	2	3	4	5	6	7	8	9	10

SECTION J

YOUR POSITIVE ATTITUDE TO LIFE

How strongly do you agree or disagree with each of the following statements?	Disagree Completely	Agree Completely
72 I am the best at the things I do	0 1 2 3 4 5 6 7 8 9 10	
73 I am always successful at the things I do	0 1 2 3 4 5 6 7 8 9 10	
74 Nothing stops me from achieving my goals	0 1 2 3 4 5 6 7 8 9 10	
75 I am perfect	0 1 2 3 4 5 6 7 8 9 10	
76 I do not make mistakes	0 1 2 3 4 5 6 7 8 9 10	
77 I never misjudge situations	0 1 2 3 4 5 6 7 8 9 10	
78 I do not fail at anything I choose to do	0 1 2 3 4 5 6 7 8 9 10	
79 I never do anything wrong	0 1 2 3 4 5 6 7 8 9 10	
80 When things don't go well, it is always someone else's fault	0 1 2 3 4 5 6 7 8 9 10	
81 There is nothing I would like to change/improve about myself	0 1 2 3 4 5 6 7 8 9 10	
82 I control all the events in my life	0 1 2 3 4 5 6 7 8 9 10	
83 I am responsible for everything that happens in my life	0 1 2 3 4 5 6 7 8 9 10	
84 I control the environment within which I live	0 1 2 3 4 5 6 7 8 9 10	
85 I can significantly influence chance events (ie the roll of dice)	0 1 2 3 4 5 6 7 8 9 10	
In the future...		
86 My life will only get better	0 1 2 3 4 5 6 7 8 9 10	
87 I expect only good things to happen to me	0 1 2 3 4 5 6 7 8 9 10	
88 I expect only the best	0 1 2 3 4 5 6 7 8 9 10	
89 I will always be lucky	0 1 2 3 4 5 6 7 8 9 10	
90 I will not have to deal with unpleasant events	0 1 2 3 4 5 6 7 8 9 10	
Feelings about yourself		
How strongly do you agree or disagree with each of the following statements?		
91 I am better than the average person	0 1 2 3 4 5 6 7 8 9 10	
92 I am more successful than the average person	0 1 2 3 4 5 6 7 8 9 10	
93 I am happier than the average person	0 1 2 3 4 5 6 7 8 9 10	
94 I fail less often than the average person	0 1 2 3 4 5 6 7 8 9 10	
95 I make fewer mistakes than the average person	0 1 2 3 4 5 6 7 8 9 10	
96 I have fewer problems than the average person	0 1 2 3 4 5 6 7 8 9 10	
97 I will have a better future than the average person	0 1 2 3 4 5 6 7 8 9 10	
In the future...		
98 I will have fewer health problems than the average person	0 1 2 3 4 5 6 7 8 9 10	
99 I will be happier than the average person	0 1 2 3 4 5 6 7 8 9 10	

Thank you for your time and participation in this survey