

**School of Psychology and Speech Pathology**

**Behavioural Activation Interventions  
for Depression and Well-being**

**Trevor G. Mazzucchelli**

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of  
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## **Declaration**

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Trevor G. Mazzucchelli

1 April 2010

Happiness consists in activity. It is a running stream, not a stagnant pool.

—John Mason Good

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## Abstract

Behavioural activation (BA) treatments for depression require patients to change their overt behaviour so that they may have more rewarding experiences in their lives. Since one of the most promising ways to increase psychological well-being is to increase engagement in valued and enjoyable activities, there is good reason to believe that BA may also be an effective intervention to increase well-being. Enhancing well-being is an important goal because there is increasing recognition of the positive impact well-being has on many desirable life outcomes such as career success, marriage and health. Although BA has existed since the 1970s there have been surprisingly few quantitative reviews of the literature, and little research on the impact of BA on well-being. Thus, the overall aim of this project was to consolidate our understanding of the impact of BA and investigate the potential of BA interventions for enhancing well-being. Specifically, the goals were to (a) review the existing empirical research on the utility of BA for treating depression, (b) review the existing research on BA related to well-being, and (c) investigate the potential of this approach to increase the well-being of individuals who are not suffering from a mental health problem. Thus this research is unique in not only focusing on clinical, depressed, individuals, but also integrating research from the field of positive psychology as it looks at improving the well-being of individuals without depression.

The first study consisted of a meta-analysis which sought to identify all randomised controlled trials of BA for depression. The goal of this study was to determine the effect of this approach, and examine the differential effectiveness of variants. Forty studies with 2,401 participants reporting symptoms of depression were included. The pooled effect size (Hedges's  $g$ ) indicated the difference between BA and control conditions at posttest was 0.91. For participants who satisfied the criteria for major depressive disorder (MDD) the overall effect size of 0.82 remained large and significant. No differences in effectiveness between BA and cognitive therapy were found. This is an important finding given that BA is a comparatively simple intervention that does not require difficult or complex skills from patients or therapists. Although more recent versions of the BA approach, such as Jacobson and colleagues' contextual BA, generally yielded greater intervention effects compared with earlier variants, all variants produced effects of similar magnitude and

differences between them were not statistically significant. Nevertheless, a focused evidence review indicated that Jacobson and colleagues' contextual BA has the strongest evidence base and satisfies the APA's Division 12 Task Force's *well-established* designation for the treatment of MDD.

Study 2, also a meta-analysis, sought to identify all randomised controlled studies which examined the effect of BA on well-being. Twenty studies with a total of 1,353 participants were included. The pooled effect size indicated that the difference in well-being between BA and control conditions at posttest was 0.52. This significant effect, which is comparable to the pooled effect achieved by positive psychology interventions, was found for nonclinical participants and participants with elevated symptoms of depression. This suggests that BA is a useful intervention for promoting the well-being of a range of populations in both clinical and nonclinical settings.

Study 3 examined the effects on well-being of a group intervention consisting of a 4-week BA component followed by a 3-week mindfulness component, finishing with an integrating closure session. Sixteen nonclinical adults recruited from the community participated in this pretest-posttest, repeated measures study. Results showed moderate and significant improvements in psychological distress and several indices of well-being after the BA component. These improvements continued through the mindfulness component of the intervention such that effects were greater after participants had received the complete intervention. Half of the participants reported reliable and clinically significant improvement in the amount of time they felt happy after the intervention and a quarter of participants reported improvement at follow-up.

Taken together, these results led to the conclusion that BA is a well-established and advantageous intervention for depression which is also an effective and viable intervention for well-being, regardless of individuals' depression status. The use of BA as a first line treatment for depression is recommended. However, further research is needed to determine whether BA interventions can be made more efficient, and to determine the full extent of their potential to promote mental health.

## Chapter 1—General Introduction

For the past century psychologists have been consumed with the study of mental illness. It is now possible to measure concepts such as depression and anxiety with precision and a good deal is known about how these conditions develop. Effective treatments also now exist for these and other major forms of mental illness (Chambless et al., 1998; Nathan & Gorman, 2007). But it is not enough to just relieve states that make life miserable, the aim should also be to prevent various disorders from happening in the first place and to assist people to build the states that make life worth living (Duckworth, Steen, & Seligman, 2005; Seligman, 2002; Seligman & Peterson, 2004).

The aim of this thesis is to increase the knowledge base of an intervention that has potential to increase happiness. Behavioural activation (BA) treatments for depression require patients to increase overt behaviour to bring them into contact with reinforcing environmental contingencies. Although BA has existed since the 1970s, there have been surprisingly few quantitative reviews of the literature as it relates to this intervention approach. BA is also consistent with recommendations emerging from models of happiness. Consequently the specific research aims are first to review the existing empirical research on the utility of BA with both depressed and nonclinical samples. This is achieved in two studies using meta-analytic techniques to facilitate the quantification of findings and comparison across studies. In doing so, the intention is to inform clinical practice in the use of this strategy and investigate its potential as an intervention to increase happiness in nonclinical samples.

The second research aim is to investigate a variant of BA specifically tailored to increase happiness in an intervention trial involving a nonclinical sample. This study is designed to investigate the approach's acceptability, potency and identify practical obstacles that may need to be overcome in its use. This study may be considered exploratory and a pilot of the approach for a subsequent study involving a larger nonclinical sample.

### **Why Pursue Happiness?**

Most people consider their personal happiness to be very important (Diener, Suh, Smith, & Shao, 1995; Triandis, Bontempo, Leung, & Hui, 1990), and the ability to be happy and contented with life is often considered to be a central criterion of

positive mental health (Diener, 1984). It has long been known that happiness is correlated with many characteristics and resources valued by society such as superior physical and mental health, satisfying relationships, number of friends, and higher income and success at work (e.g., Diener, 1984; Diener, Suh, Lucas, & Smith 1999; Wilson, 1967). However, a recent meta-analysis by Lyubomirsky, King and Diener (2005) has presented compelling evidence that happiness is not only an outcome of these favourable life circumstances but also a predictor and part cause of these outcomes. For instance, longitudinal research demonstrates that happiness relates prospectively to superior mental and physical health, immune function, longevity, positive feelings toward others, altruism, sociability, satisfying relationships, marriage, and fulfilling and productive work.

Happiness is an important by-product and predictor of outcomes that benefit not only individuals and couples, but also communities and society at large. Thus, it appears that enhancing peoples' happiness levels may be a worthy scientific goal, especially after basic physical and security needs are met.

### **Happiness Defined**

The most widely accepted definition of happiness is that of Diener and his colleagues, who prefer the label "subjective well-being" (SWB). They define it as having two general components: an affective component consisting of the balance between positive and negative affect, and a cognitive component relating to judgements of satisfaction with different life domains and global judgements of life satisfaction (Diener, 1984; Diener et al., 1999). People with high levels of happiness report frequent positive affect, infrequent negative affect and high levels of satisfaction (Diener, 1994; Diener, Sandvik, & Pavot, 1991). Table 1 presents the major subdivisions of the field.

Affect refers to consciously accessible feelings that are present in affective phenomena such as emotions and moods (Fredrickson, 2001). Emotions (e.g., fear, anger, and joy) unfold over relatively short time spans and are typically triggered by particular events, objects, or persons that then become the object at which the affect is directed. In contrast, moods (e.g., relaxed, tense, grouchy) are regarded as more enduring, free-floating or objectless, and have a variety of external and internal causes. In general, SWB researchers are primarily interested in longer-term moods rather than momentary emotions (Diener et al., 1999; Fredrickson, 2001; Frijda, 1993).

Table 1  
*Components of Subjective Well-Being*

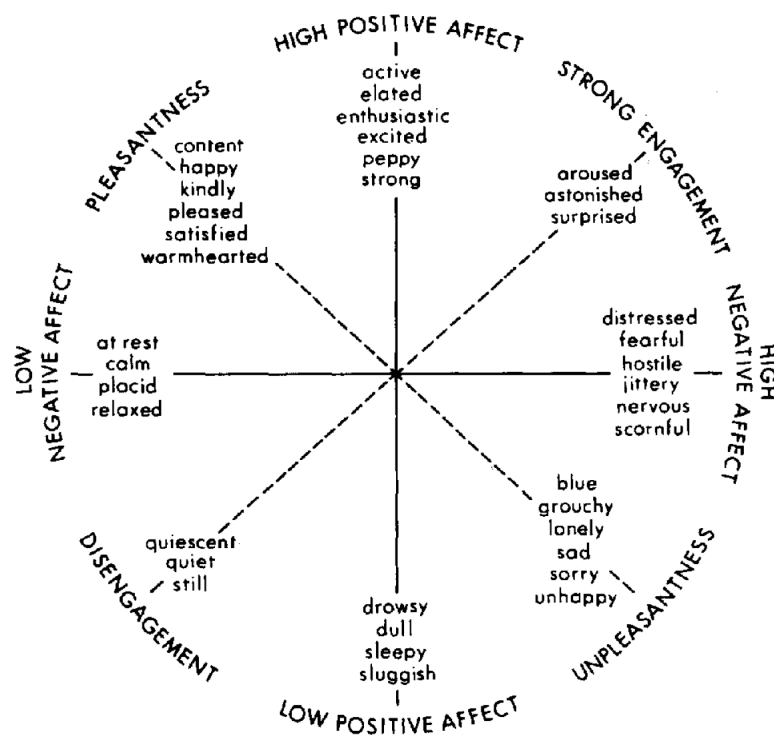
Pleasant affect	Unpleasant affect	Life satisfaction	Domain satisfactions
Joy	Guilt and shame	Desire to change life	Work
Elation	Sadness	Satisfaction with current life	Family
Contentment	Anxiety and worry	Satisfaction with past	Leisure
Pride	Anger	Satisfaction with future	Health
Affection	Stress	Significant others' views of one's life	Self
Happiness	Depression		One's group
Ecstasy	Envy		

*Note.* From "Subjective well-being: Three decades of progress," by E. Diener, E. M. Suh, R. E. Lucas, and Heidi L. Smith, 1999, *Psychological Bulletin*, 125, p. 277. Copyright 1999 by the American Psychological Association. Reprinted with permission.

Affect is often viewed along a single dimension—from feeling pleasant to feeling unpleasant. Such a dimension captures important feelings, but it is preferable to think in terms of a two-dimensional framework of the kind depicted in Figure 1. Such a framework has been substantiated in many investigations (e.g., Matthews, Jones & Chamberlain, 1990; Thayer, 1989; Watson, Clark, & Tellegen, 1988). Any number of alternative rotations can be applied to this two-factor framework. Figure 1 depicts two possibilities. The axes displayed as solid lines represent the first two factors: Positive Affect (representing the extent to which a person reports zest for life or being pleasantly aroused) and Negative Affect (representing the extent to which a person reports feeling upset or unpleasantly aroused). An alternative rotational scheme is indicated by the dotted lines. The first of the resulting factors corresponds to Pleasantness and Unpleasantness. The second factor is Arousal (labelled Strong Engagement-Disengagement). Within this rotational scheme, words in the high and low Positive and Negative Affect octants would be combinations of (Un)Pleasantness and Arousal (Watson & Tellegen, 1985).

Positive affect and negative affect are considered to be largely independent of each other (Schimmack, 2008). Over periods of time, such as a week or two, the negative correlations between them are typically negligible to moderate in strength (Bradburn, 1969; Diener, Smith, & Fujita, 1995). Positive affect and negative affect are related to different predictors including illness, positive social interactions and

personality traits such as extroversion and neuroticism (Bradburn, 1969; Clark & Watson, 1988; Costa & McCrae, 1980). Also, at any one moment in time, individuals can report both positive and negative affect, although reports of intense positive affect concurrent with intense negative affect are very rare (Diener & Iran-Nejad, 1986).



*Figure 1.* The two-factor structure of affect. From “Toward a consensual structure of mood,” by D. Watson and A. Tellegen, 1985, *Psychological Bulletin*, 98, p. 221. Copyright 1985 by the American Psychological Association. Reprinted with permission.

The affective and cognitive components of subjective well-being correlate positively with each other, although estimates of the strength of this relationship varies from small to large (Lucas, Diener, & Suh, 1996; Schimmack, Diener, & Oishi, 2002; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002; Suh, Diener, Oishi, & Triandis, 1998). Some of this variability may be explained by methodological factors. Studies involving more reliable scales or which control for random measurement error yield higher correlations (e.g., Schimmack et al., 2002; Suh et al., 1998). However, multi-method studies suggest that that methodological factors do not fully account for the lack of a perfect correlation between the two



components (Lucas et al., 1996). It has therefore been suggested that people use the affective component as well as other information to judge life satisfaction (Suh et al., 1998). The correlation between the affective and cognitive components depends on the weight that people attach to the different types of information when they judge life satisfaction.

The affective and cognitive components of SWB have been found to be related to different predictors. Changes in satisfaction with different areas of life tend to be better predictors of changes in the cognitive component of SWB than in the affective component (Headey, Holmstrom, & Wearing 1984; Schimmack, 2008). Personality traits are stronger predictors of the affective than the cognitive component of SWB (Schimmack, Diener, & Oishi, 2002).

In summary, the components of SWB may be considered to be, at least to some extent, independent of each other. The implication of this is that a full understanding of SWB requires an assessment of both positive and negative affect and life satisfaction.

Although the components of SWB rely on people's self-reports, this is appropriate given the field's view that happiness must represent the subjective experience of the individual. While it is important to be aware of factors that might influence self-report such as contextual influences and response styles, research has demonstrated that the self-reports of SWB are generally reliable and valid (Eid & Diener, 2004; Pavot & Diener, 1993; Schimmack, Bockenholt, & Reizenzein, 2002; Schimmack & Oishi, 2005). Informant reports have been shown to correlate substantially to self-reports of well-being (e.g., Lyubomirsky & Lepper, 1999; Pavot, Diener, Colvin, & Sandvik, 1991; Sandvik, Diener, & Seidlitz, 1993). Also, ratings of facial expressions revealed in photographs or video-recorded interactions have also been found to correlate significantly with self-reports of SWB (e.g., Harker & Keltner, 2001). These findings provide convergent validity for self-report measures.

The primary focus of the research in this thesis is on a person's characteristic level of SWB during a particular period of his or her life, which Lyubomirsky, Sheldon and Schkade (2005) term the *chronic happiness level*. This term is used to identify a quality that is more enduring than momentary or daily happiness, but that is also somewhat modifiable over time, and thus amenable to meaningful pursuit. Operationally, a person's characteristic level of SWB can be defined in terms of his or her retrospective summary judgements regarding some recent period (such as the

last 2, 6, or 12 months), or as the average momentary judgements of subjective well-being made at several times during that period.

### **The Relationship between Mental Illness and Mental Health**

Measures of psychological distress correlate modestly and negatively with measures of SWB (Ryff & Keyes, 1995). Consequently, it has been suggested that mental health and mental illness are not at opposite ends of a single health continuum. Instead mental health has been defined as a complete state consisting of the absence of mental illness and the presence of a syndrome of symptoms of positive feelings and functioning well psychologically and socially (Keyes, 2002; Keyes & Lopez, 2002). This definition echoes World Health Organization's (1946) definition of health: "A state of complete physical, mental and social well-being, and not merely the absence of disease." Whereas a high level of mental health symptoms is described as flourishing, low levels of mental health symptoms is described as languishing (Keyes & Lopez, 2002).

Epidemiological work suggests that 17% of US adults are flourishing, 57% are moderately mentally healthy, 12% are languishing and 14% meet the criteria for a major depressive episode (Keyes, 2002). The risk of a major depressive episode was found to be two times more likely among those who met the criteria for languishing than those who met the criteria for moderate mental health, and nearly six times greater among those who met the criteria for languishing than flourishing. Pure languishing (i.e., the absence of mental health and mental illness) is associated with substantial psychosocial impairment at levels comparable to an episode of pure depression. Although these individuals would not be diagnosed with a clinical disorder, these people experience as many lost workdays and illnesses as those who are depressed, costing society billions of dollars each year (Keyes & Lopez, 2002).

These data add further weight to the argument for the need for interventions that promote flourishing mental health. Doing so would not only lift multiple burdens from society, but also create a society of citizens who are not merely self-sufficient but also generative and resilient (Fredrickson, 2008).

### **Why is Happiness Related to Desirable Life Outcomes?**

Part of the explanation for the positive relationship between happiness and desirable life outcomes is undoubtedly the fact that success leads to happiness. An individual experiencing a positive mood or emotion is encountering circumstances that he or she interprets as desirable, the person's goals are being met and resources

are adequate (Cantor et al., 1991; Clore, Wyer, Dienes, Gasper, & Isbell, 2001). However there is also evidence that happiness, in turn, leads to behaviours that often lead to further success (see Lyubomirsky, King et al., 2005, for a review).

Fredrickson (1998, 2001) suggests that a critical purpose of positive emotions is to help an individual prepare for future challenges. Positive emotions signal that all is going well and, free from immediate danger, individuals can take the opportunity to “broaden and build” their resources. In other words, individuals can seek new goals that they have not yet attained; they can expand their network of friendships; they can take the opportunity to build their repertoire of skills for future use; or they can rest and relax to rebuild their energy after expending high levels of effort. In support of the broaden-and-build theory, there is considerable evidence that positive affect leads people to think, feel, and act in ways that promote resource building and the pursuit of goals (Carver, 2003; Elliot & Thrash, 2002; Fredrickson, 1998, 2001; Lyubomirsky, 2001; Lyubomirsky, King et al., 2005). Thus, it has been argued that the success of happy people rests on two main factors. First, because happy people experience frequent positive moods, they have a greater likelihood of working actively toward new goals while experiencing these moods. Second, happy people are in possession of past skills and resources, which they have built over time during previous pleasant moods (Lyubomirsky, King et al., 2005).

Fredrickson and Losada (2005) have observed that people who flourish experience higher ratios of positive to negative affect relative to those who do not flourish. Across multiple samples, individuals classified as flourishing have positivity ratios above 3-to-1 (but less than about 11-to-1), whereas those who are not flourishing have positivity ratios below 3-to-1. This has led them to suggest that this 3-to-1 ratio represents a threshold, above which flourishing mental health and other good outcomes become much more probable. Fredrickson (2008) has similarly suggested that if people’s habitual positivity ratios exceed about 11-to-1, they may experience diminished generativity and resilience. Above that upper bound, negative experiences may be so infrequent that people lose their connection to reality; even the very happiest people occasionally experience negative feelings (Diener & Seligman, 2002). To the extent that mood serves as feedback about reality, not experiencing negative feelings would seem quite dysfunctional.

### **Determinants of Individual’s Characteristic Happiness Level**

Research suggests that a person’s characteristic happiness level has genetic,

psychological and social foundations. Understanding the determinants of happiness is important to understand whether it is possible to effect sustainable increases in happiness, and how this might be achieved.

**Biological factors.**

*Behaviour-genetic studies.* Heritability studies estimate the amount of variance in SWB scores that can be explained by one's genes. Tellegen and colleagues (1988) examined monozygotic and dizygotic twins who were reared together and others who were reared apart. They found that monozygotic twins who were raised in different homes were more similar to each other than were dizygotic twins who were raised together or apart. Furthermore, growing up in the same household played little role in the similarity of twins. Tellegen and colleagues estimated that genes account for about 40% of the variance in positive emotionality and 55% of the variance in negative emotionality, whereas sharing the same home accounts for 22% and 2% of the variance in positive emotionality and negative emotionality respectively.

Subsequent research has produced results mostly consistent with Tellegen and colleague's findings (e.g., Roysamb, Harris, Magnus, Vitterso, & Tambs, 2002; Stubbe, Posthuma, Boomsma, & De Geus, 2005) and the consensus is that genes account for about 40 to 50% of the variance in stable levels of positive affect, negative affect and life satisfaction. Because genes must express themselves through some physiological process, these studies suggest that biology plays at least some part in determining happiness. However, the exact mechanisms by which these genetic effects are transmitted are not known. It is possible that the genetic effects are direct. Specific genes or combinations of genes may influence various facets of affective experience. Alternatively, the genetic effect may be indirect. Genes may influence physiological systems that only indirectly influence well-being through their effects on environmental choice or other behaviours (Plomin, DeFries, & Loehlin, 1977; Scarr & McCartney, 1983). Research investigating how genes and biology influence well-being is summarised below.

*Psychophysiological correlates.* A number of psychophysiological processes have been found to be correlated to SWB. For instance, individuals who show greater left versus right hemispheric activity in the prefrontal cortex report more positive affect and less negative affect than individuals with relatively high right frontal activation (Tomarken, Davidson, Wheeler, & Doss, 1992). Davidson and

colleagues argue that asymmetry does not directly influence affect, instead asymmetry predicts the emotional response to emotional challenge. For instance, in one study, Wheeler, Davidson, and Tomarken (1993) showed that baseline measures of asymmetry predicted reaction to emotional films. Greater left prefrontal activation was associated with more intense positive affect after a positive film; greater right prefrontal activation was associated with more intense negative affect after a negative film.

Differences in the metabolic rate of the right amygdala have been shown to predict negative affect (Abercrombie et al., 1998). Also, it has also been suggested that functional differences in the dopamine and opiate systems may result in individual differences in emotions such as excitement, pleasure, gratification and liking (Ashby, Isen, & Turken, 1999; Depue & Collins, 1999; Depue & Morrone-Strupinsky, 2005). Despite this research, it cannot yet be concluded that these psychophysiological processes provide the link from genes to the observed individual differences in well-being or that because differences are biologically based they are impossible to change (Davidson, 2004). There is evidence that early experience can directly affect the biological systems that govern emotional responses to stressors (e.g., Francis & Meaney, 1999). Also, Davidson and colleagues have shown that some of the physiological correlates of SWB can change over time (Davidson et al., 2003).

***Personality.*** Personality is thought to reflect an enduring tendency to behave in similar ways across varying situations and over time (Lucas, 2008). If personality plays an important role in SWB, one would expect measures of well-being to be at least somewhat consistent across time and across situations. A number of studies have examined the long-term stability of SWB measures, and most show that they exhibit a moderate degree of stability, from .56 to .61 over 1 to 3 year periods (Lucas et al., 1996) and .30 over a 17-year period (Fujita & Diener, 2005). Cross-situational consistency has also been found to be high. For instance, Diener, and Larsen (1984) assessed momentary affect multiple times in a variety of situations. They found that average levels of positive affect at work correlated .70 with average positive affect reported during recreational situations. Average negative affect at work correlated .74 with average negative affect in recreational situations. Similar levels of consistency were found across social versus alone situations and across novel versus typical situations.

These studies demonstrate that we have a tendency to experience similar mean levels of positive and negative affect in a wide variety of situations and there is moderate stability in SWB over long periods of time. Should SWB itself then be considered a trait? Against this view is evidence that personality traits are significantly more stable than affect (Fujita & Diener, 2005; Vaidya, Gray, Haig, & Watson, 2002).

Although the stability of SWB suggests that internal factors may play a role, it is possible that this may result from unchanging external circumstances. Early research examining stability among individuals who undergo major life events suggested that the effect of life events on well-being is short-lived and that people inevitably adapt back to their temperament based well-being set points. For instance, Costa, McCrae and Zonderman (1987) examined the stability of well-being among individuals who had major changes in life circumstances (e.g., divorce, widowhood, or job loss) and individuals who had very few changes in life circumstances. Stability estimates were only slightly lower in the high-change group. Similarly, researchers who have investigated the impact of life events have often emphasised people's ability to adapt to both good fortune such as being a major lottery winner, and tragedy such as being paralysed by an accident (e.g., Brickman, Coates, & Janoff-Bulman, 1978).

While evidence exists that people are able to adapt to some life events, recent research has produced evidence that challenges the idea that life events have little to no effect on well-being (Diener, Lucas, & Scollon, 2006). For instance, Lucas and colleagues showed that many negative events including widowhood (Lucas, Clark, Georgellis, & Diener, 2003) divorce (Lucas, 2005), unemployment (Lucas, Clark, Georgellis, & Diener, 2004), and the onset of disability (Lucas, 2007) appear to have lasting or even permanent effects on people's happiness. Of these negative events, it was individuals who were widowed that showed the greatest amount of adaptation (at least in terms of the absolute increase from their lowest level of happiness). Widows and widowers who did not remarry returned closest to their baseline levels of satisfaction after eight years. However, even after this period of time, they remained less satisfied with life than they were before the event (Lucas et al., 2003).

In summary, there is some degree of stability in well-being even over long periods of time. The fact that individuals who undergo major life changes report moderate stability over time suggests that this stability is not due entirely to stable

life circumstances and that personality influences well-being. However, stability estimates are not so high as to suggest that happiness cannot change. At present it is estimated that approximately one-third of the variance in well-being measures is stable variance that changes only slightly over time (Fujita & Diener, 2005). These stability estimates tend to be lower than the stability of other personality traits such as extroversion and neuroticism (Fujita & Diener, 2005; Vaidya et al., 2002). Finally studies of life events show that such events affect well-being. Although no positive events have been found that reliably increase well-being, many major negative events appear to have lasting or even permanent effects on people's happiness. These findings are consistent with the notion that personality contributes to, but does not completely set, long-term levels of well-being.

***Personality traits associated with SWB.*** The *Big Five* model of personality offers a structural organisation of personality traits in terms of five broad factors—openness, conscientiousness, extroversion, agreeableness, and neuroticism (Goldberg, 1981). This model is considered to be the most comprehensive empirical model of personality (Costa & McCrae, 1995). Most research on the links between personality and well-being focuses on the personality traits of extroversion and neuroticism. Extroversion is a trait that refers to the tendency to direct one's interest outwards ("Extroversion," 2009). Extroverts tend to enjoy human interactions and to be enthusiastic, talkative, assertive and gregarious (Lucas & Fujita, 2000). Neuroticism is a trait characterised by an enduring tendency to experience negative emotional states such as anxiety, anger, depression and self-consciousness (Matthews, Deary, & Whiteman, 2003). Costa and McCrae (1980) suggested that extroversion influences positive affect, whereas neuroticism influences negative affect. This pattern of associations has been replicated many times (for a review see Watson & Clark, 1997; for a meta-analysis see Lucas & Fujita, 2000).

Extroversion and neuroticism are not the only traits that relate to well-being. For instance, optimism and self-esteem reflect general positive views about the self and the world and have been shown to correlate with well-being (e.g., Lucas et al., 1996; Schimmack & Diener, 2003). Also, among the Big Five, agreeableness and conscientiousness exhibit reliable correlations with positive and negative affect (Vaidya et al., 2002). Agreeableness is the tendency to be compassionate and cooperative towards others (Graziano & Tobin, 2009). Conscientiousness is the tendency to show self-discipline, act dutifully, and aim for achievement (John &

Srivastava, 1999).

There are two general classes of explanations for why personality traits are associated with well-being: instrumental and temperamental (McCrae & Costa, 1991). According to instrumental explanations, personality traits affect subjective well-being indirectly, through choice of situations or the experience of life events. Lucas, Le, and Dyrenforth (2008) noted that there are two relatively simple instrumental hypotheses that could explain the association between extroversion and positive affect. First, because extroverts are more sociable than introverts, extroverts may participate in more social activity than introverts. If social activity tends to be pleasurable, then this increased social activity may account for extroverts' greater happiness. Alternatively, extroverts and introverts may engage in similar amounts of social activity, but because extroverts are more sociable than introverts, extroverts may enjoy these situations more than introverts do. Lucas and colleagues used daily- and moment-report techniques to examine the types of activities in which extroverts and introverts engaged and to examine how their positive affect changed over time. Although extroverts did engage in some types of social activities more than introverts, these differences were not large and could not account for much of the association between extroversion and positive affect. In addition, extroverts did not respond more positively to social situations than did introverts, which refutes the second explanation. Thus, even after controlling for differential participation in and reaction to social situations, extroverts were still happier than introverts.

In contrast to instrumental explanations, temperament theories propose that there is a direct link between personality and affect that does not flow through life events or life experiences. Many of these theories link extroversion and neuroticism to affect through two psychobiological systems that have been proposed and investigated by Gray (1970, 1981, 1990, 1991, 1994): the behavioural approach system (BAS) and the behavioural inhibition system (BIS). Gray claims that three underlying systems are responsible for much of the individual differences in personality: the BAS, which regulates reactions to signals of conditioned reward and non-punishment; the BIS, which regulates reactions to signals of conditioned punishment and non-reward; and the fight-flight system (FFS), which regulates reactions to signals of unconditioned punishment and non-reward. Whereas the BAS is thought to regulate approach behaviour to attain rewards and goals, the BIS regulates inhibition of behaviour in response to threat and punishment.



According to Gray's (1991) model the extroversion-introversion dimension is aligned with individual differences in BAS strength. Accordingly, extroverts should be more sensitive than introverts to signals of reward, and this reward sensitivity should be exhibited in the form of enhanced information processing and increased positive emotions when exposed to positive stimuli. The neuroticism dimension is aligned with individual differences in BIS strength, which means that neurotic people should be more sensitive than stable people to signals of punishment. This punishment sensitivity should be exhibited in the form of enhanced information processing and increased negative emotions when exposed to negative stimuli.

In support of this theory Larsen and Ketelaar (1989, 1991) showed that neurotics were more reactive than stable individuals to negative mood inductions, whereas extroverts were more reactive than introverts to positive mood inductions. Larsen and Ketelaar believed that extroverts' greater reward-sensitivity results in higher average levels of positive emotions because extroverts react more positively than introverts to the same daily stimuli and events. Although these effects have been replicated a number of times, a number of other studies have failed to replicate the extroversion reactivity effect and Lucas and Baird (2004) used meta-analytic techniques to show that this effect is not robust. One possible explanation for the discrepant results is that it may not be possible for reliable individual differences in positive emotional reactivity to be assessed using self-report techniques (Baird, Le, & Lucas, 2006).

Attentional paradigms have also been used to understand how personality and emotional factors influence attention to rewarding and punishing stimuli. For instance, Derryberry and Reed (1994) found that extroverts and introverts exhibited differential attention to positive stimuli, with no difference in attention to negative stimuli, whereas the converse was true for neurotic participants compared with low neurotic participants.

In summary, there is now a large body of research linking personality and well-being. The most studied links are between extroversion and positive affect, and between neuroticism and negative affect. However, many other traits including optimism and self-esteem have also exhibited replicable and moderately strong associations with one or more well-being constructs. It is still unclear whether each of these traits contributes unique variance in the prediction of SWB and the processes that are responsible for the observed associations have not yet been

clarified.

**Life circumstances and demographic factors.**

A major focus of early SWB research was to identify how demographics, situations, and external events influence happiness. Much of this research was based on the idea that there are basic and universal human needs and that if one's circumstances allow a person to fulfill these needs, happiness will ensue (Wilson, 1967). It is illuminating to briefly consider research on some of the stable circumstantial or demographic factors that are commonly assumed to influence happiness.

**Gender.** Lucas and Gohm (2000) investigated the effects of gender on SWB across cultures using 2 large international samples. Results indicated that women showed a slight tendency to experience greater unpleasant affect than men. This sex difference was found both in measures of frequency and intensity of unpleasant affect, and it tended to increase among older age cohorts. Because these differences were found in the majority of the diverse nations studied, it appears that these sex differences must result from factors that are relatively constant across cultures. Nevertheless, it is unclear whether these consistencies are due to biology or to consistent socialisation across cultures. Similar small effects have been found in other studies focusing on samples from the England and the United States (Cacioppo et al., 2008; Warr & Payne, 1982).

**Age.** Diener and Suh (1998) examined the relation between age and SWB in a survey that included national probability samples of almost 60,000 adults from 40 nations. They found that life satisfaction shows no decline and negative affect shows no incline with age. Positive affect was found to be lower in successive age cohorts. However, the authors suggested that this might be a cohort effect or due to the exclusive measurement of higher arousal positive emotions.

**Marriage.** Large scale surveys reveal that married people report greater happiness than those who were never married or are divorced, separated, or widowed (e.g., Diener, Gohm, Suh, & Oishi, 2000; Mastekaasa, 1994). Among the nonmarried adults, however, people who cohabit with a partner are significantly happier in some cultures than those who live alone (Kurdek, 1991; Mastekaasa, 1995). A meta-analysis by Haring-Hidore, Stock, Okun, and Witter (1985) found an average correlation of .14 between marital status and SWB.

**Education.** Small but significant correlations between education and SWB

have often been found. In a meta-analysis of the literature, Witter, Okun, Stock, and Haring (1984) reported a median effect size of .13. At least part of the relation between education and SWB is probably due to the covariation of education with income and occupational status (Witter et al., 1984). Education may contribute to SWB by allowing individuals to make progress toward their goals or to adapt to changes in the world around them. On the other hand, education may raise aspirations. Clark and Oswald (1994) found that the highly educated were more distressed than less educated persons when these groups were unemployed. Being out of work may be more aversive to the former group because of their higher expectations. Thus, education may interfere with SWB if it leads to expectations that cannot be met.

***Intelligence.*** Sigelman (1981) analysed data from two separate General Social Surveys using general intelligence test scores. In his study, the small correlations between intelligence and life satisfaction and happiness were eliminated when demographic variables were controlled. More recently, Watten, Syversen, and Myhrer (1995) failed to find a relation between intelligence and well-being in a broad Norwegian army recruit sample.

***Health.*** There is a strong association between self-reported health and SWB, but this correlation is considerably weaker when objective health ratings by physicians are examined (e.g., George & Landerman, 1984; Larson, 1978; Okun & George, 1984; Watten, Vassen, Myhrer, & Syversen, 1997). Self-rated health measures reflect not only objective health but also respondent's emotional adjustment (Brief, Butcher, George, & Link, 1993; Hooker & Siegler, 1992; Watson & Pennebaker, 1989), and the relation between self-rated health and SWB is inflated by this emotional component. Research has also found that when health conditions are severe or entail multiple or chronic problems, it may negatively influence SWB. However, when the conditions are less severe, substantial adaptation appears to be possible (Mehnert, Krauss, Nadler, & Boyd 1990; Verbrugge, Reoma, & Gruber-Baldini, 1994).

***Income.*** Wealthy nations appear much happier than poor ones (Diener, Diener, & Diener, 1995). Wealth may contribute to SWB by providing the means to meet certain basic needs such as food, shelter, clean water, and health care. Once basic needs are met, however, more money does not seem to make people much happier and increases in income are not inevitably associated with increases in well-

being (e.g., Diener, Horwitz, & Emmons, 1985; Diener, Sandvik, Seidlitz, & Diener, 1993; Haring, Stock, & Okun, 1984). When income remains stable over extended periods of time, individuals may adapt to a particular level of wealth. Also, positive changes in income can sometimes result in more stress, reducing the positive effects of wealth on well-being (Thoits & Hannan, 1979). It has also been found that people who value money more highly than other goals are less satisfied with their standard of living and with their lives (Richins & Dawson, 1992). Materialistic pursuits may be counterproductive insofar as they interfere with meeting other important psychological needs (Kasser, 2004).

**Religion.** Religiously committed people are relatively more likely to rate themselves as happy (Hadaway, 1978). Ellison (1991) reported that religious variables account for approximately 5 to 7% of life satisfaction variance, but only 2 to 3% of the variance in affective well-being. Ellison suggests that religion provides an interpretive framework by which one can make sense of his or her experiences. Religion may increase feelings of efficacy, control, and security and may therefore provide greater benefit for the cognitive aspects of SWB. In contrast, religion may do little to eliminate negative events or increase positive events in people's lives and therefore may not affect emotional well-being.

In summary, many stable circumstantial and demographic variables have been found to be associated with SWB, but most of the effects are small and it has been estimated that all of them combined account for less than 20% of the variance in SWB (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976). These small effects may be explained by the fact that people tend to adapt over time to changes in circumstances (Lyubomirsky, Sheldon et al., 2005).

Helson (1947) defined adaptation as the diminished responsiveness to repeated or continued stimuli. Hedonic adaptation refers to a reduction in the affective intensity of favourable and unfavourable circumstances (Frederick & Loewenstein, 1999). There is evidence that adaptation to events is an important factor in understanding SWB. For instance, Brickman et al. (1978) found that lottery winners were not significantly happier than a control group and that a group of individuals with spinal cord injuries were not as unhappy as might be expected. Research on bereavement after the loss of a loved one and incarceration also provide evidence for the effects of adaptation. It is important to note, however, that people adapt rapidly to some conditions (e.g., imprisonment and increases in income), slowly to other

conditions (e.g., the death of a loved one), and little or not at all to other conditions (e.g., the pleasures of eating and the avoidance of noise) (Frederick & Lowenstein, 1999).

Some types of circumstances such as life status variables may offer some potential for increasing happiness as individuals often have a certain degree of control over them. For example, one may gain a “boost” in happiness by buying a new flat-screen television, driving an expensive sports car, or moving to a bigger house. However, such boosts will probably not last, because people tend to adapt to constant circumstances. Other reasons why such circumstantial changes may prove ineffectual for permanently increasing happiness include the fact that changing many circumstances is a costly enterprise (e.g., in money, resources, and time) and once a realistic “ceiling” of positive circumstances is reached, it may be difficult to improve matters further (Lyubomirsky, Sheldon et al., 2005).

Therefore, the data suggest that changes in circumstances have limited potential for producing sustainable changes in happiness. Although this strategy may work in the short-term, it probably will not work in the long-term. Of course, if a person has not achieved basic subsistence and security, then it is logical for him to attend to these circumstances and basic needs first, before focusing on maximising his happiness. However, satisfying basic needs is likely to only get a person up to his or her genetically determined set point for well-being, and not beyond (Lyubomirsky, Sheldon et al., 2005).

#### **Intentional activity.**

A third major class of influences on SWB is the wide variety of things that people choose to do and think in their daily lives (Lyubomirsky, Sheldon et al., 2005). According to self-determination theory, well-being is enhanced when activities satisfy basic psychological needs for competence, relatedness, and autonomy (Deci & Ryan, 2000; Ryan & Deci, 2000). A brief review of research on the influence of several categories of activities that fit under this class follows below.

**Exercise.** Evidence is consistent across a wide range of meta-analyses (e.g., Arent, Landers, & Etnier, 2000; McDonald & Hodgdon, 1991), randomised control trials (e.g., King, Baumann, O’Sullivan, Wilcox, & Castro, 2002; Lee et al., 2001; Rejeski et al., 2001), and large-scale epidemiological surveys (Biddle, 2000) that physical activity can make people feel better. Evidence shows that there are immediate benefits from a single bout of exercise, such as a ten-minute brisk walk

(e.g., Hansen, Stevens, & Coast, 2001; Thayer, 1989), as well as more enduring benefits from exercise training programs. For instance, aerobics, for eight to ten weeks, two to four times a week, has been found to increase happiness and reduce clinical depression and anxiety (Biddle & Mutrie, 1991). In a meta-analysis examining older adults (Arent et al., 2000), exercise produced on average, moderate improvements in mood (Hedges's  $g = 0.34$ ) in studies comparing an exercise training group with a control group. This seems to work for both the reduction of negative moods and the enhancement of positive mood states (Hedges's  $g = 0.35$  and  $0.33$ , respectively). Effects of a similar, small to moderate magnitude are reported in populations of all ages and seem to be independent of socioeconomic or health status (Biddle, 2000). Steptoe, Kimbell and Basford (1996) found that periods of exercise led to reduced depression and anxiety for some hours afterwards and during this period stressful tasks had less effect on heart rate and blood pressure. Sport and exercise may be effective partly owing to the release of endorphins, a temporary reduction in stress-related mechanisms, but also because of the social interaction that often accompanies exercise and perhaps the experience of success, or self-efficacy.

***Social interaction.*** Social activity is positively and significantly related to subjective well-being (Argyle & Lu, 1990; Okun, Stock, Haring, & Witter, 1984). People are in a more positive mood when with others compared to being alone (Larson, 1990), and compared to less happy people, very happy people spend the least amount of time alone, the most amount of time with family, friends, and romantic partners, and have the strongest romantic and other social relationships (Diener & Seligman, 2002). Fleeson, Malanos and Achille (2002) conducted a series of studies to test the hypothesis that people could increase their positive affect by acting more extroverted, both within daily life and within a controlled laboratory setting. An experience sampling study revealed that within-person fluctuations in extroversion is associated with variations in positive affect. A laboratory experiment further revealed that when people are randomly assigned to “act extroverted” (versus “act introverted”) during a group discussion, they experience more intense positive affect (Fleeson et al., 2002). It has been suggested that the need to form and maintain strong interpersonal relationships with others, may be an essential part of well-being (Baumeister & Leary, 1995).

***Helping others.*** Volunteer and charitable work is associated with more frequent and a higher intensity of positive affect (Argyle, 1996; Fredrickson, 2003;

Magen & Aharoni, 1991) and greater life satisfaction (Meier & Stutzer, 2008). An experimental study found that students who performed five acts of kindness per week over a six-week period could increase well-being relative to students who were simply asked to complete measures of well-being (Lyubomirsky, Tkach, & Sheldon, 2004 cited in Lyubomirsky, Sheldon et al., 2005). However, this increase in well-being was only evident for participants who performed all their acts in a single day rather than spreading them out over the course of a week. Another recent study found that happy people show more kindness to others relative to those who are less happy, and that subjective happiness increases when people count their own acts of kindness (Otake, Shimai, Tanaka-Matsumi, Otsui, & Fredrickson, 2006). Helping others may increase well-being because such behaviour fulfills inherent psychological needs (Weinstein, & Ryan, 2010).

**Gratitude.** Experimental studies have shown that people who “count their blessings” by listing things in their life that they are thankful for or think or write an essay about or a letter to someone to whom they are grateful, report increases in their own positive affect relative to those who do not engage in such grateful acts (Emmons & McCullough, 2003; Froh, Sefick, & Emmons, 2008; Seligman, Steen, Park, & Peterson, 2005; Sheldon & Lyubomirsky, 2006; Watkins, Woodward, Stone & Kolts, 2003). It has been suggested that gratitude promotes the savouring of positive life experiences and situations so that maximum satisfaction and enjoyment can be derived from them. Gratitude may counteract the effects of hedonic adaptation by preventing people from taking the good things in their lives for granted (Bryant, 1989; Lyubomirsky, Sheldon et al., 2005). The ability to appreciate their life circumstances may also be an adaptive coping strategy by which people positively reinterpret stressful or negative life experiences, bolster coping resources, and strengthen social relationships (Fredrickson, Tugade, Waugh, & Larkin, 2003). Finally, the practice of gratitude appears to be incompatible with negative emotions and thus may reduce feelings of sadness, envy, anger, and greed (McCullough, Emmons, & Tsang, 2002; Watkins, 2004).

**Meditation.** Meditation refers to “...a family of techniques which have in common a conscious attempt to focus attention in a non-analytical way, and an attempt not to dwell on discursive, ruminating thought” (Shapiro, 1980, p. 14). Traditionally these techniques have been divided into concentrative meditation, where there is an attempt to restrict awareness by focusing attention on a single

object, and mindfulness meditation, where an attempt is made to attend nonjudgementally to all stimuli in the internal and external environment but not to get caught up in any particular stimulus.

Wachhotz and Pargament (2005) found a variety of psychological benefits, including enhanced positive mood, from practising a mantra-based meditation for 20 minutes a day for two weeks. Smith, Compton, and West (1995) investigated the impact of adding a concentrative form of meditation to an existing 6-week multi-component cognitive-behavioural happiness enhancement program (Fordyce, 1977, 1983). Participants who were taught the meditation exercise in addition to receiving the happiness enhancement program significantly improved on measures of happiness at post-test compared to participants who only received the happiness enhancement program and to participants in a control group. Participants who participated in the happiness enhancement program improved significantly over participants in the control group.

Fredrickson, Cohn, Coffey, Pek and Finkel (2008) tested the effects of a 6-week loving-kindness meditation practice with 139 adults—half of whom were randomly assigned to begin the practice of meditation. This meditation, akin to guided emotional imagery, was designed to promote warm, tender, and compassionate feelings. This meditation practice reliably increased people's daily experiences of positive emotions relative to those in the waitlist control group. Further these increases in positive emotions, in turn, accounted for gains in a wide range of personal resources, ranging from sleep quality to resilience and mindfulness. These resource gains, in turn, elevated signs of flourishing mental health.

Using experiencing sampling methodology in which participants carried electronic pagers and responded to daily random signals by completing a questionnaire relating to their experience, Easterlin and Cardena (1998) found that advanced skills in mindfulness meditation was associated with greater positive affect as well as more self-awareness and acceptance. Davidson and colleagues (2003) examined the affective, brain, and immunological effects of an 8-week mindfulness-based stress reduction workshop with 41 participants—25 of whom were randomly allocated to the meditation condition. Although participants in the meditation group did not report greater positive affect relative to participants in the waitlist group, they did show greater left-sided anterior brain activation at rest, and also during both



positive and negative emotion inductions. This pattern is important because Davidson's past work (2000) has linked it to greater positive affectivity. The meditation group also showed a greater immune response to the influenza vaccine, and this response was correlated with the magnitude of left-sided anterior brain activation.

***Writing about best possible future self.*** King (2001) found that when participants visualised and wrote about their "best possible future selves" for 20 minutes a day over 4 consecutive days, this led to a significant increase in positive affect immediately after writing, enhanced life satisfaction and optimism several weeks after writing, and decreased illness 5 months later. The effect from writing about best possible future selves on positive affect has since been replicated by Sheldon and Lyubomirsky (2006). It has been suggested that writing about one's possible selves may be beneficial because it may bring greater awareness and clarity to one's priorities, motivations, and values as well as reducing goal conflict (Sheldon & Lyubomirsky, 2006). Thus, such writing may serve to integrate life experiences in a meaningful way and allow the person to gain a feeling of control. It has also been suggested that imagining success at one's life goals may improve performance and boost psychological adjustment (Sheldon & Lyubomirsky, 2006).

***Goals.*** Personal goals refer to what a person is trying to accomplish in his or her everyday behaviour (Emmons, 1986). Research has demonstrated that simply having valued goals is associated with higher life satisfaction, as is making progress on those goals (Emmons, 1986; King, Richards, & Stemmerich, 1998). Personal goals have been shown to organise daily experience and mediate the relationship between events and daily emotional life. Events and circumstances matter to us to the extent that they affect our goals (Diener & Fujita, 1995; Kasser, 1996). Commitment to a set of goals provides a sense of personal agency and purpose that can motivate action and involvement in valued activities (Cantor, 1990). Involvement in activities which have clear goals, give immediate feedback on performance, and which match our level of skill is associated with great satisfaction (Csikszentmihalyi, 1975, 1990; Omodei & Wearing, 1990). Participation in valued activities also provides a structure and meaning to daily life (Klinger, 1975; Little, 1983). Furthermore, commitment to goals may help individuals cope with various problems in daily life and hence maintain personal as well as social well-being in times of adversity (Folkman & Stein, 1996; Putnam, 1995).

Several specific characteristics of goals predict SWB. The importance that one places on one's goals and the amount of effort required to achieve those goals are associated with positive affect (Emmons, 1986; Sheldon & Elliot, 1999). Happy people tend to have moderately difficult goals that are coherently organised and congruent with each other (Emmons, 1986; Emmons & King, 1988; Sheldon & Kasser, 1995). These goals should be construed in approach (rather than avoidance) terms, as avoidance goals are associated with declines in well-being (Elliot & Sheldon, 1997). Commitment to and progress on daily goals that relate to life goals are associated with enhanced SWB (King et al., 1998). Optimal goal content might be defined as those goals that are consistent with an individual's motives (Brunstein, Schultheiss, & Grassman, 1998) and presumed inherent psychological needs such as competence, autonomy and relatedness (Ryan & Deci, 2000; Sheldon & Elliot, 1999; Sheldon & Kasser, 1998).

***Summary and implications for enhancing happiness.*** The literature on the correlates of subjective well-being, indicate that some aspects of life that are associated with higher levels of SWB are changeable and some less so. Research on the heritability of well-being suggests that the variance in happiness is to a large degree determined genetically. This genetic heritage probably reflects relatively unchangeable intrapersonal, temperamental, and affective traits, such as extroversion, arousability, and negative affectivity that are rooted in neurobiology, and change little over the life span. Some correlates of SWB are life circumstances that *do* change such as income, marriage and religiosity. However the effects of these circumstances can be small or short-lived, and some are either difficult to influence or could not form part of a viable well-being enhancement program. But some concrete intentional activities (e.g., kind acts, physical exercise) are associated with enhanced well-being and would seem to represent the most promising approach to enhancing SWB in a sustainable fashion (Lyubomirsky, Sheldon et al., 2005).

### **Is it Possible to Increase Happiness in a Nonclinical Population?**

Many predictors of SWB have been identified; however, the vast majority of research has been cross-sectional and reported between-subject effects, rather than investigating well-being longitudinally and examining within-subject effects. In addition, few experimental studies have been conducted. Thus, relatively little is known about how to *change* well-being or to what extent it is even possible to increase happiness in a sustainable way (Lyubomirsky, Sheldon et al., 2005).

Pessimism has been expressed about the possibility of effecting sustainable increases in happiness (Lykken & Tellegen, 1996). This has been based on evidence of the substantial heritability of well-being, the long-term stability of personality traits which are related to well-being, and the tendency for people to adapt to circumstances. Some have argued that pursuing happiness may backfire altogether if the pursuit becomes an “extrinsic” goal that distracts people from enjoying the moment (McIntosh, Harlow & Martin, 1995; Schooler, Ariely, & Lowewenstein, 2003). From this perspective, rather than trying to increase happiness, people would be better off simply accepting their current personality and happiness levels (McCrae & Costa, 1994).

Recently, however, greater optimism has been expressed for the possibility of achieving sustainable increases in happiness. There is recognition that while there is stability in well-being even over long periods of time, stability estimates are not so high as to suggest that happiness cannot change. Further, it is possible that genes influence happiness indirectly by influencing the kinds of experiences and environments one has or seeks to have. Thus, it is possible that unwanted effects of genes could be minimised by active efforts to steer oneself away from situations that detract from well-being or by avoiding being enticed towards maladaptive behaviours (Lykken, 1999; Lyubomirsky, 2001). Second, many different activities which are presumably under volitional control have been linked to well-being. Better still, some studies have successfully increased well-being, at least in the short-term, by manipulating them (e.g., Emmons & McCullough, 2003; Fordyce, 1977, 1983; King, 2001; King & Miner, 2000; Langer & Rodin, 1976; Lichter, Haye, & Kammann, 1980; McCullough, Pargament, & Thoresen, 2000; Reich & Zautra, 1981; Seligman et al., 2005; Sheldon & Houser-Marko, 2001; Sheldon, Kasser, Smith, & Share, 2002).

### **Advantages of the Goal Approach**

Selecting and committing to a set of goals would seem to have many advantages as a means of enhancing SWB in a sustainable manner. Goals provide a framework for changing behaviour and can encompass any pursuit including those that are known to be associated with well-being for the majority of people, as well as idiographic pursuits that might be congruent with an individual’s interests and values (King, 2008).

Goals also allow us to enjoy SWB without explicitly pursuing it. Personal

goals vary widely, but they typically include more than the goal “to be happy.” When happiness is the explicit goal, the pursuit is rarely successful (McIntosh et al., 1995; Schooler et al., 2003). Explicitly focusing on enhancing what is more consciously considered a byproduct of life experiences renders the pursuit itself less than fulfilling. Fortunately goals allow us to pursue happiness while we are pursuing other things (King, 2008).

Goal pursuit as a means of enhancing SWB has several desirable features that may combat adaptation. First, throughout the day people can vary the particular goals they are focusing upon and the activities enacted during goal pursuit. Throughout their life, people change their goals in response to developmental tasks and life experiences. Such variety and change in goal pursuit may help to reduce adaptation to particular activities, allowing them to retain their potency (McAlister, 1982). Second, while goals may increase SWB, they will not necessarily eliminate negative affect. Truly caring about what happens in one’s life from one day to the next has rewards but can also increase stress because of the increased pressure to achieve those goals (Pomerantz, Saxon, & Oishi, 2000). Also, goals may be expected to relate to either positive or negative emotional experiences, depending on how we are progressing in their pursuit (Carver & Scheier, 2008). Because the pursuit of goals is likely to foster a rich emotional life that includes both positive and negative affective experiences it may protect against hedonic adaptation and permit sustained increases in characteristic levels of SWB (King, 2008).

Since mood may be considered simultaneously an aspect of SWB and a source of feedback on performance in areas of value, low SWB may be an important indicator of the need for life changes, goal reevaluation, and a reconsideration of life’s meaning (King, 2008).

### **Implications for Increasing Well-Being**

It would seem therefore, that a viable way of enhancing well-being is to focus on engagement in a multifaceted life through the pursuit of personally relevant and valued goals. The individual should make a habit of initiating activities in support of these goals, while at the same time varying the focus and timing in the way they implement these activities. People might be advised to avoid basing their happiness on the acquisition of particular circumstances or objects (e.g., moving to Sydney or buying a luxury car), because they will tend to habituate to such stable factors. It has been suggested that happiness-increasing strategies can be initiated and effectively

pursued only with concerted, consistent commitment and effort (Lyubomirsky, Sheldon et al., 2005).

### **Behavioural Activation**

Cognitive and behavioural interventions have been demonstrated to be successful in combating negative affect and depression (Cuijpers, van Straten, Andersson, van Oppen, 2008; Gloaguen, Cottraux, Cucherat, & Blackbrun, 1998; Jacobson et al., 1996). Although these interventions were developed to help people reduce their experience of negative affect, these interventions may also have implications for interventions designed to increase positive affect and life satisfaction. One intervention in particular, behavioural activation (BA) has many features consistent with the recommendations stemming from contemporary knowledge regarding well-being.

BA emphasises “structured attempts at engendering increases in overt behavior that is likely to bring the patient into contact with reinforcing environmental contingencies” and consequently, engagement with life (Hopko, Lejuez, Ruggiero, Eifert, 2003, p. 700). Common to all BA approaches are the selection of behavioural approach goals, strategies to help participants achieve these goals, and the self-monitoring of behaviour and affect. While early BA approaches have typically involved increasing participation in activities chosen from nomothetic schedules of pleasant events (e.g., Lewinsohn, 1976), contemporary interventions have tended to emphasise an ideographic approach where each participant’s circumstances, interests and values are taken into account, and avoidance behaviours are analysed and addressed (e.g. Lejuez, Hopko, LePage, Hopko, & McNeil, 2001; Martell, Addis, & Jacobson, 2001; Martell, Dimidjian, & Herman-Dunn, 2010).

It has been difficult to judge the effectiveness of the BA approach as in the past BA techniques have typically been delivered along with cognitive approaches as part of multi-component treatments (e.g., Beck, Rush, Shaw, & Emery, 1979; Lewinsohn, Muñoz, Youngren, & Zeiss, 1986). These multi-component treatments have been demonstrated to be effective, but evidence has emerged indicating that it may be the behavioural components that largely contribute to these effects (Jacobson et al., 1996). This has led to renewed interest in BA as an intervention in its own right (e.g., Dimidjian et al., 2006; Gortner, Gollan, Dobson, & Jacobson, 1998; Jacobson, Martell, & Dimidjian, 2001; Martell et al., 2001, 2010).

To date BA interventions have almost exclusively been applied to people with depression. However, it seems reasonable to assume that an evidence-based intervention that promotes the self-regulatory skills of goal-setting, planning and striving among individuals with depression might also enhance goal-setting, planning and striving and consequently increased engagement in life and well-being among nonclinical individuals as well. But even beyond the similarities with the recommendations to enhance SWB, there are good reasons to suppose that the BA approach might also have a positive impact on the SWB of nonclinical populations.

It has long been established that there is a significant relationship between mood and participation in pleasant activities (Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972). Early BA interventions found evidence that increasing participation in pleasant activities could improve mood amongst patients with depression (e.g., Lewinsohn, 1976). Subsequently, it was observed that the use of similar procedures could increase levels of well-being amongst nonclinical participants (Fordyce, 1977; Reich & Zautra, 1981). In one of a series of studies, Fordyce (1977) found that increased participation in pleasant activities was as effective as a more comprehensive intervention designed to increase well-being over a two week intervention period. In another study, Fordyce (1983) found that the BA component of his Fundamentals happiness enhancement program had a quicker effect on measures of well-being than other components and could account for the gains made by the full program, at least among those participants who showed a weakness in this behavioural area.

Although BA seems to be a promising intervention approach to increase SWB, and some studies have suggested that it might be a useful method, to date it has received little attention in relation to nonclinical populations.

There are at least four interventions that satisfy Hopko and colleague's (2003) definition of BA. However, these interventions differ in terms of their complexity. It is still to be determined whether more complex versions of the approach are superior to simpler versions of BA, and which treatment strategies account for the greatest outcome variance.

### **Aims and Significance of the Current Project**

The overall aim of the present project is to advance our understanding of BA interventions and their utility with both clinical and nonclinical populations. There is increasing recognition of the positive impact well-being can have on many desirable

life outcomes including career success, marriage and health. This understanding has resulted in increased attention to the factors that contribute to well-being and how an individual's level of well-being can be increased. BA is consistent with the recommendations emerging from models of well-being and consequently may not only be effective in treating depression, but also in promoting psychological well-being. However, there have been surprisingly few quantitative reviews of the literature as it relates to this intervention approach and little research investigating its application to promoting well-being.

This thesis therefore consists of three studies. The first consists of a meta-analysis to quantify the existing empirical research on the utility of BA for individuals with depression. Recent studies attest to the efficacy of BA for the treatment of depression, but there has not yet been an investigation of the differential effectiveness of variants of BA. Such an investigation is needed as it might inform whether more complex versions of BA add anything to simpler versions of the approach. This is important not only because it may provide insight into the mechanisms of action, but also because it may ultimately lead to greater efficiency of services. If similar health outcomes can be achieved with simpler or shorter versions of BA there is potential for increasing the efficiency of services and the reach of effective interventions. Therefore, the primary goal of the first study was to quantify the effectiveness of the various versions of BA. A related goal of Study 1 was to include a focused evidence review using the criteria developed by the Task Force within Division 12 (Society of Clinical Psychology) of the APA to determine whether any of the BA variants represent a well-established or probably efficacious treatment of depression (Chambless et al., 1998; Task Force on Promotion and Dissemination of Psychological Procedures, 1995). No existing meta-analysis of BA has considered whether the effects obtained with participants reporting elevated symptoms of depression are still shown with participants who satisfy the criteria for MDD. Thus, a third goal of Study 1 was to determine the efficacy of BA both for participants reporting elevated symptoms of depression and for participants who satisfy the criteria for MDD.

There is a strong theoretical case that BA could increase levels of enduring happiness in a normal population, but no formal meta-analysis of existing BA research has been conducted to investigate this possibility. Indeed, it seems that no meta-analyses to date have examined the effect of any intervention of depression on

well-being. Therefore the primary goal of Study 2 was to conduct a meta-analysis to examine the effects of BA on well-being. If it can be established that BA is effective in increasing the well-being of a normative sample it would indicate that BA is a versatile intervention, effective not only in treating depression but also for increasing the well-being of individuals without depression. This would present the field of positive psychology with an existing technology for increasing well-being and may also provide important insights into how to prevent mental health problems such as depression.

In Study 3 a variant of BA specifically tailored to increase happiness in a nonclinical sample is trialled. The purpose of this study was to investigate the approach's acceptability, potency and identify practical obstacles that may need to be overcome in its use. This study may be considered exploratory and a pilot of the approach for a subsequent study involving a larger nonclinical sample. Despite the pilot nature of this study it nevertheless adds to the small but growing number of well-being intervention studies.

In summary, the overall aim of this project is to add to the literature as it relates to BA interventions for the treatment of depression and the promotion of well-being. The major potential implications being more efficient and effective interventions and consequently substantial reductions in the personal and economic costs of depression, and increases in the personal and community benefits of well-being.



## Chapter 2—Disorders of Mood

The aim of this project is to advance our understanding of behavioural activation (BA) interventions and their applications for both treating depression and promoting psychological well-being. Given that a major focus of the present project is on elevating mood, and since BA developed from a behavioural explanation of depression, it is important to review our current understanding of depressive disorders; the factors implicated in their aetiology and maintenance, and treatment approaches. In addition, since excessively and persistently elevated mood can also cause serious life problems, it is also important to review the bipolar disorders.

A mood is a relatively long lasting affective state (Thayer, 1989). Moods differ from emotions in that they are less specific, less likely to be triggered by a particular stimulus or event, and longer lasting (Oatley & Jenkins, 1996; Rosenberg, 1998; Thayer, 1989). Moods generally have either a positive or negative valence. In other words, people often speak of being in a good or bad mood. Unlike acute emotional feelings like fear and surprise, moods generally last for hours or days. Mood also differs from temperament or personality traits that are even more general and long lasting. Mood is an internal, subjective state, but it often can be inferred from posture and other observable behaviours (see Table 2).

Individuals without a mood disorder experience a wide range of moods and have an equally large repertoire of affective expressions; they feel in control, more or less, of their moods and affect. Mood disorders are a group of clinical conditions characterised by a loss of that sense of control and a subjective experience of great distress. Individuals with an extremely positive mood (that is, mania) show expansiveness, flight of ideas, decreased sleep, heightened self-esteem, and grandiose ideas. Patients with extremely negative mood (that is, depression) have a loss of energy and interest in normally enjoyable activities, impaired concentration and memory difficulties, feelings of worthlessness, and thoughts of death or suicide. Other signs and symptoms of mood disorders include changes in activity level, cognitive abilities, speech, and bodily functions such as sleep, appetite and sexual activity. These changes almost always result in impaired interpersonal, social, and occupational functioning and, furthermore, may result in a major burden of suffering among clients and their families (Hays, Wells, Sherbourne, Rogers, & Spritzer, 1995).

Table 2

*Distinctions between Emotions and Related Affective States*

State	Definition
Affect	Consciously accessible feelings. Affect is present within emotions (as the component of subjective experience), but also within other affective phenomena, including moods and affective traits. Unlike emotions, affect is often free-floating or objectless, longer lasting, and may be salient only at the level of subjective experience. Affect is often conceptualised as varying along two dimensions, either pleasantness and activation or positive and negative emotional activation (Fredrickson, 2001).
Emotion	A multicomponent response tendency, triggered by a particular stimulus or event, which unfolds over relatively short time span. Response tendencies manifest across loosely coupled component systems, such as subjective experience, facial expressions, and physiological changes. Emotions are often conceptualised as fitting into discrete categories of emotion families, like fear, anger, joy, and interest (Fredrickson, 2001).
Mood	A relatively long lasting emotional state. Moods differ from simple emotions in that they are less specific, less intense, and less likely to be triggered by a particular stimulus or event (Thayer, 1989).
Temperament	A constitutional predisposition to react in a particular way to stimuli (Segan, 2006).
Trait	A characteristic way in which a person perceives, feels, believes, or acts (Kassin, 2004).

**The Mood Disorders**

The *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (*DSM-IV-TR*; American Psychiatric Association, 2000) groups mood disorders into two categories: depressive disorders and bipolar disorders. Individuals who are afflicted with only depressive episodes are said to have a depressive disorder. Individuals with both manic and depressive episodes and individuals with manic episodes alone are said to have a bipolar disorder.

As shown in Table 3, depressive disorders are divided into three main diagnostic categories based on symptom expression, severity, and duration. Major depressive disorder (MDD) is characterised by a severe presentation of multiple symptoms for at least a 2-week period of time. Dysthymic disorder is characterised by at least two years of depressed mood for more days than not, accompanied by additional depressive symptoms that do not meet the criteria for a major depressive episode seen in MDD. Depressive disorder not otherwise specified includes minor depressive disorder, recurrent brief depressive disorder, and premenstrual dysphoric

disorder. In minor depressive disorder the symptom severity does not reach the severity necessary for a diagnosis of MDD; in recurrent brief depressive disorder the depressive episodes do reach the severity of symptoms required for a diagnosis of MDD but do so for only a brief period of time, insufficient in length to meet the diagnostic criteria for MDD.

Bipolar disorders (BPDs) are similarly divided into three main diagnostic categories. Bipolar I (BP-I) is characterised by one or more manic or mixed manic and depressive episodes; a manic episode being a distinct period of an “abnormally and persistently elevated, expansive, or irritable mood” (*DSM-IV-TR*, 2000, p. 362). Bipolar II disorder (BP-II) is characterised by the presence of major depressive episodes alternating with at least one episode of hypomania—that is, an episode of manic symptoms that do not meet the full criteria for the manic episodes seen in BP-I. Cyclothymic disorder is characterised by at least two years of numerous periods of hypomanic symptoms that do not meet criteria for a manic episode and numerous periods of depressive symptoms that do not meet the criteria for a major depressive episode.

Table 3

*Types of Mood Disorders*

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Depressive Disorders (involve depression only)

*Major Depressive Disorder* (MDD; more severe disorder that can often be recurrent or chronic)

*Dysthymic Disorder* (less severe disorder that lasts at least two years)

*Depressive Disorder Not Otherwise Specified*

Bipolar Disorders (BPDs; one or more manic-like episodes)

*Bipolar I Disorder* (BP-I; one or more fully manic or mixed manic and depressive episodes usually accompanied by major depressive episodes)

*Bipolar II Disorder* (BP-II; one or more major depressive episodes accompanied by at least one hypomanic episode)

*Cyclothymic Disorder* (less severe disorder with mood deflections in both directions that lasts at least two years)

*Bipolar Disorder Not Otherwise Specified*

*Mood Disorder Due to a General Medical Condition, Substance-Induced Mood Disorder and Mood Disorder Not Otherwise Specified*

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*Note.* Information sourced from *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (*DSM-IV-TR*; American Psychiatric Association, 2000).

Additional *DSM-IV-TR* mood disorder diagnoses include mood disorder due to a general medical condition, substance-induced mood disorder, and mood disorder not otherwise specified.

### **Epidemiology and Costs of Mood Disorders**

Clinical depression is so widespread that it has long been called the common cold of mental illness (Seligman, 1975). In recent community surveys, 4 to 10% of the general population have been shown to experience an episode of MDD within a year (Andrews, Henderson, & Hall, 2001; Kessler et al., 2003; Kessler et al., 2006). Based on Dutch and Australian prevalence data, it has been estimated that approximately 30% of men and 40% of women suffer from one or more major depressive episodes during their life (Kruijshaar et al., 2005). The Global Burden of Disease study conducted by the World Health Organization (WHO) assessed the extent of disability (measured by number of work days lost) and mortality associated with non-communicable diseases in different countries. The study concluded that depression is one of the most debilitating health problems in the world (Murray & Lopez, 1996). In 1990, depression ranked fourth among all diseases (after low respiratory infections, diarrheal diseases, and conditions arising during the perinatal period). The WHO researchers predicted that, by the year 2020, depression would rank second (after heart disease), accounting for 15% of the disease burden in the world. An updated version of this study has estimated that by 2030 depression will still be the second leading cause of burden of disease, overtaking heart disease, but second to HIV/AIDS (Mathers & Loncar, 2006).

For BPD, data from the United States suggests that the lifetime prevalence is about 1% for BP-I, 1.1% for BP-II disorder, and 2.4% for subthreshold BPD (Merikangas et al., 2007).

**Gender ratio.** Before adolescence, approximately equal numbers of boys and girls experience depression (Speier, Sherak, Hirsch, & Cantwell, 1995). However, after puberty, females are twice as likely as boys to experience depression (Birmaher et al., 1996; Poznanski & Mokros, 1994; Rushton, Forcier, & Schectman, 2003). This is an almost universal observation, independent of country or culture. Women's greater rates of depression are due to gender differences in first onsets, but not in duration of the episodes (Eaton et al., 1997; Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993). In contrast to MDD, BP-I has a prevalence that is equal for men and women (Merikangas et al., 2007; Weissman et al., 1993).

**Recurrence.** Longitudinal research has demonstrated that depression is a recurrent disorder. At least 50% of individuals who recover from an initial episode of depression will have at least one subsequent depressive episode, and those individuals with a history of two or more past episodes will have a 70-80% likelihood of recurrence in their lives (Consensus Development Panel, 1985; Paykel et al., 1995).

**Suicide.** Mood disorders are the diagnoses most commonly associated with suicide. The lifetime rate of suicide attempts among individuals with BPD, unipolar depression, and any other mental health condition has been reported to be 29.2%, 15.9%, and 4.2%, respectively (Chen & Dilsaver, 1996). The age-adjusted suicide rates for individuals suffering from mood disorders have been estimated to be 400 per 100,000 for males and 180 per 100,000 for females (Sadock & Sadock, 2008).

**Economic cost.** Depression is associated with an enormous economic burden, both from the direct costs associated with treating depression, but also from the indirect costs resulting from individuals with depression being unable to maintain their usual economic role. Indirect economic costs include the effects of illness on work attendance and productivity, the costs of long-term disability and premature mortality, and the loss of productivity of family members involved in a caring role. The results of “costs of illness” studies are variable, but the indirect costs of depression always exceed the direct costs. For example, in the United States, the direct medical costs of depression were calculated as \$26.1 billion in 2000, the indirect costs substantially greater (\$57 billion) (Greenberg et al., 2003). On an annual basis, the mean number of lost days for someone with BPD is 65.5, versus 27.2 for someone with MDD. The higher work loss associated with BPD is thought to be due to more severe and persistent depressive episodes in those with BPD than in those with MDD (Kessler et al., 2006).

## **History**

Depression has been recorded since antiquity, and descriptions of what are now called mood disorders can be found in many ancient documents. In the Old Testament King Saul is described as experiencing depression and committing suicide because of it, as does Ajax in Homer’s *Iliad*. About 400 B.C. Hippocrates used the terms “mania” and “melancholia” for disturbances (Pilgrim, 2007).

## **Theoretical Models of Mood Disorders**

Research suggests that biological, psychological and social factors all play a role in causing mood disorders. Understanding the etiological and maintaining factors of depression is important to select and develop efficacious treatment.

**Biological factors.**

*Behaviour-genetic studies.* Heritability studies estimate how much genetics contributes to the variation in mood disorders in a population at a given point in time (Plomin et al., 1997). A Swedish study found the concordance rate for MDD in monozygotic twins ranged from 31% (for males) to 44% (for females). By contrast the concordance rates in dizygotic twins ranged from 11% to 16% (Kendler, Gatz, Gardner, & Pedersen, 2006). For BP-I, concordance rates have been estimated at 43% in monozygotic twins, compared to 6% in dizygotic twins (Kieseppä, Partonen, Haukka, Kaprio, & Lönnqvist, 2004). A combination of BP-I, BP-II and cyclothymia produced concordance rates of 42% in monozygotic twins compared to 11% in dizygotic twins (Edvardsen et al., 2008). There is an excess of both unipolar depression and BPD among relatives of probands with BPD and if both are counted in the co-twin the concordance with BPD rises to 67% in monozygotic twins and 19% in dizygotic twins (McGuffin et al., 2003). The genetic data strongly indicate a significant factor in the development of a mood disorder is genetics. Because genes must express themselves through some physiological process, these studies suggest that biology plays at least some part in vulnerability to depression.

Clinical research on the influence of genetics on serotonin action and metabolism in psychiatric settings has revealed that individuals possessing either one or two copies of the short variant of the 5-HTTLPR (serotonin transporter) gene experienced higher levels of depression following a recent life stressor (Caspi et al., 2003; see Uher & McGuffin, 2008, for a review). Such research suggests one account for the genetic predisposition observed in behaviour-genetic studies.

*Monoamine hypothesis.* The emergence of the “monoamine hypothesis” of depression and antidepressant drug action can be traced back to the 1950s, when reports emerged that, the antihypertensive drug, reserpine depletes the storage of a group of neurotransmitters sharing chemical characteristics, monoamines, and induces sedative “depressive” symptoms. At this time it was also discovered that, the antitubercular drug, iproniazid has an antidepressant effect and that it is an inhibitor of monoamine oxidase—an enzyme that catalyses the oxidation of monoamines (Baumeister, Hawkins, & Uzelac, 2003). The correlation between the

psychological and biochemical effects of these drugs (i.e., iproniazid and reserpine) led to the monoamine hypothesis that depression is caused by the underactivity and mania is caused by the overactivity in the brain of monoamines, such as dopamine, norepinephrine, and serotonin (e.g., Schildkraut, 1965). In its contemporary formulation, the monoamine hypothesis suggests that a relationship exists between the three main monoamine neurotransmitters in the brain (i.e., dopamine, norepinephrine, and serotonin) and specific symptoms of MDD. The proponents of this theory recommend the choice of an antidepressant that would target the neurotransmitter associated with the patient's most prominent symptoms. Anxious and irritable patients should be treated with serotonin or norepinephrine reuptake inhibitors, and those experiencing a loss of energy and enjoyment of life with norepinephrine and dopamine enhancing drugs (Nutt, 2008).

In the past two decades, research has revealed that a simple monoamine hypothesis that accounts only for a shortage of neurotransmitters in the central nervous system does not fully account for the presentation of depression (Hirschfeld, 2000). Research has failed to find convincing evidence of a primary dysfunction of a specific monoamine system in patients with MDD. Not all drugs affecting the noradrenergic and serotonergic systems result in the remission of symptoms, and the medications tianeptine and opipramol have long been known to have antidepressant properties despite lacking any effect on the monoamine system (Brink, Harvey, & Brand, 2006; Hirschfeld, 2000; Müller, Siebert, Holoubek, & Gentsch, 2004; Volz & Stoll, 2004). Experiments with pharmacological agents that cause depletion of monoamines have shown that this depletion does not cause depression in healthy people nor does it worsen symptoms in depressed patients—although an intact monoamine system is necessary for antidepressants to achieve therapeutic effectiveness (Delgado, 2000). A more recent hypothesis regarding the biological aetiology of depression conceptualises depression as a neurochemical stress reaction.

***Neuroendocrine regulation.*** Research attention has focused on depression as an overreaction of the neurochemical stress system, and particular emphasis has been placed on hypothalamic-pituitary-adrenal (HPA) axis dysfunction (Nemeroff, 1996, 1998). The HPA axis is a neuroendocrine system that plays a key role in the stress response. When either a physical or psychological threat is present, the hypothalamus increases production of corticotropin-releasing factor (CRF). CRF causes a secretion of adrenocorticotrophic hormone in the pituitary, which results in

cortisol release in the adrenal gland), thus preparing the body for either “flight or flight” (Nemeroff, 1998). Investigations reveal increased levels of the hormone cortisol and enlarged pituitary and adrenal glands in patients with MDD, suggesting disturbances of the endocrine system may play a role in MDD and some other psychiatric disorders. Oversecretion of CRF is thought to drive this, and is implicated in the cognitive and arousal symptoms (Monteleone, 2001).

Evidence that stressful experiences in early life may assist in the programming of the responsiveness of the HPA system to subsequent life stresses led Stokes (1995) to propose that, in some individuals, early life stressful experiences and, possibly, genetic predisposition may activate and program the HPA axis to respond excessively to subsequent life stress. This may be responsible for prolonged elevation of cortisol levels or hypercortisolaemia, which may damage the hippocampus and decrease the quantity of glucocorticoid receptors. Hippocampal damage may promote cognitive and learning deficits, and may potentiate and sustain the hyperactivation of the HPA axis through an increase in CRF production, which, in turn, could directly induce depressive-like symptoms. Furthermore, as cortisol reduces the availability of peripheral tryptophan to brain serotonin synthesis (Coppen & Doogan, 1988), persistent hypercortisolaemia may impair brain serotonergic transmission, whose functional integrity is essential for normal mood.

Shelton (2000) has outlined the potential relationship between adaptive elements of the stress response system and depressive symptoms. He characterises agitation, loss of appetite, anxiety, insomnia, and reduced sexual interest as immediate survival behaviour (hyperarousal or hypervigilance), whereas the adaptive mechanism of energy conservation may be seen in symptoms such as fatigue, hypersomnia, overeating, psychomotor retardation, and chronic inhibition of sexual behaviour. Shelton labels a third adaptive mechanism as behavioural disengagement or adaptive learning, which may present in depression as anhedonia, low motivation, or memory and concentration difficulties.

Although the conceptualisation of depression as an overreaction of the neurochemical stress system is compelling, it has been less consistently supported by studies in samples of children with MDD. Research with child populations has failed to show consistent HPA abnormalities, with many studies showing no difference in cortisol or ACTH levels between children and adolescents with and without



depression (Birmaher, Dahl, et al., 1992; Birmaher, Ryan et al. 1992; Dorn, et al. 1996; Kutcher et al., 1991; Puig-Antich et al., 1989).

The concept of brain plasticity suggests that dysregulation of neurochemistry results in alteration of brain structure or function. An understanding of the neurobiology of depression has also emerged from imaging studies.

***Neuroanatomical studies.*** MRI scans of patients with depression have reported a number of differences in brain structure compared to those without the illness. Although there is some inconsistency in the results, meta-analyses have shown strong evidence for smaller hippocampal volumes in MDD patients and increased numbers of white matter lesions in both MDD and BPD patients (Videbech, 1997; Videbech & Ravnkilde, 2004). White matter lesions, often localised in the frontal lobes and the basal ganglia, have been associated with patients with a late age of onset and have led to the development of the theory of cerebrovascular depression (Herrmann, Le Masurier, & Ebmeier, 2008).

The hippocampus plays a role in short-term memory and spatial navigation, but has also been implicated in mood and depression. The loss of hippocampal neurons found in some individuals with depression is thought to be particularly involved in some of the cognitive symptoms of depression, such as impaired memory. Research has found that the creation of new neurons, a process called neurogenesis, in the hippocampus may be necessary for recovery from depression (Minkel, 2007). Drugs may increase serotonin levels in the brain, stimulating neurogenesis and thus increasing the total mass of the hippocampus. This increase may help to restore mood and memory (Duman, Heninger, & Nestler, 1997; Sheline, Gado, & Kraemer, 2003). Similar relationships have been observed between depression and an area of the anterior cingulate cortex implicated in the modulation of emotional behaviour (Drevets, Savitz, & Trimble, 2008). One of the nerve proteins responsible for neurogenesis is the brain-derived neurotrophic factor (BDNF). There is evidence that the level of BDNF in the blood plasma of people with MDD is reduced compared to healthy control participants and that antidepressant medication increases the blood level of BDNF (Sen, Duman, & Sanacora, 2008).

***Neurofunctional studies.*** Functional neuroimaging techniques, which look at metabolism patterns of the brain at rest or when performing a task, have frequently reported reduced functioning in the prefrontal and cingulate regions which are implicated in cognitive control, and increased activity in the amygdala and other

limbic regions which are responsible for emotional processing and modulation (Abercrombie et al., 1998; Banks, Eddy, Angstadt, Nathan, & Phan, 2007; Drevets, Bogers, & Raichle, 2002; Drevets, Spitznagel, & Raichle, 1995; Mayberg et al., 1999; Sheline et al., 2001; Siegle, Thompson, Carter, Steinhauer, & Thase, 2007). Recently Smoski and colleagues (2009) found that reward processing in individuals with MDD is characterised by hyporesponsivity in striatal brain regions. In a follow-up study, Dichter, Felder, Petty, Bizzell, Ernst and Smoski (2009) reported that brief behavioural activation treatment for depression (Hopko, Lejuez, Ruggiero et al., 2003) was related to recovery of function in brain regions related to processing rewards, including the dorsal striatum during reward anticipation.

The most compelling integrated neurobiological model of depression describes disturbance in the reciprocal relationship between the cognitive/attentional networks in the brain and the regions responsible for processing emotion; this is termed the *limbic-cortical network* model (Mayberg, 2003). According to this model increased activity in limbic regions in conjunction with decreased dorsal cortical activity is the mechanism for depression. This model is consistent with integrative literature reviews which have advanced the hypothesis that limbic-cortical network dysregulation can account for the expression of bipolar disorder in part because of decreased prefrontal modulation of overactive limbic structures (Adler, DelBello, & Strakowski, 2006; Ketter et al., 2002; Strakowski, Delbello, & Adler, 2005).

### **Psychosocial approaches.**

***Life events and environmental stress.*** Numerous investigations have found a correlation between the occurrence of stressful life events and the subsequent onset of an episode of major depression. Poverty and social isolation are associated with increased risk of psychiatric problems in general (Raphael, 2000). Child abuse (physical, emotional, sexual, or neglect) is also associated with increased risk of developing depressive disorders later in life (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008). Disturbances in family functioning, such as parental (particularly maternal) depression, severe marital conflict or divorce, death of a parent, or other disturbances in parenting are additional risk factors (Raphael, 2000). In adulthood, stressful life events are strongly associated with the onset of major depressive episodes (Kessler, 1997); a first episode is more likely to be immediately preceded by stressful life events than are recurrent ones (Stroud, Davila, & Moyer, 2008).

Lack of social support is associated with depression, but there has been debate

as to whether the lack of social support may increase the likelihood that life stress will lead to depression, or the absence of social support may constitute a form of strain that leads to depression directly (Vilhjalmsson, 1993). There is evidence that neighbourhood social disorder, for example, due to crime or illicit drugs is a risk factor, and that a high neighbourhood socioeconomic status, with better amenities, is a protective factor (Kim, 2008). Adverse conditions at work, particularly demanding jobs with little scope for decision-making, are also associated with depression (Bonde, 2008).

Recent reviews indicate that individuals with bipolar spectrum disorders experience increased life events prior to first onsets and recurrences of mood disorders. Whereas negative life events precede the depressive episodes of bipolar individuals, both negative and positive life events precede hypomanic/manic episodes (Alloy et al., 2005; Alloy, Abramson, Smith, Gibb, & Neeren, 2006; Alloy Abramson, Walshaw, Keyser, & Gerstein, 2006; Alloy, Abramson, Walshaw & Neeren, 2006; Johnson, 2005; Johnson & Kizer, 2002). Recent evidence suggests that events involving goal striving or goal attainment specifically trigger hypomanic/manic symptoms and episodes (Johnson et al., 2000, 2008; Nusslock, Abramson, Harmon-Jones, Alloy, & Hogan, 2007). Another specific type of life event that has been found to trigger bipolar mood episodes is events that disrupt daily routines (e.g., mealtimes, sleep-wake times). Such events are hypothesised to trigger bipolar mood episodes through their effects on destabilising circadian rhythms (Ehlers, Frank & Kupfer, 1988; Grandin, Alloy, & Abramson, 2006; Healy & Williams, 1988).

***Psychodynamic theories.*** Early psychodynamic approaches focused on hypothesised intrapsychic forces that interact to shape a personality. Sigmund Freud, who is credited with inventing psychodynamic theory and psychoanalysis, suggested that the unconscious mind is divided into three parts: the id which is a representation of the primitive drives that seeks instant self-gratification, the super-ego which contains a representation of the rules and norms of society inside the mind and that criticises or punishes misbehaviour through guilt, and the rational ego which seeks to satisfy the id's drives in ways that will not have adverse consequences and will satisfy both the id and the super-ego (Freud, 1923/1961). According to Freud, the conscious and unconscious parts of the mind can come into conflict with one another, producing a phenomenon called repression. Repression is a state where

motives, wishes or desires are kept at a distance from consciousness because they are incompatible with the ego. In general, psychodynamic theories suggest that a person must successfully resolve early developmental conflicts (such as gaining trust, affection, successful interpersonal relationships, and mastering body functions) in order to overcome repression and achieve mental health. Mental illness, on the other hand, is a failure to resolve these conflicts.

In attempting to understand depression, Freud (1917/1984) proposed a relation between object loss and melancholia. Freud suggested that both mourning and depression involved the forced withdrawal of object cathexis—people, tasks, work or ideas in which a person has invested libidinal or “sexual” energy. Because this withdrawal is involuntary, it is experienced as a painful process against which the ego protests. The ego denies the loss and strives to find a substitute object—whether real or imaginary. In cases of successful recovery, the individual’s connection to the object begins to be severed and the libidinal energies that were directed from the ego to the object are displaced into alternative objects. In depression, the attempted recovery begins in a similar manner to mourning, with protest from the ego and search for a substitute object. However, failing to find a suitable replacement in the outside world and refusing to concede the object is lost, the ego draws within itself its own cathexes. The energy that was previously sent out from the ego, now returns to focus upon the ego. In depression, this is experienced as an increase in introspection and a decreased interest in the outside world. A critical judgement of the ego occurs based on its failure to live up to ideals. Simultaneously the ego is attacked by repressed emotions felt towards the lost object. Mania can occur when the ego suddenly triumphs, resulting in a sudden fresh availability of psychic energy which is directed outwards to the external world.

Psychodynamic theory has undergone much evolution over its history and many variations of Freud’s original theory have been suggested. For example, Melanie Klein (1935/1975, 1940/1975) viewed clinical depression as an inability to successfully work through the depressive position during childhood. She believed that infants perceive objects in the external world (such as their mother’s breast) as either all good or all bad. As a result of this splitting, the same object can be represented internally as both a gratifying good object and as a frustrating bad object, and the infant can have destructive and aggressive fantasies towards internalised bad objects. Later, as the infant realises that good objects and bad objects are actually

different qualities of the same object, the infant can experience anxiety that they could harm or drive away a person who they ambivalently love. Klein regarded depressed persons as fixated or stuck at a developmental level at which they are extraordinarily concerned that loved good objects have been destroyed by the greed and destructiveness they have directed to them. As a result of that fantasised destruction, depressed persons feel persecuted by the remaining hated bad objects. The worthless feeling that is characteristic of people with depression grows out of a sense that their good internal parents have been transformed into persecutors because of the person's destructive fantasies and impulses. Hence, in the Klein view, the self-reproach experienced by persons with depression is directed against the self rather than toward an internalised object, as in Freud's view. Klein regarded mania as a set of defensive operations designed to idealise others, deny any aggression or destructiveness toward others, and restore the lost love objects.

Another derivative of psychodynamic theory is the interpersonal theory of Meyer (1957) and Sullivan (1953) where social, cultural and interpersonal relationships are viewed as being largely responsible for mental illnesses. Sullivan stressed the use of interpersonal relationships to understand, assess and treat mental illness. Sullivan also indicated that life events and relationships occurring after the early childhood influence subsequent psychopathology. This contrasts with earlier psychodynamic theory which emphasised the primacy of early childhood events to the essential exclusion of later life history.

According to Coyne's (1976a) contemporary interpersonal theory, depression is a response to disruptions in the social field of the individual and maintained by the negative responses of significant others to the depressed person's symptomatic behaviour. Coyne postulated a sequence of behaviour that begins with the depressed person's initial demonstration of depressive symptoms, typically in response to an upsetting life event. Individuals in the depressed person's social environment respond immediately to these depressive symptoms with genuine concern and support. Then in an escalating cycle, depressed people start to make an increasing number of requests for reassurance, and the people to whom those requests are made start to become frustrated and negatively evaluate, avoid, and reject the depressed person (or become depressed themselves). Depressed people's symptoms then start to worsen as a result of other people's rejection and avoidance of them.

While there is support for some of the general assumptions of psychodynamic theories, such as depression is more likely to occur in individuals who have experienced unpleasant and traumatic experiences in childhood, a criticism of most psychodynamic theories is that the specific assumptions about the origins of depression have been disproved or lack empirical support (Eysenck, 2004). There is, however, a greater level of support for interpersonal theory. For instance, there is evidence that individuals with depression are rejected by important others in their social environment (Amstutz & Kaplan, 1987; Burchill & Stiles, 1988; Coyne, 1976b; Gotlib & Robinson, 1982; Gurtman, 1986; Hammen & Peters, 1977; Hokanson & Butler, 1992; Joiner & Barnett, 1994; Joiner & Melasky, 1995; Sacco & Dunn, 1990; Stephens, Hokanson, & Welker, 1987). However, there is some debate concerning the process that leads the depressed person to be rejected. Although some studies yield support for Coyne's hypothesis that others react to depressive behaviours with aversion and hostility (e.g., Coyne, 1976b; Coyne et al., 1987; Hokanson & Butler, 1992; Hokanson, Rubert, Welker, Hollander, & Hedeem, 1989; Sacco & Dunn, 1990), other studies fail to do so (e.g., Burchill & Stiles, 1988; Gotlib & Robinson, 1982; McNiel, Arkowitz, & Pritchard, 1987). Employing a communication theories analysis, Segrin and Abramson (1994) integrated empirical findings documenting social skills deficits in depression to argue that social rejection is the result of the depressive's failure to meet the basic communication needs of others.

***Existential and humanistic theories.*** Existential psychologists have connected depression to the lack of both meaning in the present (Frankl, 1962) and a vision of the future (May, 1994). Abraham Maslow, suggested that depression could arise when people are unable to self-actualise, or to realise their full potential (Maslow, 1971).

There is support for the notion that the sense that one's life is meaningful is (negatively) associated with depression and psychiatric illness (Crumbaugh & Maholick, 1964; Klinger, 1977). Also, that there is an association between the constructs of boredom and meaninglessness (Melton & Schulenber, 2007). However, humanistic theory has been criticised for generally lacking empirical evidence (Seligman & Csikszentmihalyi, 2000). For example, evidence is lacking that boredom and meaninglessness is a causal factor in depression. Also, Wahba and

Bridwell (1976) found a lack of adequate empirical evidence for Maslow's self-actualisation theory.

***Behavioural theories.*** Skinner (1953) hypothesised that depression was the result of a disruption (loss) of established positively reinforced behaviours. The notion that a lack of or reduction in positive reinforcement produces depression has been the foundation of most behavioural theories of depression.

Ferster (1966, 1973, 1981) emphasised that two behavioural patterns characterise the repertoire of the depressed person. First, there is a low rate of positively reinforced social behaviors, such as eye contact, verbal communication, and eating. Second, there is a high rate of escape and avoidance behaviors, such as complaining, ruminating, requesting help, suicidal behaviours, and withdrawal from activities that produce anxiety in the individual. Activities that are positively reinforced can come to occur less than those that are reinforced negatively through escape/avoidance. The person comes to mostly react to feelings of dysphoria, aversive interpersonal consequences, and other aversive stimuli. Such a passive repertoire prevents the individual from developing a broad set of positively reinforced behaviour that will keep him or her actively engaged and "living life to its fullest."

Ferster (1973, 1981) proposed several etiological factors that could account for the depressed repertoire. Two of these factors emphasised the development of a repertoire characterised by high rates of escape and avoidance behavior. Ferster hypothesised that people who are vulnerable to depression may have been raised in an environment characterised by negative reinforcement. For example, Ferster (1981) describes a parent who is depressed, occupied, or otherwise unresponsive to the hungry infant. In this situation the infant is likely to escalate his or her distress and that this escalation will result in the parent feeding the child in order to escape the aversive stimulation. If feeding or relief from an irritating nappy requires high-frequency, persistent behaviour, largely based on negative reinforcement, more playful, less compelling activities are pre-empted. The child may not play with the variations in the sounds they make, learn that they can sustain parent's tickling and handling by gurgling pleasurably, or watch the range of their own hands and feet from different perspectives. Such activities are the bases for children expanding their view of the environment and learning those features that indicate the availability of positive reinforcement. The parallel in adult life is social and physical

play not connected to the pressures of daily living. In the long term a cumulative deficit in the variety and amount of positively reinforced interactions is likely to be produced. Children and adults may behave according to his or her own deprivation and will not actively respond to the external environment whereby his or her behaviour will be positively reinforced. In extreme cases, the person's behaviour can become controlled primarily by negative reinforcement (i.e., the alleviation of the deprivation) and the passive style will continue. When experiencing major life changes or encountering a stressful event, rather than engaging in active problem solving, these individuals are more likely to cope with aversive feelings in a passive fashion involving escape and avoidance. When escape and avoidance are the primary functions of the person's behaviour, his or her repertoire of responses becomes very narrow. The individual may experience life as very limited, not finding pleasure in activities, and act as if there are no options for finding a way out of the vicious circle.

Ferster also suggested that frequent aversive control of an individual's behaviour could lead to the individual's very own behaviour becoming aversive as it precedes punishment or aversive stimuli. In this case any disposition to engage in such behaviour may result in anxiety that leads the individual to suppress their behaviour. Thus an individual is negatively reinforced for suppressing this behaviour. By way of illustration, Ferster (1981) describes a person with depression who acts aggressively toward someone whom he believes is responsible for causing interpersonal loss or rejection. This aggressive act is met with aggression or, by loss of the relationship, further isolation and ostracism which in turn evokes further anger and rage. These responses to the aggressive behaviour shapes the behaviour, by negative reinforcement, into a covert form. The person mutters the angry statement under his or her breath. In a more extreme form, the counter control drives the performance into such covertness that the person may be totally unaware of it. Pathological magnitudes of the process occur because of the establishment of a vicious circle whereby the more isolation and loss the person experiences, the more aggressive are his or her inclinations. Behavioural repertoires characterised by frequent suppression of anger will pre-empt other potentially positive modes of action that could be positively reinforced.

Ferster also proposed two etiological factors that emphasised low rates of positively reinforced behaviour. First, he emphasised that depressive reactions,



particularly the low rate of behaviour seen in depressed individuals, could result from fixed-ratio schedules that require a fixed and large amount of activity. Research with animals has revealed that such a schedule of reinforcement leads to long pauses after reinforcement and that these activities are particularly susceptible to weakening or loss (Ferster & Skinner, 1957; Skinner, 1938). An analogous situation might be a stable work situation for which a constant and unchanging amount of work activity and quality is required. This might provide the conditions for depression.

Finally, Ferster described how major life transitions and other changes in the environment could result in low rates of behavior, if the current environment no longer provides the relevant controlling stimuli. For example, the death of a loved one or a retirement may result in a substantial loss of positive reinforcers and a subsequent reduction in positively reinforced behaviour. It is also possible for a lack of connection to the environment to occur slowly as when the temporary supports and special treatment of childhood are withdrawn, paced with the child's chronological age and physical growth rather than with the development of the increasingly complex kinds of behaviour that the community requires.

Lewinsohn and his colleagues (e.g., Lewinsohn & Shaw, 1969; Lewinsohn, 1974; Lewinsohn, Youngren, & Grosscup, 1979) argued that a low rate of response-contingent positive reinforcement (RCPR) constitutes a sufficient explanation for most aspects of depression. According to Lewinsohn (1974), a low rate of RCPR produces a low rate of social and other behaviours because the lack of reinforcement effectively extinguishes the behaviours contingent on such reinforcement. In addition, the low rate of RCPR is assumed to act as an eliciting stimulus for additional depressive behaviours, such as dysphoria, fatigue, and other somatic symptoms. Finally, cognitive symptoms of depression such as low self-esteem, pessimism, and feelings of guilt are assumed to be secondary elaborations of other symptoms which have been elicited or evoked by the low rate of RCPR. In other words, the cognitive symptoms may be inaccurate causal explanations for the observed private and public experiences of depression. For example "I am sick" may be evoked by somatic symptoms, "I am unlikable" may be evoked by social isolation and poor interpersonal relations, and "I am bad" may be evoked by feelings of guilt.

Lewinsohn suggested that RCPR is a function of three factors. First, RCPR is a function of the number of events that are potentially reinforcing to the individual.

The number of these events should vary depending on the person's history and biological factors such as the individual's age and health. For example, watching a movie may be reinforcing for one individual, while going white-water rafting may be reinforcing for another individual. Yet another individual may be reinforced by both events, providing more opportunities for RCPR. If a person has a smaller number of potentially reinforcing events, or experiences a decrease in his or her capacity to enjoy positive events, then that person is more vulnerable to depression (see Costello, 1972).

Second, RCPR is a function of the availability of these reinforcing events in the environment. A person who is confined to home while recuperating from a long illness may have few available activities to engage in that are followed by reinforcement. The death or social exit of an individual who has formerly provided social reinforcement may also result in a loss of reinforcement.

Third, RCPR is a function of the skills the individual possesses to obtain reinforcement from his or her environment. A key feature of Lewinsohn's model is that a major source of depression-relevant RCPR is the individual's social environment. Consequently, Lewinsohn posited that depressed individuals may lack adequate social skills. Libet and Lewinsohn (1973, p. 304) defined social skill as "the complex ability both to emit behaviours which are positively or negatively reinforced, and not to emit behaviours which are punished or extinguished by others." An individual is considered to be socially skilful, therefore, to the extent that he or she elicits positive (and avoids negative) consequences from the social environment. Consequently, the final factor that influences rates of RCPR is whether or not the individual has in his or her repertoire the instrumental behaviour necessary to obtain positive reinforcement from others. For example, spending time with friends may be reinforcing to an individual, and friends may be potentially available, but if the individual does not possess the social skills necessary to acquire and maintain such friendships he or she may experience a low rate of RCPR.

There has been a great deal of empirical support for some of the basic assumptions of the behavioural theories. For instance, Lewinsohn and his associates have shown evidence of the relationship between mood and activity in a series of related studies. Specifically, dysphoric mood has been found to be negatively correlated with pleasant events. Most of these events require some behavioural response by the person (e.g., going to the park, having a conversation). Likewise,

unpleasant or aversive events have been positively correlated with negative mood (Grosscup & Lewinsohn, 1980; Lewinsohn & Amenson, 1978; Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972). More recently, Hopko, Armento, Cantu, Chambers, and Lejuez (2003) asked college students to record their behaviours every couple of hours each day for a week, and to rate each behaviour in terms of its immediate and future reward value. They found that nonclinical mildly depressed college students report participating in fewer behaviours perceived as rewarding in terms of both immediate pleasure and potential for these behaviours to result in more distal rewards compared to students without depression. Using similar diary methodology, Hopko and Mullane (2008) found support for the notion that depressive symptoms are associated with qualitative differences in overt behaviours. Relative to non-depressed individuals, mildly depressed college students engaged less frequently in social, physical, and educational behaviours and more frequently in employment-related activities. Individuals with depression also differ from individuals without depression on a variety of social skills that could be important for obtaining and maintaining the positively reinforcing aspects of social interactions (Coyne, 1976a; Joiner, 1997; Segrin & Abramson, 1994). Individuals with depression have been found to elicit less social reinforcement (Lewinsohn & Shaffer, 1971; Libet & Lewinsohn, 1973).

Not all aspects of Lewinsohn's behavioural theory have received empirical support. For instance, although unpleasant events do correlate with depression, neither pleasant nor unpleasant events predict future depression (Lewinsohn & Hoberman, 1982). This suggests that events alone are not a sufficient cause of depression. Also, the theory has difficulty accounting for individual differences in terms of who would become depressed when deprived of RCPR. This lack of support might at least in part be due to the historical lack of efficient, sensitive and valid methods of measuring key constructs in behavioural formulations of depression including negative reinforcement, RCPR, and an individual's reinforcement history (Armento & Hopko, 2007).

***Learned helplessness theory.*** In what is considered to be the definitive original demonstration of the learned helplessness theory of depression, Seligman and Maier (1967) placed three groups of dogs in harnesses. Dogs in the normal control group were simply put in the harnesses for a period of time and later released. A dog in the "escape" group was intentionally subjected to pain by being given

electric shocks, which it could end by pressing a lever that was placed close to its nose. A dog in the “yoked” control group was wired in parallel with a dog in the escape group, receiving shocks of identical intensity and duration, but his or her lever did not stop the electric shocks. To a dog in the yoked control group, it seemed that the shock was “inescapable” and ended at random, because it was his paired dog in the escape group that was causing it to stop. Normal control and escape group dogs quickly recovered from the experience, but yoked control dogs learned to be helpless, and exhibited symptoms similar to chronic clinical depression.

In part two of Seligman and Maier’s experiment, these three groups of dogs were tested in a shuttle-box apparatus, in which the dogs could escape electric shocks by jumping over a low partition. For the most part, the yoked control dogs, who had previously “learned” that nothing they did had any effect on the shocks, simply lay down passively and whined. Even though they could have easily escaped the shocks, the dogs did not try.

In a previous experiment, Overmier and Seligman (1967) ruled out the possibility that the yoked control group dogs learned some behaviour in part one of the experiment, while they were struggling in the harnesses against the “inescapable shocks,” that somehow interfered with what would have been their normal, successful, behaviour of escaping from the shocks in part two. When yoked control group dogs were immobilised with a paralysing drug (curare) and underwent a procedure similar to that in part one of the Seligman and Maier’s experiment they exhibited the same “helpless” response in the shuttle-box during the second part of the procedure. The possibility that this behavior is the result of adaptation to shock was also deemed unlikely, because it occurred even when escape/avoidance shocks were intensified.

Hiroto (1974) reported results that demonstrated a learned helplessness phenomenon in man, directly parallel to learned helplessness in dogs. One group of university students received aversive loud noise which they could control by pressing a button four times. A second group received uncontrollable noise that terminated independently of participant’s responding, and a third group received no noise. All groups then received controllable noise using a hand shuttle box. In the shuttle box, noise termination was controllable for all participants; to turn off the noise, participants merely had to move a lever from one side of the box to the other. As with animals, the typical participant in the group receiving prior uncontrollable noise

tended to sit and take the noise without responding, while the group receiving prior controllable noise as well as the group receiving no noise readily learned to shuttle.

Hiroto and Seligman (1975) conducted similar experiments with university students. They found that a group pretreated with four insoluble discrimination problems was debilitated at solving later anagrams relative to a control and soluble pretreated groups. This demonstrated that learned helplessness can be produced within cognitive tasks, without aversive unconditioned stimuli or instrumental components. They also found cross-modal helplessness. A group pretreated with insoluble cognitive problems was debilitated at instrumental escape to the same extent as the group pretreated with instrumental inescapability. Similarly a group pretreated with an inescapable tone was debilitated at anagram solution to the same extent as the group pretreated with four insoluble discrimination problems. This finding of cross-modal helplessness led Hiroto and Seligman to suggest that learned helplessness may involve a trait-like system of expectancies that responding is futile.

A similar effect can also be observed at an early age in humans. Watson and Ramey (1972) conducted an experiment with two groups of human babies. One group was placed into a crib with a sensory pillow, designed so that the movement of the baby's head could control the rotation of a mobile. The other group had no control over the movement of the mobile and could only enjoy looking at it. Later, both groups of babies were tested in cribs that allowed the babies to control the mobile. Although all the babies now had the power to control the mobile, only the group that had already learned about the sensory pillow used it.

Maier and Seligman (1976) proposed a learned helplessness hypothesis to account for the debilitating effects of experience with uncontrollability. The cornerstone of this hypothesis was that learning that outcomes are uncontrollable results in three deficits: motivational, cognitive and emotional. The hypothesis is "cognitive" in that it postulates that mere exposure to uncontrollability is not sufficient to render an organism helpless; rather, the organism must come to expect that outcomes are uncontrollable in order to exhibit helplessness. The motivational deficit consists of retarded initiation of voluntary responses and is seen as a consequence of the expectation that outcomes are uncontrollable. If the organism expects that its responses will not affect some outcome, then the likelihood of emitting such responses decreases. Second, the learned helplessness hypothesis argues that learning that an outcome is uncontrollable results in a cognitive deficit

since such learning makes it difficult to later learn that responses produce that outcome. Finally, the learned helplessness hypothesis claims that depressed affect is a consequence of learning that outcomes are uncontrollable.

The parallels between learned helplessness in animals and humans and depression is obvious. The analogy was further supported by the finding that human participants who were already depressed before experiments started, performed poorly in anagram puzzles whether they experienced inescapable noise or not. These participants presumably required no special technique to render them helpless. They were already helpless—and hence depressed—before the experiment began (Klein & Seligman, 1976; Miller & Seligman, 1975). Some further similarities between learned helplessness and depression concern the effects of certain antidepressant drugs. These drugs have a similar effect on animals rendered helpless: the helplessness disappears and the animals behave much like normals (e.g., Porsolt, LePichon, & Jalfre, 1977).

However, the original theory of learned helplessness failed to account for people's varying reactions to situations that can cause learned helplessness (Peterson & Park, 1998). For instance not all humans became helpless. Also, learned helplessness sometimes remains specific to one situation (Cole & Coyne, 1977), but at other times generalises across situations (Hiroto & Seligman, 1975). An individual's attributional or explanatory style was suggested as the key to understanding why people respond differently to adverse events (Peterson & Seligman, 1984). Although a group of people may experience the same or similar negative events, how each person privately interprets or explains the event will affect the likelihood of acquiring learned helplessness and subsequent depression (Abramson, Seligman, & Teasdale, 1978). The precipitating factor may be some personal catastrophe—rejection, bankruptcy, physical disease, the death of a loved one. People with a pessimistic explanatory style—which sees negative events as stable (“it will never change”), due to internal (“it's my fault”), and global (“it will affect everything”) factors—are most likely to suffer from learned helplessness and depression (Peterson, Maier, & Seligman, 1993). Abramson, Metalsky, and Alloy (1989) presented a revision of the 1978 reformulated theory of helplessness and depression, which they called the *hopelessness theory of depression* (see also Abramson, Alloy, & Hogan, 1997). According to this theory, people who exhibit a depressogenic inferential style, in which they characteristically attribute negative life

events to stable (likely to persist over time) and global (likely to affect many areas of life) causes, infer that negative consequences will follow from a current negative event, and infer that the occurrence of a negative event in their lives means that they are fundamentally flawed or worthless, are hypothesised to be vulnerable to developing episodes of depression when they confront negative life events. In particular, such individuals are hypothesised to be vulnerable to a specific subtype of depression referred to as hopelessness depression. According to the hopelessness theory of depression, the expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur and that one cannot change this situation is a proximal sufficient cause of the symptoms of hopelessness depression. Also, any therapy that restores hopefulness should be effective in remediating current symptoms of hopelessness depression. In contrast, modifying cognitive vulnerability may be important in prevention of future episodes of hopelessness depression.

Consistent with the cognitive vulnerability hypothesis of the hopelessness theory, individuals without depression exhibiting the aforementioned thinking patterns were significantly more likely to exhibit a lifetime history of depressive episodes (Alloy et al., 2000). Additionally, there is evidence that the tendency to report these types of thinking patterns prospectively predicts depression onset and a worse course of depression (Alloy et al., 2006; Alloy et al., 1999; Iacoviello, Alloy, Abramson, Whitehouse, & Hogan, 2006).

***Cognitive theories.*** Whereas Seligman's and the hopelessness theory of depression grew out of studies on animal learning, a related cognitive account proposed by Aaron Beck grew out of clinical observations of depressed patients (Beck, 1963, 1964, 1976). Beck proposed three concepts which underlie depression: negative automatic thoughts, distorted information processing, and recurrent patterns of depressive thinking or schemas. Many of the spontaneous or automatic thoughts of people with depression are negative. Such negativity focuses on the self, the world and the future: the negative cognitive triad. People suffering from depression tend to see themselves as defective or inadequate, and see the world as presenting them only with insurmountable obstacles and difficulties. They see such problems persisting indefinitely into the future and are pessimistic to the point of hopelessness and perhaps suicidal wishes. When these negative automatic thoughts come to mind, they trigger feelings of misery and despair and depressive behaviour such as procrastination and inactivity.

The negative content of thinking manifest in these negative automatic thoughts results in part from certain biases or distortions in the processing of information. These biases maintain a patient's beliefs in the validity of his or her negative thoughts despite the presence of contradictory evidence (see Beck, 1967). These biases include arbitrary inference, selective abstraction, overgeneralisation, magnification and minimisation, personalisation and dichotomous thinking (Beck et al., 1979). Arbitrary inference or jumping to conclusions refers to the process of drawing a negative conclusion that may not be justified by the evidence. For instance when a friend fails to say hello when passing in the street because she is so absorbed in her thoughts, a patient concludes that she must be ignoring him and no longer likes him. Selective abstraction consists of focusing on a negative detail taken out of context, ignoring the more salient features of the situation and conceptualising the whole experience on the basis of this fragment. Overgeneralisation refers to the pattern of drawing a general rule or conclusion on the basis of one or more isolated incidents and applying the concept across the board to related and unrelated situations. For instance, a student might regard his poor performance in a single class on one particular day as proof of his or her stupidity. Magnification and minimisation are reflected in errors in evaluating the significance or magnitude of an event that are so gross as to constitute a distortion. For instance a mistake is viewed as a "catastrophe." Personalisation refers to the tendency to relate external events to him or herself when there is no basis for making such a connection. Dichotomous or all-or-nothing thinking is the tendency to put all experiences in one of two opposite categories; for example, perfect or defective, smart or stupid. In describing oneself, the patient selects the extreme negative categorisation (Beck et al., 1979).

Schemas are longstanding cognitive patterns that predate the onset of the episode of depression and whose activation results in cognitive biases and automatic thoughts. Certain conditional beliefs or assumptions can cause people to be vulnerable to depression. These conditional beliefs typically set out the conditions that must be satisfied for the person to adopt a sense of worth, fulfillment or happiness. Common conditional beliefs include "Unless you can do something properly then there is no point in doing it at all," "If I make a mistake, people will lose respect for me," "If anyone criticises or rejects you, it shows you are an unlikeable person" and "You cannot be happy unless you are loved by others." These conditional beliefs are similar to quite functional beliefs held by many people,



in that most people would prefer to do things well, to be loved and respected and not criticised or rejected. However, they are unhelpful in their extremity or the rigidity with which they are applied to situations where the conditions are perceived as not being met (James, Southam, & Blackburn, 2004; Moore & Garland, 2003).

In the cognitive model of depression, these conditional beliefs are thought to develop through early life experiences. For instance, where parents have been excessively critical, the child may internalise the implicit rule that being valued only comes from perfect performance. This assumption may become dormant during parts of adult life where any endeavours are met with a reasonable degree of success. However, any notable failures activate the latent assumption and the person becomes sensitised to any signs of falling short of their perfectionistic standard (Beck et al., 1979).

There is strong support for the cognitive triad hypothesis that depressed people think more negatively about themselves, the world, and the future (for a review see Haaga, Dyck, & Ernst, 1991). The evidence also appears generally supportive of a systematic negative attentional and recall bias in laboratory experiments during depressive episodes (Clark, Beck, & Alford, 1999; Haaga et al., 1991; Ingram & Holle, 1992), and in formerly depressed patients when appropriate priming procedures are employed (Clark et al., 1999; Ingram, Miranda, & Segal, 1998; Segal & Ingram, 1994). However, the evidence is more mixed for cognitive distortions. While evidence of cognitive distortions have been found in depressed populations (Gotlib, 1981, 1983), research with dysphoric populations has failed to find differences in the accurate processing of information (Dykman, Horowitz, Abramson, & Usher, 1991; Haack, Metalsky, Dykman, & Abramson, 1996). For example, both dysphoric and nondepressed individuals appear to use objectively valid situational information in making attributions for success and failure experiences (Haack et al., 1996). Further, the research on depressive realism suggests that dysphoric individuals' judgments of contingency between performance and outcome are more accurate than were nondepressed people, who possess an "illusion of control" (Alloy & Abramson, 1979, 1988; for a review see Ackermann & DeRubeis, 1991). These findings have led some to argue for reformulations of Beck's theory emphasising that what distinguishes cognition is negative thought content, not inaccuracy or distorted thought processes per se (Allan, Siegel & Hannah, 2007; Haaga & Beck, 1995). Finally, there is evidence that individuals

holding dysfunctional attitudes concerning the need to be perfect or gain others' approval are significantly more likely to exhibit a lifetime history of depressive episodes (Alloy et al., 2000). Additionally, there is evidence that the tendency to report these beliefs prospectively predicts depression onset and a worse course of depression (Alloy et al., 1999; Alloy et al., 2006; Iacoviello et al., 2006).

***Self-control theory.*** Rehm's (1977) self-control theory of depression attempted to integrate behavioural and cognitive aspects of the disorder by formulating it from the viewpoint of Kanfer's (1970) model of self-control. From this perspective, specific deficits in self-monitoring, self-evaluation, and self-reinforcement may explain the various aspects symptoms of depression. First, with respect to self-monitoring, depressed individuals selectively attend to negative events that follow their behaviour, to the relative exclusion of positive events—a cognitive style that might account for the pessimistic outlook of depressed individuals. Second, depressed persons selectively attend to immediate consequences of their behaviour, to the relative exclusion of delayed outcomes; therefore, they cannot look beyond present demands when making behavioural choices. The third deficit in the self-control behaviour of depressed persons involves self-evaluation—a comparison between an estimate of performance (which derives from self-monitoring) and an internal criterion or standard. Rehm suggested that depressed individuals set very high standards for themselves, making goal attainment improbable. As a consequence, they often do not succeed in reaching their goals, and therefore evaluate themselves negatively. Depressed persons may also manifest a self-evaluation deficit with respect to their style of attribution. Rehm hypothesised that depressed persons may fail to make accurate internal attributions of causality such that they become helpless and self-denigrating. If their performance is successful, for example, depressed persons may attribute their success to external factors such as luck and the simplicity of the task, thereby refusing to take credit for their success. Similarly, depressed persons may attribute the cause of an unsuccessful performance to internal factors such as lack of skill and effort, thus taking excessive responsibility for failure. Finally, Rehm (1977) suggested that depressed persons fail to administer sufficient contingent rewards to themselves to maintain their adaptive behaviours. This low rate of self-reward may account in part for the slowed rates of overt behaviour, the lower general activity level, and the lack of persistence that typify depression. In addition, depressed persons are hypothesised to administer excessive

self-punishment, which suppresses potentially productive behaviour early in a response chain, resulting in excessive inhibition.

Evidence consistent with the self-control theory has taken the form of results showing that individuals with depression reward themselves less and are significantly more self-critical than individuals without depression (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Lobitz & Post, 1979; Roth & Rehm, 1980; Rozensky, Rehm, Pry, & Roth, 1977). However the evidence regarding the proposed individual differences in the other self-regulatory variables is mixed. Research employing attitudinal or trait-like measures of perfectionism have found an association with dysphoric and depressive states (Flett, Hewitt, & Mittelstaedt, 1991; Hewitt & Dyck, 1986; Hewitt & Flett, 1991, 1993). Other investigators employing different attitudinal measures of goal stringency have found no relation between high standards and dysphoria (Carver & Ganellen, 1983; Carver, la Voie, Kuhl, & Ganellen, 1988).

***Problem-solving theory.*** Nezu and his colleagues (e.g., Nezu, 1987; Nezu, Nezu, & Perri, 1989) have attempted to integrate existing psychological theories of depression by articulating a formulation of depression that implicates ineffective problem solving skills. According to Nezu's (1987) formulation, depression can result from deficiencies in any or all of five major components of problem solving: problem orientation, problem definition and formulation, generation of alternatives, decision making, and solution implementation and verification. For example, individuals who experience difficulty with problem orientation may appraise a situation as a "threat" rather than as a "challenge," or may attribute the cause of the problem to internal, stable, and/or global factors. Similarly, individuals who are deficient in generating alternatives may generate a restricted range of alternatives, or may generate less effective alternatives than do their more skilful counterparts.

Regardless of the specific problem-solving deficit, Nezu (1987) suggests that the onset of depression occurs when an individual is confronted with a difficult situation. Nezu argues that if these problematic situations are not resolved, negative consequences are likely to occur, resulting in a decrease in both personal and social reinforcement. To the extent that the individual experiences deficits in problem-solving skills, the resulting depressive episode will be severe and long-lasting. Finally, Nezu also contends that deficits in problem-solving ability will increase

relapse rates, because of the high probability of problems occurring in the future and remaining unresolved.

In support of this theory, a number of investigations have demonstrated an association between problem-solving deficits and depressive symptomatology, both in adults (e.g., Fossati, Ergis, & Allilaire, 2001; Gotlib & Asarnow, 1979; Marzuk, Hartwell, & Portera, 2005; Murphy et al., 2001) and in children (e.g., Sacco & Graves, 1984).

***Response styles theory.*** According to the response styles theory of depression, rumination is a mode of responding to distress that involves repetitively and passively focusing on symptoms of distress and on the possible causes and consequences of these symptoms. Rumination does not lead to active problem solving to change circumstances surrounding these symptoms. Instead, people who are ruminating remain fixated on the problems and on their feelings without taking action (Nolen-Hoeksema, 1991).

According to the response styles theory, rumination exacerbates and prolongs distress, particularly depression, through several mechanisms. First, rumination enhances the effects of depressed mood on thinking, making it more likely that people will use the negative thoughts and memories activated by their depressed mood to understand their current circumstances. Second, rumination interferes with effective problem solving, in part by making thinking more pessimistic and fatalistic. Third, rumination interferes with instrumental behaviour, leading to increases in stressful circumstances. In addition, Nolen-Hoeksema and Davis (1999) argued that people who chronically ruminate will lose social support, which in turn will fuel their depression. These consequences of rumination then make it more likely that the initial symptoms of depression will become more severe and evolve into a depressive episode.

In support of response styles theory are studies which have shown that rumination is associated with the experience of depressive symptoms (e.g., Morrow & Nolen-Hoeksema, 1990; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990) and that rumination in the context of depressed mood or MDD is associated with more negative thinking (Lavender & Watkins, 2004; Lyubomirsky, Caldwell, Nolen-Hoeksema, 1998), poorer problem solving (Lyubomirsky & Nolen-Hoeksema, 1995; Watkins & Baracaia, 2002), diminished instrumental behaviour (Lyubomirsky, Kasri, Chang, & Chung, 2006; Lyubomirsky & Nolen-Hoeksema, 1993), and

reduced social support (Nolen-Hoeksema & Davis, 1999; Schwartz & McCombs, 1995).

Nolen-Hoeksema (1991) originally suggested that rumination should predict the duration of depressed mood or depressive episodes more than it should predict their onset. However, rumination scores have not been found to consistently predict the duration in people already meeting the criteria for depression (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema, 2000). It has been suggested that the failure to find this prediction might be due to the fact that samples of already-depressed people may be relatively homogenous for rumination, reducing variance in scores and thus reducing the statistical power for rumination to predict duration of depression. An alternative possibility is that rumination contributes to an individual “crossing the line” from dysphoria into a depressive episode, but once an individual has a depressive episode, other autonomous self-perpetuating processes emerge that determine the duration of the episode (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

The original response styles theory argued that using positive distractions was an adaptive alternative to rumination and suggested that these response styles were unrelated, if not in direct opposition (Nolen-Hoeksema, 1991). However, some studies have found that distraction is negatively correlated with depression and rumination (Bagby & Parker, 2001), some studies have found that distraction is positively correlated (Schmaling, Dimidjian, Katon, & Sullivan, 2002), and other studies have found that distraction is uncorrelated (Kuehner & Weber, 1999). Nolen-Hoeksema and colleagues (2008) have suggested that this inconsistency might be due to how distraction has been measured. Most distraction scales (including the distraction subscale of the Response Styles Scale developed by Nolen-Hoeksema & Morrow, 1991) reflect the range and frequency of engaging in distracting activities rather than whether distraction is employed successfully (by absorbing themselves fully in these activities).

***Cognitive-behavioural theories of Bipolar Disorder.*** Similar to the cognitive model of depression, cognitive-behavioural approaches to BPDs emphasise a diathesis-stress biopsychosocial model and focus on the importance of maladaptive beliefs and automatic thoughts. They have focused on evidence suggesting that psychosocial stressors and adverse cognitive styles interact with an inherent biological vulnerability to produce manic and depressive episodes (Newman, Leahy,

Beck, Reilly-Harrington, & Gyulai, 2002). Recent theories have suggested that biological vulnerability to BPD may result from dysregulation in the hypothetical neurobiological motivational system, the behavioural approach system (BAS; Depue & Iacono, 1989; Depue, Krauss, & Spont, 1987; Johnson, 2005; Urosevic, Abramson, Harmon-Jones, & Alloy, 2008). Activation of the BAS by signals for reward is thought to cause a person to increase approach motivation and movement toward attainment of goals, as well as cognitive processes (e.g., hope, self-efficacy, planning) aimed at promoting goal attainment. BAS activation is also hypothesised to be associated with happiness and elation (Depue & Iacono, 1989; Gray, 1994), and anger (Carver, 2004; Harmon-Jones & Allen, 1998; Harmon-Jones & Sigelman, 2001).

According to BAS dysregulation theories, individuals vulnerable to BPD are unable to effectively regulate their emotions and behaviour because an overly sensitive BAS renders them excessively responsive to BAS-relevant events. Events involving goal striving and attainment, reward incentive, and anger evocation result in excessive BAS activation potentially leading to hypomanic/manic symptoms, such as elation, excessive goal-seeking behaviour and optimism, decreased need for sleep, and irritability. In contrast, events involving failure and nonattainment of goals result in excessive BAS deactivation or shutdown of behavioural approach, leading to depressive symptoms of sadness, low energy, anhedonia, and hopelessness. Even quite minor BAS-relevant events may be sufficient to trigger bipolar mood episodes in individuals with highly sensitive BAS temperaments (Depue & Iacono, 1989; Depue et al., 1987; Johnson, 2005; Urosevic et al., 2008).

In support of the BAS dysregulation theory are longitudinal studies which have found evidence that BAS sensitivity predicts bipolar mood episodes. For example, Salavert et al. (2007) found that over an 18-month follow-up BP-I patients who relapsed with a hypomanic/manic episode had higher, and those who relapsed with a depressive episode had lower, BAS sensitivity at Time 1 than patients who remained asymptomatic. Also, Alloy et al. (2008) found that higher Time 1 BAS sensitivity predicted a shorter time to onset of hypomanic/manic episodes among individuals with bipolar spectrum disorders over a three-year follow-up. In both these studies BIS and BAS sensitivity was measured using self-report measures. These measures included items related to reactions to the anticipation of punishment, responses to the occurrence or anticipation of reward, the persistent pursuit of desired goals, and the

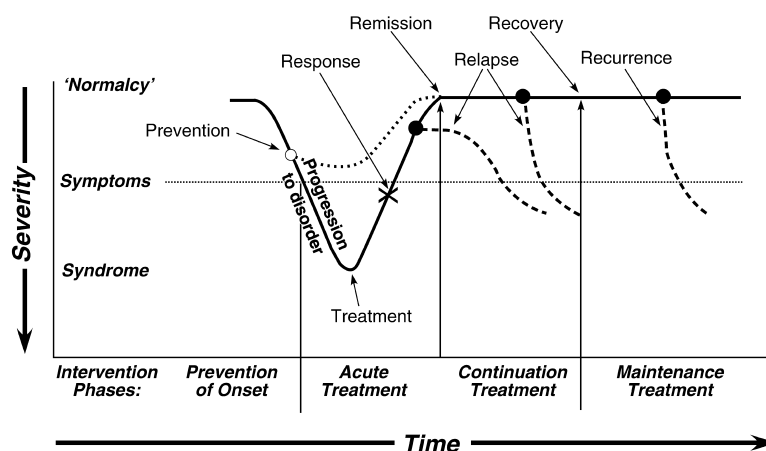
desire for new rewards and a willingness to approach potentially rewarding events on the spur of the moment (Carver & White, 1994; Torrubia, Avila, Molto, & Caseras, 2001).

Cognitive-behavioural models emphasise that an individual's cognitive style and behavioural coping strategies in response to stressful life events mediates the extent to which the biological vulnerability is expressed in a full-blown bipolar episode. Consistent with this has been the finding that euthymic individuals with BPD exhibit a unique profile of maladaptive cognitive styles characterised by perfectionism, autonomy, self-criticism, and extreme goal-striving and not by maladaptive dependency, approval-seeking, or attachment attitudes typically observed among unipolar depressed individuals (Alloy et al., 2009; Goldberg Gerstein, Wenze, Welker, & Beck, 2008; Lam, Wright, & Smith, 2004; Rosenfarb, Becker, Kahn, & Mintz, 1998; Scott, Stanton, Garland, & Ferrier, 2000). Also in a longitudinal study, Reilly-Harrington, Alloy, Fresco and Whitehouse (1999) reported that negative attributional styles increased vulnerability to both manic and depressive symptoms following stressful life events. In another longitudinal study, Alloy et al. (2009) found that higher autonomy and self-criticism predicted a greater likelihood of hypomanic/manic episodes, and higher autonomy predicted a lower likelihood of major depressive episodes. These findings provide some support for the notion that certain cognitive styles may influence the course of mood episodes.

### **Course of Mood Disorders and Phases of Treatment**

Figure 2 depicts the prototypic course of an episode of mood disorder and the associated phases of treatment (Kupfer, 1991). The *acute phase of treatment* covers the period from the start of treatment until the point when the reduction of symptoms is considered acceptable. *Response* is defined as a significant reduction in symptom severity (typically 50%), such that the patient no longer meets criteria for the disorder (Frank et al., 1991). *Remission* is a more complete response, defined as a reduction of symptom intensity to a level within the range of a never-ill population. *Relapse* refers to the return of symptoms associated with the treated episode. Treatment may suppress symptoms early on, but these symptoms are likely to reemerge if treatment is discontinued before the underlying episode has been resolved. Extending treatment past the point of remission for the purpose of preventing relapse is called *continuation treatment*. It is not clear how long it takes for the underlying episode to completely resolve. The risk for symptom return is

highest during the first few months following initial remission and decreases over time in a manner that tracks the length of time it would have taken the episode to remit spontaneously in the absence of treatment (Reimherr et al., 1998). *Recovery* refers to the resolution of the underlying episode, either because it has run its course or as a consequence of treatment. By convention, the return of symptoms following recovery is called a *recurrence* and is considered to represent the onset of a wholly new episode. Extending treatment beyond the point of recovery for the purpose of preventing recurrence is called *maintenance treatment* (Frank et al., 1991).



*Figure 2.* Phases of treatment of depression. The solid line represents the course of a prototypical episode of depression, the dotted line represents normalisation that occurs if the ongoing episode is prevented, and the dashed lines represent the return of symptoms associated with relapse and recurrence. From “Treatment and prevention of depression,” by S. D. Hollon, M. E. Thase, and J. C. Markowitz, 2002, *Psychological Science in the Public Interest*, 3, p. 42. Copyright 2002 by the American Psychological Society. Reprinted with permission.

### Treatment Approaches for MDD

The three most common treatment approaches for MDD are pharmacotherapy, physical treatments and psychological and behavioural treatments. Below is a brief review of the most empirically supported treatments belonging to these different categories.

#### Pharmacotherapy.

Most antidepressants fall into three classes: monoamine oxidase inhibitors (MAOIs), tricyclic antidepressants (TCAs), and selective serotonin reuptake inhibitors (SSRIs; Thase & Kupfer, 1996). The MAOIs were some of the first antidepressant medications to be identified. These medications inhibit monoamine



oxidase, an enzyme that breaks norepinephrine and serotonin down, thus allowing a greater supply of these neurotransmitters to remain available. The TCAs, named after their chemical structure, inhibit the nerve cell's ability to reuptake serotonin and norepinephrine, thus allowing a greater amount of these two substances to be available for use by nerve cells. The SSRIs block the presynaptic serotonin transporter receptor. This drug differs from the TCAs in that its action is specific to serotonin only. Its effect on norepinephrine is indirect, through the fact that falling serotonin "permits" norepinephrine to fall so preserving serotonin preserves norepinephrine (Thase & Kupfer, 1996).

SSRIs, such as citalopram, escitalopram, fluoxetine, paroxetine, and sertraline, are the primary medications prescribed owing to their effectiveness, relatively mild side effects, and because they are less toxic in overdose than other antidepressants (Thase & Kupfer, 1996). A recent meta-analysis of 117 randomised controlled trials (RCTs) that used 12 second generation antidepressants (i.e., antidepressants that were introduced in the 1970s and 1980s) found that escitalopram and sertraline were the most efficacious and acceptable, and that sertraline, one of the early second-generation antidepressants, had the most favourable overall balance between benefits, acceptability, and cost (Cipriani et al., 2009). Antidepressants have been shown to improve response and remission compared to placebo. In a meta-analysis of 75 short-term RCTs, intention-to-treat response rates were about 50% on antidepressants compared with 30% on placebo (Walsh, Seidman, Sysko, & Gould, 2002). The likelihood of eventual response decreases if there has been no improvement by 4 weeks treatment with only around 20% chance of remission at 12 weeks if there has been no improvement by 6 to 8 weeks (Nierenberg et al., 2000; Nierenberg, McLean, Alpert, & Worthington, 1995). Patients who do not respond to an antidepressant can be switched to another, including one in the same class, this results in improvement in 12 to 70% of cases (Anderson et al., 2008). The only switch strategy with some evidence of enhanced efficacy is from an SSRI to the TCA, venlafaxine (Ruhe, Huyser, Swinkels, & Schene, 2006). Antidepressant medication treatment is usually continued for 16 to 20 weeks after remission, to minimise the chance of recurrence (Karasu, Gelenberg, Merriam, & Wang, 2000). People with chronic depression may need to take medication indefinitely to avoid relapse (National Institute of Mental Health, 2008). Antidepressants of all types have shown limited efficacy in juvenile depression, but fluoxetine might be more

effective, especially in adolescents (Tsapakis, Soldani, Tondo, & Baldessarini, 2008).

Antidepressants differ in their side-effect profile, their potential to interact with other drugs and in safety in overdose. SSRIs and TCAs show a different side-effect profile with significantly more nausea, diarrhoea, anorexia and stimulatory side effects (agitation, insomnia and anxiety) on SSRIs and more antimuscarinic side effects (dry mouth, constipation, blurred vision, urinary disturbance), dizziness and sweating on TCAs. SSRIs are slightly better tolerated than TCAs overall (Anderson, 2001). MAOIs are dangerous in overdose, have potentially life-threatening dietary and drug interactions, and toxic effects including hypertensive crisis (Bateman, 2007). They are still occasionally used, and newer and better tolerated agents of this class have been developed (Krishnan, 2007). Common strategies for managing the side effects from antidepressants include reducing the dose, slower titration, switching antidepressant to a drug with less tendency to cause that side effect, non-drug management and symptomatic treatment with another drug (Anderson et al., 2008).

The term treatment-resistant depression is used to describe cases that do not respond to adequate courses of at least two antidepressants (Wijeratne & Sachdev, 2008). In these cases a medication with a different mode of action may be added to bolster the effect of the antidepressant (Valenstein et al., 2006). Medication with lithium salts has been used to augment antidepressant therapy in those who have failed to respond to antidepressants alone (Bosch & Bauer, 2006). Addition of a thyroid hormone, triiodothyronine may work as well as lithium, even in patients with normal thyroid function (Nierenberg, et al., 2006). Addition of atypical antipsychotics is also known to increase the effectiveness of antidepressant drugs, although increased side effects are associated with this approach (Bender, 2008).

The effectiveness of antidepressants continues to be questioned. Meta-analyses of antidepressant medications have reported only modest benefits over placebo treatment, and when unpublished data are included, the benefit falls below accepted criteria for clinical significance (Kirsch et al., 2008). A bias in the publication of studies showing antidepressant efficacy compared to studies which do not support efficacy may have inflated or created the apparent efficacy of antidepressants over placebo (Turner, Matthews, Linardatos, Tell, & Rosenthal, 2008). However, antidepressants effectiveness has been shown to increase with the

severity of the depression. The benefit may be minimal or nonexistent, on average, in patients with mild or moderate symptoms, but substantial for patients with very severe depression (Fournier et al., 2010; Kirsch et al., 2008).

The effects of prescription antidepressants for MDD may be comparable to those of psychological treatments, although more patients cease medication than cease psychological treatments, most likely due to side effects from the medication (Cuijpers, van Straten, van Oppen, & Andersson, 2009). Patients generally prefer psychotherapy to antidepressants, and although allocation by patient preference has not found any difference in outcomes between the two there may be a more rapid improvement if treatment is matched to treatment preference (Lin et al., 2005; van Schaik et al., 2004). Another consideration is that a naturalistic study found antidepressants to be the most cost-effective strategy for the majority of patients (Miller et al., 2003).

#### **Physical treatments.**

***Electroconvulsive therapy.*** Electroconvulsive therapy (ECT) is a procedure whereby grand mal seizures are electrically induced in anaesthetised patients. ECT can have a quicker effect than antidepressant therapy and for this reason may be the treatment of choice in the emergency situation when symptoms are severe including intense and persistent suicidality, psychomotor retardation and/or psychotic symptoms are prominent, and where there is reduced fluid intake leading to clinically significant dehydration (Karasu et al., 2000). It is thought that ECT works by eliciting or provoking compensatory central nervous system mechanisms that regulate the same neurotransmitter systems affected by antidepressant medications. ECT is probably more effective than pharmacotherapy for depression in the immediate short-term (Carney et al., 2003), although a community-based study found much lower remission rates in routine practice (Prudic, Olfson, Marcus, Fuller, & Sackeim, 2004). Used on its own the relapse rate is very high, but this may be reduced by continuation therapy with an antidepressant. In placebo-controlled relapse prevention RCTs following ECT there is a 65 to 84% relapse rate on placebo over 6 months contrasting with 18 to 60% on a TCA alone, 26% on paroxetine and 39% on nortriptyline and lithium (Lauritzen et al., 1996; Sackeim et al., 2001; van den Broek, Birkenhager, Mulder, Bruijn, & Moleman, 2006). The main drawback of treatment with ECT is short-term, and probably longer-term, impairments in cognitive functioning (Rose, Wykes, Leese, Bindman, & Fleischmann, 2003). For

this reason ECT remains a controversial treatment, and debate on the extent of cognitive effects and safety continues (Ingram, Saling, & Schweitzer, 2008; Reisner, 2003).

***Repetitive transcranial magnetic stimulation.*** Repetitive transcranial magnetic stimulation (rTMS) involves focal stimulation of the superficial layers of the cerebral cortex using a rapidly changing magnetic field applied using an external coil. rTMS appeared similarly effective for both uncomplicated depression and depression resistant to medication (Schutter, 2008); however, it was inferior to ECT in a side-by-side randomised trial (Eranti et al., 2007). There are few RCT data describing efficacy and relapse rates beyond the acute treatment phase (Anderson et al., 2008).

***Vagus nerve stimulation.*** Stimulation of the left vagus nerve appears to be more effective than usual treatment in the medium term for chronic treatment resistant depression of at least moderate severity with good stability of response over two years (George et al., 2005; Sackeim et al., 2007). Despite the promising results reported mainly in open studies, further clinical trials are needed to confirm the efficacy of vagus nerve stimulation for MDD (Daban, Martinez-Aran, Cruz, & Vieta, 2008).

### **Psychological and behavioural treatments.**

***Cognitive behaviour therapy.*** The most studied form of psychotherapy for depression is cognitive behaviour therapy (CBT). CBT includes a number of therapeutic approaches that share a theoretical basis in behavioural learning theory and cognitive psychology (Grazebrook & Garland, 2005). Some of the most well known include cognitive therapy (CT; Beck, 1964, 1970), rational emotive behaviour therapy (Ellis, 1957; 1962) and multimodal therapy (Lazarus, 1973). The particular therapeutic techniques vary within the different approaches, but commonly include keeping a diary of significant events and associated feelings, thoughts and behaviours; questioning and testing thoughts and beliefs that might be unhelpful and unrealistic; gradually participating in activities which may have been avoided; and trying out new ways of behaving and relating to others. Relaxation, mindfulness and distraction techniques are also commonly included.

A recent meta-analysis concluded that CBT has acute efficacy when compared to waiting list/drug placebo in adults diagnosed with depression (17 studies, effect size 0.77; Haby, Donnelly, Corry, & Vos, 2006). A meta-analysis found modest

positive effects for CBT in children and adolescents in small studies against active control/waiting list (six studies, effect size 0.41; Haby, Tonge, Littlefield, Carter, & Vos, 2004). A meta-analysis of seven trials in the elderly found that CBT was more effective than waiting list controls and superior to active control conditions (Wilson, Mottram, & Vassilas, 2008). A meta-analysis of 89 studies in the elderly found similar effect sizes for antidepressant and psychological treatments (mostly CBT) in major depression and a possible greater effect size for psychological treatment than antidepressants in subthreshold depression (Pinquart, Duberstein, & Lyness, 2006).

In comparing CT and antidepressants, a large placebo-controlled RCT by the National Institute of Mental Health (NIMH) found no significant difference over all between imipramine and CT. However, for the subgroup of patients who were initially more severely depressed, a significant treatment effect was found between imipramine and placebo, but not CT and placebo (Elkin et al., 1989). When this study was included in a mega-analysis with three other RCTs which compared CT with antidepressants in patients with at least moderate major depression neither approach was found to have a significant advantage overall (DeRubeis, Gelfand, Tang, & Simons, 1999). A subsequent placebo controlled RCT comparing CT with paroxetine (augmented by lithium carbonate or desipramine hydrochloride, if necessary) found no significant difference in comparative efficacy with both superior to placebo but a numerical advantage to paroxetine over CT. Follow-up tests of a site X treatment interaction indicated a significant difference at one treatment centre, where medications were superior to CT. This difference was attributed to lower therapist expertise (DeRubeis et al., 2005). Another RCT found improvement over placebo for paroxetine but not CT over 8 weeks but final response rates were similar at 16 weeks (Dimidjian et al., 2006). Faramarzi and colleagues (2008) reported that CBT was more effective than fluoxetine in treating depression in infertile women. The cognitive behavioural-analysis system of psychotherapy (CBASP; which includes cognitive, behavioural and interpersonal techniques) was used in a large RCT involving patients with major depression and at least 2 years of depressive symptoms. CBASP was found to be equally effective as nefazodone (Keller et al., 2000).

There continues to be a debate about whether CBT is effective, or as effective as antidepressants in severe major depression, particularly given the cognitive deficits which might be expected to impair engagement, concentration and memory

(Tavares, Drevets, & Sahakian, 2003). In the NIMH study CT was less effective than imipramine and no more effective than placebo among more severely depressed and functionally impaired patients (Elkin et al., 1989; Sotsky et al., 1991). Although this study has been very influential, questions have been raised about the adequacy with which the CT was implemented (Jacobson & Hollon, 1996). Furthermore, a subsequent mega-analysis, which pooled the individual participant data from the NIMH and three other relevant studies, failed to find significant differences between antidepressant medication and CT among more severely depressed participants (DeRubeis, Gelfand, Tang, & Simons, 1999). However, in a subsequent study by Dimidjian and colleagues (2006), paroxetine outperformed CT among more severely depressed patients. There is evidence that experienced CT practitioners are required to achieve good outcomes in moderate to severe major depression (DeRubeis et al., 2005; Scott, 1996; Shaw et al., 1999).

In terms of reducing relapse, Hensley, Nadiga, and Uhlenhuth (2004) found that CT performed better than maintenance TCAs. When they pooled data from three small RCTs they found that after 1 to 2 years only 10% of patients on antidepressants remained in remission compared with 35 to 50% of those who had received CT. Gloaguen et al. (1998) reported an average 60% relapse rate for maintenance TCAs compared with 30% for CT over 1 to 2 years in eight studies. A recent RCT found that acute responders to CT were less likely to relapse over the following year compared with acute responders to medication who had their antidepressant withdrawn (31% versus 76%), and no more likely to relapse than patients compliant with continuation antidepressants (31% versus 47%; Hollon et al., 2005). Furthermore (mostly small) studies have investigated the effect of adding a course of CT following initial improvement to medication and have shown efficacy in achieving full remission and in reducing relapse in those with recurrent depression, even if antidepressants are stopped (Paykel, 2007). A study of patients in remission found that augmentation with brief CT significantly reduced relapse compared with treatment as usual alone over 2 years but only in those with five or more previous episodes (relapse 46% versus 72% in those with five or more previous episodes, but 63% versus 59% in fewer previous episodes; Bockting et al., 2005).

Mindfulness-based CT (MBCT) incorporates mindfulness in an attempt to change an individual's awareness of, and relationship to, unwanted thoughts and feelings. When given as an 8-week treatment during remission MCBT has been

found effective in reducing relapse in the following year compared with treatment as usual (the majority taking antidepressants) in patients with three or more previous episodes. However, because trials have only compared MBCT plus TAU with TAU these findings cannot be attributed to MBCT-specific effects (Coelho, Canter, & Ernst, 2007).

Finally, a study of continuation CT for 8 months following acute response to CT in patients with recurrent depression reduced relapse over the following 16 months for those who had not achieved stable remission (Jarrett et al., 2001). CT has the strongest evidence for significant reduction of subsequent relapse and there is data that supports the continuing efficacy of CT after acute treatment, but its relative efficacy compared with maintenance antidepressants is difficult to interpret (Anderson et al., 2008).

Few studies have investigated whether an intervention may prevent recurrence of depression, a notable exception being a trial by Fava, Rafanelli, Grandi, Conti, and Belluardo (1998) who treated 40 patients with medications, first to the point of remission and then to the point of recovery. At the end of the continuation phase, the patients were randomly assigned to receive either 10 sessions of a modified version of CT or clinical management over the next 20 weeks, during which time they were also tapered off medications. The modifications to CT involved attention to patient's lifestyle and to beliefs and behaviours designed to increase positive affect and enhance life satisfaction. All patients were then followed across the remainder of a 2-year interval, during most of which (from week 20 on) they were treatment free and no longer on medications. The patients who were exposed to CT were considerably less likely to experience a recurrence following treatment termination (25%) than were the patients who had received clinical management (80%). The implications of this trial are important. The standard perception is that pharmacotherapy is more cost-effective than psychotherapy, but this may not be the case over the long run if CBT interventions truly have an enduring effect. Although treating a patient to the point of remission typically costs more with CBT than with medications, the cumulative expense of maintaining patients on medications indefinitely will eventually exceed the cost of providing a time-limited course of CBT.

There has been interest in whether the combination of an antidepressant medication and CBT is more effective than an antidepressant medication or CBT

alone. Thase and colleagues (1997) combined the data of six studies and found that recovery rates for CT versus combined antidepressant medication and CT did not differ in patients with mild to moderate major depression, but combined treatment showed significantly higher recovery rates in those with moderate to severe major depression with recurrent illness. In a large-scale study, Keller and colleagues (2000) showed substantially higher results of response and remission in patients with major depression and at least 2 years of depressive symptoms when CBASP and nefazodone were combined than when either modality was used alone (73% for combined therapy versus 48% for either CBASP or nefazodone alone). In recent studies in adolescents greater efficacy for combined CBT and fluoxetine compared with either treatment alone was reported in one study (Treatment for Adolescents With Depression Study Team, 2004) but three subsequent studies have found no benefit from combined treatment over an SSRI alone (Clarke et al., 2005; Melvin et al., 2006; Goodyer et al., 2007; Goodyer et al., 2008).

In summary, the evidence suggests similar efficacy for antidepressants and CBT and their combination in mild to moderate depression in adults and the elderly with greater efficacy of combination treatment in moderate to severe depression. In adolescents CBT is probably effective but may be inferior to fluoxetine and most studies find no benefit for combined treatment over an SSRI alone.

Of the CBT approaches, CT has been the most extensively studied, with numerous outcome studies documenting its efficacy (Hollon et al., 2002). However, findings from a component analysis of CT suggest that the behavioural components alone work as well as the full package and represent a more parsimonious and accessible treatment than CT (Jacobson et al., 1996). Specifically, the behavioural component alone produced as much change in depressive symptoms as the full CT condition during acute treatment and evidenced no more relapse than CT over a 2-year follow-up (Gortner et al., 1998). This study has revitalised interest in purely behavioural treatments for depression.

***Behaviour therapy.*** Behaviour therapy (BT) includes a number of interventions that share a theoretical basis in behavioural learning theory. Some of the most well known interventions that take a relatively pure behavioural approach include increasing engagement in pleasant events (Lewinsohn, Sullivan, & Grosscup, 1980), behavioural activation (BA; Jacobson et al., 2001; Martell et al., 2001, 2010), brief behavioural activation treatment for depression (Hopko, Lejuez, Ruggiero et al.,



2003; Lejuez, Hopko, & Hopko, 2001, 2002; Lejuez, Hopko, LePage et al., 2001), self-control therapy (Rehm, 1977) and problem-solving therapy (Nezu, 1986). The particular therapeutic techniques vary within the different approaches, but commonly include ongoing monitoring of mood and activity; functional assessment to increase patients' awareness of the consequences of their behaviour; graded task assignments; skills training and role-playing of behavioural assignments; managing situational contingencies by scheduling when activities will occur during the week, finding ways to make tasks more enjoyable, and/or arranging rewards after an activity is completed; and attending to experience or mindfulness.

Recent reviews have concluded that in adults with depressive symptoms there is evidence of acute efficacy for BT versus waiting list/drug placebo/relaxation/treatment as usual controls (12 studies, effect size 0.70; Ekers, Richards, & Gilbody, 2008); and versus waiting list/psychological placebo/treatment as usual (10 studies, effect size 0.87; Cuijpers, van Straten, & Warmerdam, 2007). Evidence for the acute efficacy of problem solving therapy versus control treatment/placebo/waiting list has also been found (13 studies, effect size 0.34–0.83 depending on method of analysis; Cuijpers et al., 2007). In comparative studies there appears to be little difference in efficacy between CBT and BT (Ekers et al., 2008: 12 studies, non-significant effect size 0.08 in favour of CBT; Cuijpers et al., 2007: 10 studies, non-significant effect size 0.01 in favour of BT). However, a process-oriented study on CT has highlighted the value of behavioural strategies, suggesting that a focus on creating cognitive changes about interpersonal relationships was associated with worse functioning after CT, whereas a focus on creating actual interpersonal change was associated with improvement (Hayes, Castonguay, & Goldfried, 1996). Consistent with this, Coffman, Martell, Dimidjian, Gallop, and Hollon (2007) found that clients with increased functional impairments and problems with primary support groups participating in Dimidjian and colleague's (2006) study self-reported extreme nonresponse to CBT but not BA.

Jacobson and colleagues' contextual BA approach has been found to be comparable to antidepressant medication (paroxetine) with respect to the reduction of acute distress regardless of level of initial severity and superior to CT among more severely depressed patients. Further, BA demonstrated an advantage over paroxetine by having a significantly lower attrition rate (Dimidjian et al., 2006). Dobson and colleagues (2008) reported that, at 1-year follow-up, individuals who had received

BA or CT or who were still taking antidepressant medication had relapsed at a significantly lower rate than individuals who had been withdrawn from medication onto pill-placebo. Across the second year of follow-up, individuals who had received BA or CT relapsed at a significantly lower rate than individuals who were withdrawn from medication.

***Interpersonal psychotherapy.*** (IPT) was developed by Klerman and Weissman and focuses on the interpersonal context and on building interpersonal skills (Klerman, Weissman, Rousaville, & Chevron, 1984; updated by Weissman, Markowitz, & Klerman, 2000). IPT has similarities to psychodynamic psychotherapy in its loose structure and emphasis on helping patients become aware of feelings they may not have been aware of previously. IPT also has similarities to contemporary cognitive behavioural approaches in that it is time-limited, focuses on the “here and now,” includes techniques to build skills such as role play, and encourages activity between sessions to improve mood (Weissman, Markowitz, & Klerman, 2007).

IPT unfolds in three successive stages. During the first stage the therapist takes a careful history that links the patient’s depressive symptoms to his or her interpersonal situation in a formulation that centres on one of four interpersonal problem areas, all of which are connected to life events and social roles (Markowitz & Swartz, 1997). *Complicated bereavement* (grief) results from the loss or death of a significant other. *Role disputes* in which a client is experiencing nonreciprocal expectations about a relationship with someone else, such as the struggles involved in a bad marriage. *Role transitions* in which an individual is in the process of giving up an old role and taking on a new one. The fourth area, *interpersonal deficits*, involve problems associated with a lack of social skills such as difficulty in initiating or sustaining relationships leading to social isolation. Although some patients have multiple interpersonal problems, the goal of the initial stage of IPT is to isolate one or two of the most salient problems to serve as a focus of treatment (Markowitz et al., 2000).

During the middle stage of IPT, the therapist pursues strategies specific to the identified interpersonal problem area. For complicated bereavement, the therapist facilitates the grieving process, the client’s acceptance of difficult emotions, and helps the patient find new activities and relationships to compensate for the loss. For a role dispute, the therapist helps the patient understand the nature of the relationship

and the relevant dispute and what options are available for resolving it. For a role transition, the therapist helps the patient learn to manage the change by expressing emotions about the loss of the old role, recognising positive and negative aspects of the uncomfortable new role he or she is assuming, and acquiring skills and support in the new role they must take on. For interpersonal deficits, the therapist helps the patient to analyse their communication patterns, develop new interpersonal skills through role play, and work to develop new relationships (Markowitz, 1998).

In the final stage of IPT the therapist works to prepare the patient to function without the treatment. Therapeutic gains are recognised and attributed to the client's own actions in changing a life situation. Because depression can recur, the therapist also helps the patient to anticipate interpersonal triggers for and responses to depressive symptoms that might arise in the future.

A recent meta-analysis concluded that in adults with depressive symptoms, IPT is an efficacious treatment. When compared to waiting list/drug placebo/usual treatment there was a significant difference favouring IPT (de Mello, de Jesus Mari, Bacaltchuk, Verdelli, & Neugebauer, 2005). RCTs of IPT for depressed children and adolescents suggest that it is more effective than waiting list/clinical monitoring (Mufson & Sills, 2006; Mufson, Weissman, Moreau, & Farfinkel, 1999; Rossello & Bernal, 1999). Similarly, an RCT suggests that IPT may be superior to nortriptyline in the acute treatment of geriatric depression (Sloane, Stapes, & Schneider, 1985).

In terms of preventing relapse, continuation IPT monotherapy over 2 years was more effective in patients remitting with IPT alone than those who needed combined IPT and antidepressants acutely (relapse 26% versus 50%; Frank et al., 2007). Over three years of continuation IPT in combination with nortriptyline showed a trend to be better than nortriptyline alone after acute combination treatment (relapse 20% versus 43%; Reynolds et al., 1999). Continuation IPT given more frequently than monthly did not enhance efficacy (Frank et al., 2007). Combining IPT with medication in acute treatment was associated with better response rates (response 70% versus 51%) and fewer relapses over the subsequent 3 months (3% versus 25%) with numerical but not statistical benefit sustained to 12 months (1% versus 29%; Schramm et al., 2007). Relapse prevention studies with continuation IPT as monotherapy after acute combination treatment with an antidepressant suggests a modest (Frank et al., 1990; Reynolds et al., 1999) or no (Reynolds et al., 2006) benefit compared with placebo.

A recent RCT comparing CBT and IPT found no overall difference but an advantage to CBT in patients with more severe major depression (Luty et al., 2007). BT was found to be more effective than brief dynamic or interpersonal therapy (three studies, effect size 0.56) in treating depressive symptoms (Ekers et al., 2008).

***Psychodynamic psychotherapy.*** The primary focus of psychodynamic psychotherapy is to reveal the unconscious content of a client's psyche in an effort to alleviate psychic tension. Although deriving from Freud's psychoanalysis, psychodynamic psychotherapy differs from psychoanalysis in that it is briefer and less intensive; it usually consists of one to three sessions weekly rather than the four or five typical of psychoanalysis, and the patient sits and faces the therapist rather than lying on a couch. Because of the focus on free association and the transference phenomenon, psychodynamic sessions tend to be relatively unstructured and the therapist is more silent than in IPT or CBT. Although widely practiced there is limited research on its efficacy. In a mega-analysis of three controlled trials of Short Psychodynamic Supportive Psychotherapy (de Jonghe, 2005), this modification was found to be as effective as medication for mild to moderate depression (de Maat et al., 2008).

***Exercise.*** Exercise refers to physical activity that enhances or maintains physical fitness and overall health. Exercise may be divided into aerobic forms which train cardio-respiratory capacity and anaerobic forms which train muscular strength/endurance and flexibility/co-ordination/relaxation (American College of Sports Medicine, 1980). The aerobic forms of exercise, especially jogging or running, have been most frequently investigated as a treatment for depression. A recent meta-analysis of 23 studies found that exercise has a large effect (effect size 0.82) on depressive symptoms in people with a diagnosis of depression when compared with waiting list/placebo (Mead et al., 2008). However, it is likely that this result is biased in favour of exercise for methodological reasons. For instance, when only those trials with intention to treat analyses were included, the effect size was moderate but only of borderline statistical significance.

When exercise was compared with other established treatments (CT and antidepressants), there was no difference in effect. The effect of exercise on depressive symptoms in those trials which included long-term follow-up was only moderate, suggesting that the benefits of exercise may gradually be lost after the intervention is completed, implying that exercise may need to be continued long-

term in order to maintain the initial benefits.

Uncertainties continue regarding how effective exercise is for depression, mainly because of methodological considerations. Furthermore, if exercise is of benefit for depression, it is not yet clear what the optimum type, frequency and duration of exercise is or whether it should be performed supervised or unsupervised, indoors or outdoors, or in a group or alone (Mead et al., 2008).

### **Treatment Approaches for BPD**

The emphasis of the treatment of bipolar disorder is on effective management of the long-term course of the illness. The most common treatment approaches for BPD are pharmacotherapy and psychological treatments.

#### **Pharmacotherapy.**

*Depressive episodes.* Mood stabilisers such as lithium are typically recommended as the first line pharmacotherapy treatment of bipolar depression rather than antidepressants. In support of this, a recent large-scale study found that severe depression in patients with bipolar disorder responds no better to a combination of antidepressant medications and mood stabilisers than it does to mood stabilisers alone (Sachs et al., 2007). Meta-analysis suggests that conventional antidepressants are, on average, superior to placebo in the acute treatment of bipolar depression (Gijsman, Geddes, Rendell, Nolen, & Goodwin, 2004). However, the number of studies and the number of patients in the studies are low. ECT is also effective in severe depression (Carney et al., 2003).

A short-term risk of treatment for depression is a switch to mania. This may occur as a consequence of illness course or because some treatments have a greater potential to cause switching than others. In a meta-analysis of patients with a previous history of mania, treatment with TCAs was twice as likely to result in a manic event as treatment with SSRIs or placebo (Peet, 1994). In short-term bipolar treatment trials with antidepressants, switch rates were low, but there was a higher rate of switch for TCAs compared with other antidepressants (SSRIs in particular; Gijsman et al., 2004). Sachs and colleagues (2007) found that the use of paroxetine and bupropion did not hasten the emergence of manic symptoms. Anti-manics used in combination with antidepressants may reduce the risk of a manic switch in depressed patients with a high risk of mania. Empirically supported anti-manic agents include lithium and valproate (Burgess et al., 2001; Macritchie, Geddes, Scott, Haslam, & Goodwin, 2001).

The optimal length of continuation-phase pharmacotherapy has not been established empirically for bipolar depression (Goodwin et al., 2003). During the continuation phase, the risk of depressive relapse must be balanced against concerns about inducing mania or rapid cycling (Solomon, Keitner, Miller, Shea, & Keller, 1995).

***Manic episodes.*** Lithium, valproate and the antipsychotic, olanzapine are now the first-line recommended treatments for mania (American Psychiatric Association, 2002). The use of lithium salts as a treatment of bipolar disorder was first discovered by John Cade, an Australian psychiatrist (Cade, 1949). One current theory suggests that lithium inhibits the enzyme inositol monophosphatase which is believed to create an imbalance in neurotransmitters thus stabilising neurotransmitter levels so that cyclic oscillations in amine concentrations are less likely to occur. In early studies lithium had a success rates of 80 to 90%; however, more recently response rates of only 40 to 50% have been reported (American Psychiatric Association, 2002). The apparent decline in lithium responsiveness may be partly due to sampling bias or factors such as younger age of onset, increased frequency of drug abuse, or shorter treatment periods because of briefer hospital stays (Solomon et al., 1995).

Several medications originally developed for other conditions are increasingly being used for patients with BPD who cannot tolerate or do not respond to lithium. The anticonvulsant medication, valproate has been shown to be effective in severe mania (Macritchie et al., 2003). This medication is believed to work by stabilising neuronal membrane systems (Manji & Lenox, 1999). For some patients, it is preferable to lithium because its side effects are less severe and compliance with the medication is better (Macritchie et al., 2001, 2003).

Older, conventional antipsychotics are effective for the treatment of mania, but are not recommended because of the risk of side effects known as extrapyramidal symptoms (Cookson, 2001; Goodwin et al., 2003; Prien, Caffey, & Klett, 1972). These symptoms can include things such as repetitive, involuntary muscle movements (such as lip smacking) or an undeniable urge to be moving constantly. Trials with atypical antipsychotics, such as olanzapine, show that an anti-manic action can be achieved without extrapyramidal symptoms (Keck, McElroy, Strakowski, & Soutullo, 2000; Tohen et al., 1999, 2000). While the neurobiology of mania is poorly understood, mania may be a hyperdopaminergic state appropriately

treated by blockade of dopamine receptors. The primary mode of antipsychotic action is thought to be dopamine blockade, although there is controversy about the precise mechanism at receptor level (Kapur & Remington, 2001). For manic patients who do not respond to pharmacotherapy or with severe mania during pregnancy ECT remains a viable alternative (Mukherjee, Sackeim, & Schnur, 1994).

The efficacy of lithium for preventing onset of mania also appears to be significantly lower now than in previous decades: Recurrence rates of 40 to 60% are now typical of ongoing lithium therapy (Bowden et al., 2000). Noncompliance with the medication regimen almost certainly plays a role, and there is concern that medication “holidays” may cause patients to lose their responsiveness to lithium (Post, Leverich, Altshuler, & Mikalaukas, 1992). With the growing recognition of the limitations of lithium, anticonvulsants and the atypical antipsychotics are being used increasingly for maintenance therapy of bipolar disorder (American Psychiatric Association, 2002). An RCT in 2005 has also shown olanzapine monotherapy to be just as effective and safe as lithium in prophylaxis (Tohen et al., 2005).

#### **Psychological and behavioural treatments.**

***Cognitive behaviour therapy.*** CBT has been tested in more randomised trials than any other psychological approach for BD. Early studies focused primarily on using CBT to enhance patients’ compliance in taking their medication as prescribed (e.g., Cochran, 1984). More recent work has focused not just on enhancing compliance, but also on teaching patients to recognise prodromes for depressive and manic episodes and then modify their cognitions and behaviour to prevent the onset of full-blown episodes (e.g., Lam et al., 2003; Newman, Leahy, Beck, Reilly-Harrington, & Gyulai, 2002; Scott, Garland, & Moorhead, 2001; Scott et al., 2006). Indeed, different investigators have used interventions which, although all coming under the class of CBT, have employed different models or emphases (e.g., CBT added to psychoeducation versus schema focused CBT). Studies have also differed considerably in sample characteristics (e.g., recovered versus syndromally ill). It is perhaps for this reason that findings are inconsistent across studies and vary with sample characteristics. Nonetheless meta-analyses of RCTs have concluded that CBT along with some other psychological interventions are a useful adjunct to medication, particularly for the prevention of depressive relapses (Beynon, Soares-Weiser, Woolacott, Duffy & Geddes, 2008; Scott, Colom & Vieta, 2007; Scott & Gutierrez, 2004). Insufficient data and a lack of common comparators has meant

that it has not been possible to compare CBT with other psychological interventions.

***Family-focused therapy.*** Family-focused therapy (FFT) is a structured psychosocial treatment for BPD based on the notion that the family or marital environment moderates the expression of underlying biological vulnerabilities (Miklowitz & Goldstein, 1997). The resultant symptomatic states themselves become a source of stress to which families and spouses often respond with high levels of expressed emotion, which in turn triggers subsequent exacerbation of symptoms or relapse. FFT for bipolar patients is modeled on developments in the family psychoeducational treatment of schizophrenia (Falloon et al., 1985; Goldstein, Rodnick, Evans, May, & Steinberg, 1978; Hogarty et al., 1991). The FFT model consists of psychoeducation for the patient and family members (typically, parents or spouse), followed by training in communication and problem-solving skills. The approach includes development of a relapse prevention plan, examination of the attitudes toward medications, as well as communication exercises (e.g., active listening, constructive feedback) aimed at reducing high expressed emotion interchanges (Miklowitz, 2008). FFT has been demonstrated to be effective in reducing relapse, with less severe depressive and manic symptoms (Miklowitz, George, Richards, Simoneau, & Suddath, 2003; Rea et al., 2003). The effects of FFT on depression have been found to be mediated by improvements in patient/relative interactions, whereas improvements in manic symptoms have been found to be mediated by improved medication adherence (Miklowitz et al., 2003). FFT has also been demonstrated to be effective in combination with pharmacotherapy in stabilising bipolar depressive symptoms among adolescents (Miklowitz et al., 2008).

***Interpersonal and social rhythm therapy.*** Frank and her colleagues (1994) modified IPT to create interpersonal social rhythm therapy (IPSRT). This adaptation is based on a theory that suggests that social *zeitgebers* (interactions and expectations) serve to provide order and regularity in life that help maintain affective balance (Ehlers et al., 1988). Specific elements added to conventional IPT in this adaptation include scheduling activities and regularising sleep schedules (Malkoff-Schwartz et al., 2000). Frank and colleagues (2005) randomly assigned 175 BP-I patients following an acute illness episode to pharmacotherapy and either (a) stabilisation with weekly IPSRT sessions, or (b) stabilisation with weekly intensive clinical management (review of symptoms, adherence monitoring, psychoeducation) sessions. Patients who met criteria for “stabilisation” were then re-randomised to



pharmacotherapy plus IPSRT or intensive clinical management, with monthly sessions over two years. Patients assigned to IPSRT in the acute treatment phase survived longer without a new affective episode irrespective of maintenance treatment assignment. The effects of IPSRT were most pronounced in patients who succeeded in stabilising their social rhythms during the acute phase. Patients receiving IPSRT acutely also showed greater improvement in occupational functioning during the acute phase than patients in intensive clinical management (Frank et al., 2008). The results suggest that IPSRT may be an effective intervention if initiated immediately following an acute episode.

### **Access to Treatment**

Despite the availability of efficacious interventions, surveys consistently document that the majority of individuals with depression do not receive appropriate treatment (Young, Klap, Sherbourne, & Wells, 2001; Young, Klap, Shoai, & Wells 2008). It also appears that nearly half of all individuals with a BPD do not receive appropriate care (Regier et al., 1993). While the number of people receiving treatment for these disorders has increased, particularly with respect to the use of psychoactive medications, undertreatment remains a serious problem (Hirschfeld et al., 1997; Olfson et al., 2002). Depression often goes unrecognised, especially in primary-care settings, and access to competent treatment is not always easy to obtain. Surveys of clinical practice suggest that many physicians fail to provide antidepressant medications in adequate doses or prescribe the wrong medications (Hirschfeld et al., 1997; Regier et al., 1993; Young et al., 2001). At the same time, empirically supported interventions like IPT and FFT are not widely available, and a significant number of practitioners still prefer more traditional psychotherapies of unknown efficacy. Many practitioners report using CBT, but this approach may not be delivered at an adequate level of competence (Hollon et al., 2002).

### **Summary and Conclusions**

Mood disorders are among the most common and debilitating psychiatric disorders and are one of the leading causes of suicide. The majority of mood disorders fall into two categories. Unipolar disorders involve depression only, whereas BPDs involve episodes of elevated mood of varying severity (mania or hypomania) typically in addition to episodes of depression. Most people who become depressed will have multiple episodes, and some depressions are chronic. Persons with BPD will also have manic or hypomanic episodes. Given the recurrent

nature of the disorder, it is important not just to treat the acute episode, but also to protect against its return and the onset of subsequent episodes.

Research suggests that biological, psychological and social factors all play a role in causing mood disorders. The most influential models implicate genetic, behavioural or thinking vulnerabilities which interact with stressful life events to cause depression.

Several types of interventions appear to be effective in the treatment of depression. These include antidepressant medications, ECT, CBT, BT and IPT. The antidepressant medications have the most extensive empirical support and generally are efficacious so long as they are continued or maintained, but can produce troublesome side effects and do little to reduce risk after their use is terminated. ECT remains the most effective intervention for the most severe depressions, but its use needs to be weighed against concerns regarding possible effects on memory and cognition. Some psychological and behavioural treatments have fared well in comparisons with medications and can have benefits not conferred by medications. CBT has the most extensive empirical support of any of the psychotherapies. It appears to be effective for all but the most severe depressions (and maybe those as well). It may also have an enduring effect that reduces subsequent risk of relapse, but its effectiveness may depend on the competence of the clinician. Behavioural interventions appear to be just as effective as CBT, both acutely and in preventing relapse and these may represent a more parsimonious approach. IPT has also had good results in a number of different populations including relatively severely depressed outpatients. Psychological treatments such as CBT, FFT and IPSRT appear to be a useful adjunct to medications in preventing relapse in bipolar patients.

Although effective interventions exist, many depressed patients still do not respond fully to treatment. Only about half of all patients respond to any given intervention, and only about a third eventually meet the criteria for remission. Also, while there is evidence of a more enduring effect for some psychological interventions compared to antidepressant medications, many patients treated with medication will not stay well once they get better unless they receive ongoing treatment. Finally, too few patients access empirically supported treatments.

Considerable progress has been made in the understanding and treatment of mood disorders, but clearly more needs to be done. Existing treatments need to be improved and new approaches developed to manage patients who currently do not

respond. Access to empirically supported interventions must be improved, and the field needs to emphasise efforts at prevention that build on existing indications that people can learn strategies to reduce future risk.

The purpose of the present project is to better understand a promising intervention for depression, BA. How effective is this intervention for individuals with MDD? How does the efficacy of BA compare to other interventions? Do more complex versions of BA add anything to simpler versions? If similar health outcomes can be achieved with simpler or shorter versions of BA there is potential for increasing the efficiency of services and the reach of an effective intervention. Is it possible to lift the well-being of individuals who are not suffering from a mental health disorder by exposing them to the skills taught in BA? Could exposure to BA prevent future episodes of depression? The remaining chapters in this thesis explore these issues. Further consideration will also be given to the mechanisms through which BA may be effective.

## Chapter 3—Study 1

### Behavioural Activation Treatments for Depression<sup>1</sup>

#### Introduction

Behavioural activation (BA) treatments evolved out of the reinforcement explanation of depression which proposes that the behaviour of depression is the result of a loss or lack of response contingent positive reinforcement (RCPR; Lewinsohn, 1974). Under such reinforcement conditions, repertoires of behaviour are insufficiently rewarded and behaviour deteriorates in frequency, intensity, and quality. Also, the lack of RCPR elicits dysphoria and the other somatic, emotional and cognitive symptoms of depression. In support of this proposal was the finding that there is a significant relationship between mood and participation in pleasant activities (Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972). Individuals with depression find fewer activities pleasant and engage in pleasant activities less frequently, and therefore obtain less positive reinforcement than other individuals (MacPhillamy & Lewinsohn, 1974).

Based on this theory, Lewinsohn, Sullivan, and Grosscap (1980) developed a behavioural treatment of depression in which patients monitor their mood and daily activities in order to see the connection between them. Subsequently each patient is taught how to decrease the frequency and subjective aversiveness of unpleasant events in his or her life, and to increase pleasant ones.

The self-control theory of depression by Rehm (1977) elaborated the traditional behavioural model by formulating it from the viewpoint of Kanfer's (1970) model of self-control. From this perspective, self-control skills are seen as important for ensuring that an individual obtains external reinforcement by either persisting in or changing goal-directed behaviour in the face of setbacks. Individuals with depression selectively attend to immediate negative consequences of their behaviour to the exclusion of delayed positive consequences or regardless of actual contingencies. These individuals may also set very high standards for themselves and consequently fail to achieve goals and self-reinforce at a very low rate and self-punish at a very high rate.

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<sup>1</sup> An earlier version of this chapter was accepted for publication as Mazzucchelli, T., Kane, R., & Rees, C. (2009). Behavioral activation treatments for depression in adults: A meta-analysis and review. *Clinical Psychology: Science and Practice*, 16, 383-411.

Teaching patients self-management skills to help progress towards personally important goals and participate more in behaviours that are reinforcing became a central component of a treatment program based on Rehm's self-control theory. Participants are required to keep a daily log of their activities and mood in order to see the association between the two. Participants are also taught to define goals in positive ways (e.g., making better friends with women in my neighbourhood) and to break those goals down into realistic, attainable, sub-goal activities (e.g., phone a friend to chat). Finally, participants are taught a system to self-evaluate their behaviour and to self-administer rewards (Fuchs & Rehm, 1977; Rehm & Kornblith, 1979).

Trials of these approaches found mostly promising results (e.g., Barrera, 1977, 1979; Fuchs & Rehm, 1977; Kornblith, Rehm, O'Hara, & Lamparski, 1983; McNamara & Horan, 1986; Rehm et al., 1981; Zeiss, Lewinsohn, & Muñoz, 1979). Multi-component treatments for depression that combined these BA techniques with cognitive approaches were also developed during this period. In their original *Cognitive Therapy of Depression* treatment manual, Beck et al. (1979) devoted an entire chapter to behavioural techniques including activity-scheduling, self-monitoring, graded task assignment, and role-playing. Lewinsohn, Antonuccio, Steinmetz, and Teri (1984) developed a psychoeducational course called "The Coping with Depression Course" which included elements relating to increasing pleasant activities, social skills training, relaxation training and cognitive restructuring. Cognitive restructuring was added as another approach to increase availability of perceived reinforcement and decrease perceived punishment. Similarly, Rehm's self-control program was expanded and revised in a series of therapy outcome studies, with an increased emphasis on covert reinforcement involving positive self-statements as contingent rewards following difficult positive activities or sub-goal activities (Rehm, 1984; Reynolds & Coats, 1986; Rokke & Rehm, 2001; Stark, Reynolds, & Kaslow, 1987). These treatments have been demonstrated to be effective, but only recently has evidence emerged indicating that it may be the behavioural components that largely contribute to these effects.

In an elegant treatment-dismantling study of cognitive therapy (CT) for depression, Jacobson and colleagues found that the behavioural component of CT was equally effective alone or in combination with the cognitive components (Gortner et al., 1998; Jacobson et al., 1996). On the basis of this result, an expanded

version of this behavioural intervention was developed (Jacobson et al., 2001; Martell et al., 2001, 2010). This model draws from the work of Ferster (1973) emphasising the role of avoidance in depression, and contextualism (Jacobson, 1994). Certain aspects of a person's life circumstances can trigger depression and particular ways of responding to these circumstances can maintain it. Avoidance (e.g., of interpersonal situations, occupational or daily-life demands, and distressing thoughts or feelings) is viewed as a coping strategy to avoid the short-term distress that is often associated with pursuing potentially mood-enhancing reinforcers, at the longer-term cost of reducing opportunities to contact these very reinforcers and by creating or exacerbating life problems. Increased activation and engagement is presented as a strategy to break this cycle.

The initial treatment objective of Jacobson and colleagues' BA approach is to increase patients' awareness of avoidance patterns by encouraging the monitoring of behaviour and teaching a functional analytic model for understanding behaviour. Once these patterns are recognised, the principal objective becomes one of helping the patients to identify and reengage with activities and contexts that are reinforcing and consistent with their long-term goals. Many of the same behaviourally focused activation strategies used in CT are used including self-monitoring, structuring, and scheduling daily activities, rating the degree of pleasure and accomplishment experienced during engagement in specific daily activities, exploring alternative behaviours related to achieving goals, and using role-play to address specific behavioural deficits. In addition, this protocol includes the establishment or maintenance of routines, and behavioural strategies for targeting rumination, including an emphasis on the function of ruminative thinking and on moving attention away from the content of ruminative thoughts toward direct, immediate experience.

Jacobson and colleagues' contextual BA approach has been found to be comparable with antidepressant medication (paroxetine) with respect to the reduction in acute distress regardless of the level of initial severity, and superior to CT among more severely depressed patients. Further, BA demonstrated an advantage over paroxetine by having a significantly lower attrition rate (Dimidjian et al., 2006).

In an independent research program, Lejuez, Hopko, & Hopko (2001, 2002) and Lejuez, Hopko, LePage et al., (2001) developed Brief Behavioral Activation Treatment for Depression (BATD). This treatment is based on behavioural matching

theory (Hernstein, 1970; McDowell, 1982). It suggests that depression occurs when environmental change causes reinforcers for depressed behaviour to become more accessible and immediate relative to reinforcers for healthy behaviour. This results in a directly proportional change in the time and effort devoted to exhibiting depressed behaviours relative to nondepressed behaviours. Based on this model, the BATD model attempts to create an environment that supports healthy behaviour by seeking the agreement from family and friends to notice and respond positively to healthy behaviour and reduce reinforcement (such as sympathy and opportunities to escape from responsibilities) in response to depressed behaviour. The emphasis then shifts to identifying goals in major life areas such as relationships, education, employment, hobbies, and recreational activities. Activities related to these goals are developed and put on activity hierarchies that patients progressively move through. Patients are taught to reward themselves for achieving weekly goals by scheduling enjoyable activities that they can engage in if they complete their activity goals. The BATD protocol has been reported to be successful in a number of mostly small open trials (e.g., Hopko, Bell, Armento, Hunt, & Lujuez, 2005; Hopko, Lejuez, & Hopko, 2004; Hopko, Lejuez, LePage, Hopko, & McNeil, 2003; Hopko, Sanchez, Hopko, Dvir, & Lejuez, 2003; Lejuez, Hopko, LePage et al., 2001).

The significance of the BA approach is that it may be simpler to deliver and thus represent a more parsimonious treatment option (Jacobson et al., 1996). If similar health outcomes could be achieved with simpler interventions, or a lesser dose of psychotherapy, there is potential for increasing the efficiency of services and the reach of effective interventions. The present review suggests that there are at least four interventions that satisfy the definition of BA by Hopko, Lejuez, Ruggiero et al. (2003), namely “a therapeutic process that emphasises structured attempts at engendering increases in overt behaviour that is likely to bring the patient into contact with reinforcing environmental contingencies and produce corresponding improvements in thoughts, mood, and overall quality of life” (p. 700). Common to all BA interventions are (a) the selection of behavioural goals designed to increase positive reinforcement, (b) strategies to assist participants achieve goals, and (c) the self-monitoring of behaviour and affect. However, there are differences across BA approaches (see Table 4). In particular, these interventions differ in terms of their complexity. Jacobson and colleagues’ protocol includes a significant emphasis on assisting patients with functional analytic interpretations of behaviour. It also

includes many strategies not incorporated within other BA interventions such as verbal rehearsal, distraction from unpleasant events, attention to experience (a technique similar to mindfulness training), and skill-training procedures. It remains to be seen whether this omnibus style intervention is superior to other simpler versions of BA, and which treatment strategies account for the greatest outcome variance.

A recent meta-analysis by Cuijpers et al. (2007) included 16 studies involving BA and concluded that pleasant activity scheduling is slightly superior to other psychological treatments and equal to CT at posttest and follow-up. A subsequent meta-analysis by Ekers et al. (2008) included 17 studies and concluded that behaviour therapies were superior to controls, brief psychotherapy, supportive therapy, and equal to CBT.

**Study aims.** The primary aim of the present study is to replicate and significantly extend previous meta-analyses by including the results from 40 studies—more than doubling the number of studies included in the next largest meta-analysis (Ekers et al., 2008). Moreover, in addition to examining the effects of BA relative to other therapeutic approaches, the present study aims to examine the differential effectiveness of variants of BA and hence go part way to exploring whether more complex versions of BA add anything to more parsimonious versions of the approach. Unlike past meta-analyses, another aim of the present study is to consider whether the strong effect sizes obtained with participants reporting elevated symptoms of depression are still shown with participants who satisfy the criteria for MDD. A final aim of the present study is to complement the meta-analysis with a focused evidence review using the criteria developed by the Task Force within Division 12 (Society of Clinical Psychology) of the APA to determine whether any of the BA variants represent a well-established or probably efficacious treatment for depression (Chambless et al., 1998; Task Force on Promotion and Dissemination of Psychological Procedures, 1995).



Table 4  
*Characteristics of Exemplar Behavioural Activation Interventions*

	Activity Schedules	(Behavioural) Self-control Therapy	Contextual Behavioural Activation	Behavioural Activation Therapy for Depression
Publication	Lewinsohn (1976)	Fuchs and Rehm (1977)	Martell, Addis, and Jacobson (2001)	Lejuez, Hopko, and Hopko, (2003)
Duration	10-30 sessions	6-22 sessions	16-20 sessions	9-12 sessions
Assessment process	Construct a 160-item activity schedule from activities participant nominates as being enjoyable, pleasant, meaningful, or interesting for them in the past. Pleasant Events Schedule may be used for this purpose. Daily monitoring of participation in activities from activity schedule and daily completion of DACL for 30 days. Relationship between activity and mood established and specific activities that are correlated with mood identified.	Logging behaviour that participants feel are “reinforcing” in themselves or that produce “reinforcement”, and noting mood at the end of each recorded activity. Positive Activities Survey used to provide examples of what could be logged. This monitoring continues for the duration of intervention.	Hourly monitoring of activity and associated feelings (e.g., achievement and pleasantness) for duration of intervention. Evaluate whether activity is consistent with and progress is being made towards life goals. Teach functional analysis—identification of avoidance patterns and alternative coping behaviours.	Hourly monitoring of activity for one week to establish “baseline” and consider what activities might be “missing”. Establishing life goals by considering various life domains. Completing Life Activities Checklist of enjoyable activities.
Goal selection and strategies to achieve activity goals	Goals established for increasing rate of behaviour for ten activities that are correlated with mood.	Goals established by considering desirable but low-frequency classes of activity. Development of 3-5 sub-goals for several activity goals. Encouragement to accomplish and log sub-goal behaviour.	Scheduling activities with weekly activity chart. Establishing and maintaining regularised routines. Graded task assignment. Verbal rehearsal of assigned tasks. Manage situational contingencies. Role-play assignments. Acting in a way patient would like to feel, or be perceived. Distraction from unpleasant events. Behavioural stopping. Skills training including training in social skills and problem solving. Attention to experience. Enlist cooperation from significant others.	Select goals across a range of life domains that may bring a sense of pleasure and/or accomplishment. Develop a 15-item graded activity hierarchy. Set frequency and duration goals for participation in activities on a weekly basis. Contract family and friends to reward healthy behaviour and avoid rewarding unhealthy behaviour.
Monitoring progress	Daily monitoring of participation in activities from activity schedule. Daily completion of DACL.	Daily monitoring of activity and mood. Graphing of total number of positive activities and daily average mood to confirm relationship between the two.	Daily monitoring of activity. Weekly administration of BDI.	Daily monitoring of achievement of activity goals. Weekly administration of BDI. Weekly graphing of participation in activities and depression scores.
Incentives for goal achievement	Therapy time contingent on increased rate of behaviour for correlated activities.	Reward menu for achieving goals based on a point system where sub-goals are weighted according to difficulty or subjective importance and prices assigned to rewards.	Natural contingencies are emphasised.	Reward menu for goal achievement.

*Note.* BDI = Beck Depression Inventory; DACL = Depression Adjective Checklist.

## Method

**Identification and selection of studies.** A computer search (using PsycINFO and MEDLINE databases) was conducted to find articles, chapters and dissertations published between January 1970 and September 2008 that included the terms *activity scheduling*, *behavioral activation* or *behavioural activation*, *pleasant events*, or *pleasant activities*. Reference lists of all articles were searched for additional articles. Studies were included in the meta-analysis if effects of a BA intervention on typically developing (i.e., without an intellectual disability) adults with a depressive disorder or an elevated level of depressive symptomatology were compared with a control condition or another psychological or active pharmacological treatment in a randomised controlled trial. No language restrictions were applied and unpublished dissertations, where available, were included so as to describe the universe of studies. Over 592 articles, chapters, and theses were reviewed.

Thirty-seven percent of the reviewed works were not empirical studies. Other works were excluded for a variety of reasons, namely: the interventions did not reflect the BA approach (33%), the BA approach was confounded with other treatment components such as the modification of thoughts (11%), there was no comparison condition (6%), insufficient information was provided to extract effect sizes (2%), and the participants were not depressed or were not adults (2%).

**Behavioural activation.** The BA approach is rooted in the behavioural tradition established by Ferster (1973) and Lewinsohn (1974). A treatment was considered to be BA when it primarily involved strategies to prompt participants to engage with, or act on, the environment so as to increase positive reinforcement and undermine punishment. Social skills training could be a part of the intervention if the purpose of this training was explicitly framed within the goals of the BA approach. Four variants of the BA approach were identified.

**Pleasant activities.** These interventions credited Lewinsohn and mostly involved monitoring and scheduling pleasant activities. Social skills training was sometimes also part of the intervention protocol.

**Self-Control.** These interventions credited Rehm and included such elements as monitoring activities and mood, goal setting, self-evaluation of performance, and self-administering rewards. Only versions of this approach that had a behavioural focus were included.

**Contextual.** These interventions either credited Jacobson and colleagues (Jacobson et al., 2001; Martell et al., 2001), included the behavioural component of CT that was evaluated by Jacobson and colleagues (Gortner et al., 1998; Jacobson et al., 1996) or were judged to be equivalent to this approach (e.g., McLean & Hakstian, 1979). Activity scheduling, self-monitoring, graded task assignment, and role-playing were part of this intervention as well as functional analysis, mental rehearsal, and mindfulness in newer versions.

**Behavioural activation treatment for depression.** These interventions credited Lejuez, Hopko, and Hopko (2001) or Lejuez, Hopko, LePage et al. (2001). They consisted of contracting to change immediate environmental contingencies, goal setting and graduated task assignment, monitoring, and self-administering rewards.

**Comparators.** The effects of BA were examined relative to a range of comparison conditions. These are listed below.

**Control conditions.** Waiting list or a range of nontreatment options (minimal contact, pharmacological placebo) delivered to the patient in the absence of any active treatment. In most cases this condition continued for the duration of, but not beyond, the active intervention conditions.

**Cognitive behavioural therapy/cognitive therapy (CBT/CT).** Interventions that identified, questioned and modified cognitive responses to situations and their emotional consequences. This category included any intervention that explicitly aimed to change thinking—whether automatic thoughts or self-statements. Behavioural strategies were sometimes also part of the intervention protocol.

**Antidepressant medication (ADM).** This included all pharmacological interventions for depression such as paroxetine (Dimidjian et al., 2006) and amitriptyline (McLean & Hakstian, 1979).

**Other.** This included all other active treatment conditions including psychotherapy approaches that focused on developing insight and subsequent character development through interpersonal relationships with the therapist. This category included brief psychodynamic therapy (Bellak & Small, 1965; Bernard & Klein, 1977; Horowitz & Kaltreider, 1979). It also included supportive counseling (Rogers, 1961), problem solving (D’Zurilla, 1986), assertiveness training, education about the intervention, monitoring and increasing placebo activities and treatment as usual.

**Quality assessment.** The methodological quality of each study was assessed

using nine criteria based on a range of important methodological features of psychotherapy research (Chambless & Hollon, 1998). These included adequacy of sample size to allow a stable estimate of effect size, confidence in sample description, confidence in outcome assessment tools, use of treatment manuals, adequacy of therapist training and monitoring, extent that investigator allegiance is balanced, equivalence of comparison groups at pretest, completeness of data set such that observations did not systematically exclude participants who refused treatment or dropped out, and checks for therapist or site effects. Studies were allocated a numerical rating from 0 to 17 according to the extent that these criteria were met. No studies were excluded on the basis of methodological quality.

**Meta-analysis.** Standardised mean difference effect sizes ( $ES_{sm}$ ) were calculated with the following formula:  $ES_{sm} = (M_c - M_t) / SD_p$ , in which  $M_t$  = the posttest mean of the treatment group on a specific outcome,  $M_c$  = the posttest mean of the comparison group, and  $SD_p$  = the pooled standard deviation of the two groups. If means or standard deviations were not provided, effect sizes were calculated from the  $t$  or  $F$  ratio, or from the significance level when  $t$  or  $F$  were not reported. If a result was reported as significant but did not provide an exact probability, the one-tailed  $p$  value was assumed to be .025. If a result was simply reported as nonsignificant and no data were provided to calculate an exact probability, it was conservatively assigned  $p$  (one-tailed) = .5. When only diagnostic status data were encountered, the arcsine transform method was used to adjust for the dichotomisation. When necessary, effect sizes were also calculated from chi-squared data.

Calculations of effect sizes relied on methods described by Lipsey and Wilson (2001). Standardised mean difference effect sizes express effect size in standard deviation units; thus, an effect size of 1.00 on a given dependent measure indicates that the treatment group scored one standard deviation better, on average, than the comparison group on that measure. Although a widely used convention for interpreting effect size values was established by Cohen (1988) based on his informal observations of behavioural research, the present study used the distribution of mean effect sizes for 302 meta-analyses of psychological, behavioural and educational interventions as a benchmark (Lipsey & Wilson, 1993). Effect sizes of 0.67 or greater are assumed to be large, while effect sizes of 0.31 to 0.66 are medium, and effect sizes of 0.00 to 0.30 are small (Lipsey & Wilson, 2001).

In calculations of effect sizes for depression only those instruments that explicitly measured symptoms of depression were used. If more than one depression measure was used, the mean of the effect sizes was calculated, so that each study (or comparison group) only had one effect size. This approach produces conservative estimates of effect size (Rosenthal & DiMatteo, 2001). Where studies included two comparisons under the same category (i.e., CT and CBT) or presented results using sub-categories (e.g., high/low depression severity) these comparisons were combined, taking into account the relative proportions of participants in the different conditions. Results in the unpredicted direction (i.e., the comparison group experienced greater decreases in depression compared to the BA group) were recorded as negative values.

Hedges's (1981) correction for small sample bias was applied to all effect sizes. The resultant Hedges's  $g$ s were then combined using the formula:  $M_g = \sum w_i g_i / \sum w_i$  where  $w_i$  is the weight for each study and  $g_i$  is the effect size for each study. Because the present study accumulated data from studies that have been performed by researchers operating independently and using different populations, a common effect size was not assumed. Consequently, mean effect sizes were calculated with the random-effects model. In the random-effects model each study is weighted by the inverse of its variance, which includes both within-studies variance and the estimate of between-studies variance (Borenstein, Hedges, Higgins, & Rothstein, 2009). Comprehensive Meta-analysis (Version 2.2.046; Borenstein, Hedges, Higgins, & Rothstein, 2007) was used to calculate pooled mean effect sizes. The subgroup analyses as implemented in Comprehensive Meta-analysis Version 2.2.046 were used to examine whether the effect sizes of specific subgroups differed from each other.

As an indicator of homogeneity, Cochran's heterogeneity statistic  $Q$  was calculated. This statistic tests the null hypothesis that effect sizes from each of the studies are similar enough that they share a common effect size (Cochran, 1954). Cochran's  $Q$  was calculated using the following formula:  $Q = \sum w_i (d_i - d_w)^2$ , where  $d_i$  is the individual effect size for  $i = 1$  to  $k$  (the number of effect sizes),  $d_w$  is the weighted mean effect size over the  $k$  effect sizes, and  $w_i$  is the individual weight for  $d_i$ . The significance of  $Q$  is evaluated against a chi-square distribution with  $k - 1$  degrees of freedom.

The  $I^2$  statistic ( $I^2 = 100\% \times (Q - df) / Q$ , where  $Q$  is Cochran's heterogeneity statistic and  $df$  the degrees of freedom) was used to estimate heterogeneity. A value of 0% indicates no observed heterogeneity, and larger values show increasing heterogeneity, with 25% as low, 50% as moderate, and 75% as high heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003). In the event of significant heterogeneity (indicated by a significant  $Q$ ), linear regression was used to investigate the relationship between study characteristics and effect size.

Caution is needed in interpreting meta-analytical findings because of the potential for selection and other biases that may be introduced in the process of locating, selecting, and combining studies (Egger, Davey-Smith, Schneider, & Minder, 1997). Such bias was examined using a funnel graph, a plot of sample size versus effect size estimates (Light & Pillemer, 1984). If no bias is present, this plot should be shaped like an inverted funnel, with a broad spread of points for the less precise smaller studies at the bottom and decreasing spread as the sample size increases. Asymmetry was tested using Egger's weighted regression test (Egger, et al., 1997). If asymmetry was found to be significant, Duval and Tweedie's (2000) "trim and fill" method was used to estimate the number of missing studies that might exist and the unbiased effect size. Finally, the *fail-safe N* and the *critical N* were estimated in order to address the file drawer problem. The *fail-safe N*<sup>2</sup> is an estimate of the number of studies with null results that would need to be added to the meta-analysis for the effect to no longer be reliable. The *critical N*<sup>3</sup> is an estimate of the number of unpublished non-significant studies. If the *fail-safe N* is greater than or equal to the *critical N* it is assumed that the significance of the observed effects is unchallengeable. An alpha level of .05 was used for all statistical tests.

The American Psychological Association's (APA's) Division 12 Task Force on Promotion and Dissemination of Psychological Procedures developed criteria for *well-established* and *probably efficacious* treatments (Chambless & Hollon, 1998; Chambless et al., 1996; Task Force on Promotion and Dissemination of Psychological Procedures, 1995). Well-established treatments must be shown to be superior or equivalent to an already established treatment, in at least two group

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<sup>2</sup>  $k_0 = k[MES_k / MES_c - 1]$ , where  $k_0$  is the number of effect sizes with a value of zero needed to reduce the mean effect size to  $MES_c$ ,  $k$  is the number of studies in the mean effect size,  $MES_k$  is the weighted mean effect size, and  $MES_c$  is the criterion effect size level (Rosenthal, 1979).

<sup>3</sup>  $k_c = 5k + 10$ , where  $k_c$  is the critical number of studies,  $k$  is the number of studies in the mean effect size (Rosenthal, 1979).

design studies with adequate sample sizes (25–30 per condition) and conducted by different investigators. Alternatively, they must have demonstrated efficacy in a large series of single case designs. Further, experiments must be conducted with the use of treatment manuals and well-specified samples. Designation as probably efficacious requires two studies showing the treatment to be more effective than a waiting list control group, or to an already established treatment (but conducted by the same investigator), or a small series of single case designs.

## Results

**Description of studies.** Forty studies, with a total of 2,401 participants met the inclusion criteria and were included in the current study. Data on these studies were sourced from 35 published papers, one published book chapter and eight unpublished theses. Published and unpublished studies did not differ from each other in terms of their quality ( $t[38] = -.13, p = .906$ ). Forty-three of these works were in English, one in Spanish. Selected characteristics of the included studies are described in Table 5. (Note: throughout the following sections, numbers within square brackets refer to the study numbers listed in Table 5.) Three studies included in the meta-analysis of Cuijpers et al. (2007) were excluded. The study by Teri, Logsdon, Uomoto, and McCurry (1997) was excluded because the sample of patients with Alzheimer's disease was mostly passive in scheduling activities and it was caregivers who rated patients' mood. The study by Zeiss et al. (1979) was excluded because of insufficient information to extract effect sizes. The study by Wilson (1982) was excluded because of a potential interaction between placebo and other interventions making it impossible to calculate the effect for the BA intervention alone (see Hollon & DeRubeis, 1981). Moreover, whereas Cuijpers and colleagues included Thompson and Gallagher (1984) and Thompson, Gallagher, and Breckenridge (1987) as two separate studies, I treated them as a single study. The latter study was judged to be an extension of the former by recruiting more participants. Five studies included in the meta-analysis of Ekers et al. (2008) were excluded. The studies by Cole (1984), McKendree-Smith (2000), and Scogin, Jamison, and Gochneaur (1989) were all excluded because the behavioural interventions were confounded with cognitive components. The studies by Maldonado Lopez (1984) and Wilson (1982) were excluded because of a potential pharmacological/placebo interaction with other interventions rendering it impossible to calculate the effect for the BA interventions. One paper excluded by the meta-analysis of Ekers et al. (2008) was included in this

study, namely Padfield (1976). Contrary to Ekers et al. (2008), I judged that Padfield (1976) did report sufficient data to extract effect sizes.

**BA versus control conditions.** Nineteen studies with a total of 538 participants contributed data to this analysis [1–6, 11, 14, 15, 25, 26, 28, 31, 32, 34, 37, 39, 40]. Participants were taken from adult community sources consisting of volunteers [1–7, 11, 14, 15, 25, 30, 31, 37, 40] and students [4, 26, 32, 34, 39]. Three studies [1, 25, 31] used older adults. Control conditions consisted of waiting list [1–6, 11, 14, 26, 30–32, 34, 39, 40], attention control [15], and treatment as usual [7, 25, 37]. Eleven interventions were based on pleasant activities [2–5, 14, 26, 25, 32, 34, 39, 40], five on behavioural self-control [1, 11, 30, 31, 37], one on contextual BA [6], and two on BATD [7, 15]. The effect of BA interventions against control conditions was large with a pooled effect size of 0.91, demonstrating a highly significant difference favouring BA (Table 6). This main analysis is presented as a forest plot in Figure 3. Heterogeneity was low to moderate, but significant ( $p = .03$ ). There was some evidence of selection bias for this outcome (Egger's regression intercept = 2.29; 95% CI: 0.27–4.32,  $p = .029$ ) and a funnel graph showed some asymmetry with smaller studies tending to show more pronounced beneficial effects in favour of BA. Duval and Tweedie's trim and fill method for correcting bias estimated that four studies were missing, adjusting for which yielded a large random effects point estimate of 0.67 (95% CI: 0.50–0.84;  $Q = 61.62$ ). The *fail-safe N* resulted in a figure of 422 studies which exceeded the *critical N* of 100 studies.



Table 5

*Selected Characteristics of Controlled and Comparative Studies on Behavioural Activation for Depression*

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[1] Barlow (1986)	US	Older Adults ( $M = 77$ )	Senior citizen apartment buildings	Age $\geq 65$ (Excluded if actively suicidal, moderately or severely demented, or receiving treatment for depression.) High depressed subgroup (CES-D > 15)	1. Self-control [Self-control]	~10	~6	6	Group	6 (90 min)	~9	Pre, post.	CES-D	9 (mod)
					2. Waiting-list (6 week)	~5	~6	NA	NA	6 (90 min)	~9			
[2] Barrera (1977 / 1979) <sup>a</sup>	US	Adults ( $M = 36$ )	Community	MMPI-D > 80T; GFCC Factor I > 1.0; GFFCC Factor I-III, V > .70	1. Activity scheduling immediate treatment [Pleasant Activities]	10	60	4	Group	8 (60 min)	10	Pre, post, 1-, 2-, 8-month FU	MMPI-D, BDI	11 (mod)
					2. Self-monitoring (4 week), delayed treatment	10	40	4	Telephone	4 (NR)	10			
					3. Waiting list (4 week), delayed treatment	11	27	NA	NA	NA	18			
[3] Besyner (1979)	US	Adults ( $M = 42$ )	Community	Self-reported depression of at least 2 weeks duration; BDI $\geq 13$	1. Cognitive therapy	10	40	4	Group	4 (120 min)	0	Pre, post, 1-month FU	BDI	9 (mod)
					2. Behaviour therapy [Pleasant Activities]	14	~27	4	Group	4 (120 min)	21			
					3. Nonspecific therapy	10	~33	4	Group	4 (120 min)	10			
					4. Waiting list (4 week)	16	~18	NA	NA	4 (120 min)	31			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[4] Catanese et al. (1979)	US	Young adults ( $M = NR$ )	University	BDI $\geq$ 9; SRDS $\geq$ 40	1. Overt reward (Pleasant activity contingent on blue mood) [Pleasant Activities]	26	~27	2	Group	2 (30 min)	12	Pre, post, 2-week FU	BDI, SRDS	5 (low)
					2. Covert reward	25	~27	2	Group	2 (30 min)	12			
					3. Overt punishment	25	~27	2	Group	2 (30 min)	24			
					4. Covert punishment	21	~27	2	Group	2 (30 min)	10			
					5. Social influence	26	~27	2	Group	2 (30 min)	27			
					6. Waiting list (4 week)	32	~27	NA	NA	NA	34			
[5] Comas-Diaz (1981)	US	Low SES Puerto Rican women ( $M = 38$ )	Community	Depressed; BDI; HRSD (not further specified)	1. Cognitive therapy	8	0	4	Group	5 (90 min)	0	Pre, post, 5-week FU	BDI, HRSD	9 (mod)
					2. Activity scheduling [Pleasant Activities]	8	0	4	Group	5 (90 min)	0			
					3. Waiting list (4 week)	10	0	NA	NA	NA	0			
[6] Cullen (2002); Cullen et al. (2006)	US	Adults ( $M = 38$ )	Community	DSM-IV criteria for major depression (SCID-I); BDI-II $\geq$ 20; RHRSD $\geq$ 14	1. Behavioural activation [Contextual]	13	69	10	Ind	10 (NR)	31	Pre, post	BDI-II	12 (high)
					2. Waiting list, delayed treatment (6 week)	12	67	6	Ind	3 (NR)	33			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[7] Daughters et al. (2008)	US	Adults ( $M = 42$ )	Inpatient substance abuse treatment facility	DSM-IV criteria for substance dependence for past year; completion of detoxification; BDI-II $\geq 10$	1. LETS Act & TAU [BATD]	22	67	2	Group	6 (3 x 60 min, 3 x 30 min)	9	Pre, post, 2-week FU	BDI-II, HRSD	11 (mod)
					2 TAU (daily treatment groups related to substance abuse, stress and anger management, spirituality, education, life and job skills)	22	59	2	Group		14			
[8] Dimidjian et al. (2006); Dobson et al. (2008)	US	Adults ( $M = 40$ )	Community	DSM-IV criteria for major depression; BDI-II $\geq 20$ ; HRSD $\geq 14$ .	1. Behavioural activation & Cognitive therapy	45	~34	16	Ind	Max 24 (50 min)	13	Pre, mid, post, 12-, 24-month FU	BDI-II, HRSD	15 (high)
					2. Behavioural activation [Contextual]	43	~34	16	Ind	Max 24 (50 min)	16			
					3. Antidepressant medication	100	~34	16	Ind	8 (30 min)	44			
					4. Placebo medication (8 weeks)	53	~34	8	Ind	4 (30 min)	22	Pre, mid	BDI-II, HRSD	
[9] Emanuels-Zuurveen & Emmelkamp (1996)	ND	Adults who were married or cohabitating ( $M = 38$ )	Community	DSM-III-R criteria for unipolar depression; BDI > 14; spouse willing to cooperate; marital distress	1. Behavioural therapy including social skills [Pleasant Activities]	18	~48	8	Ind	8 (60 min)	12	Pre, mid, post	BDI	10 (mod)
					2. Behavioural marital therapy.	18	~48	8	Couple	8 (60 min)	43	Pre, mid, post	BDI	
[10] Fleming & Thornton (1980)	US	Adults ( $M = 38$ )	Community	Reported depression $\geq 3$ weeks; BDI $\geq 17$ ; D30 $\geq 14$ ; clinical judgement that major presenting problem is depression	1. Cognitive	~13	~24	4	Group	8 (120 min)	~2	Pre, post, 6-week FU	BDI, D30	9 (mod)
					2. Self-Control [Self-Control]	~13	~24	4	Group	8 (120 min)	~2			
					3. Nonspecific therapy	~13	~24	4	Group	8 (120 min)	~32			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[11] Fuchs & Rehm (1977)	US	Adults ( $M = 29$ , range = 18-48)	Community	MMPI: $F \leq 80$ , $L \leq 60$ , $D \geq 70$ , $D > Hy$ , and $D > Pt$ and $D$ among the 2 highest elevations.	1. Self-control [Self-Control]	12	0	6	Group	6 (120 min)	33	Pre, post, 6-week FU	BDI, MMPI-D	8 (mod)
					2. Nonspecific therapy	12	0	6	Group	6 (120 min)	16			
					3. Waiting list (6 week)	12	0	6	NA	NA	16			
[12] Gallagher (1981)	US	Older Adults ( $M = 68$ )	Clinical Sample	Clinical interview; MMPI-D $> 2SD$ above mean; no organic impairment	1. Behavioural therapy [Pleasant Activities]	14	50	5	Group	10 (90 min)	~28	Pre, post, 5-week FU	MMPI-D, BDI, SRDS	9 (mod)
					2. Supportive	14	50	5	Group	10 (90 min)	~28			
[13] Gallagher & Thompson (1982)	US	Older Adults ( $M = 68$ )	Community	RDC diagnosis of current definite episode of non-psychotic MDD, $BDI \geq 17$ , $HRSD \geq 14$	1. Behavioural therapy [Pleasant Activities]	15	40	12	Ind	16 (90 min)	33	Pre, post, 1½-, 3-, 6-, 12-month FU	BDI, HRSD, SRDS	9 (mod)
					2. Cognitive therapy	11	10	12	Ind	16 (90 min)	9			
					3. Brief relational / insight psychotherapy	12	20	12	Ind	16 (90 min)	16			
[14] Gallagher-Thompson et al. (2000); Lovett & Gallagher (1988)	US	Adults ( $M = 60$ ; range = 31 - 81)	Community	Providing care to an adult 60+ years with physical or mental disability. 20% found to have definite major depression; 16% probable major depression; 11% minor depression; 16% subsyndromal depression.	1. Life satisfaction [Pleasant Activities]	78	~17	10	Group	10 (120 min)	28	Pre, post	RDC using SADS Interview data	10 (mod)
					2. Problem solving	77	~17	10	Group	10 (120 min)	23			
					3. Minimal contact control (10 week)	58	~17	NA	NA	NA	21			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[15] Gawrysiak et al. (2009)	US	Young adults ( $M = 18$ )	University	18 years or older. BDI-II $\geq 14$ . No currently receiving psychotherapy or having received psychotherapy in the previous two years. Absence of suicidal intent, psychosis or bipolar disorder.	1. BATD [BATD]	14	~20	2	Ind	1 (90 min)	0	Pre, post	BDI-II	7 (mod)
					2. Attention control (2 week)	16	~20	NA	Ind	1 (90 min)	0			
[16] Graf (1977)	US	Young adults ( $M = 19$ )	University	BDI > 12	1. Increased mood-related activities [Pleasant Activities]	30	~43	2	Ind	1 (60 min)	30	Pre, post	BDI	10 (mod)
					2. Increased control activities	30	~43	2	Ind	1 (60 min)	10			
					3. Activity monitoring condition	30	~43	2	Ind	1 (60 min)	27			
[17] Hammen & Glass (1975), Experiment 1	US	Young adults ( $M = \text{NR}$ )	University	Mild to moderate depression (based on screening with D30, FCC & PFS)	1. Increase activities [Pleasant Activities]	10	NR	2	NR	1 (NR)	NR	Average score from daily recordings over 2 weeks	DACL, ED Scale	5 (low)
					2. Expectancy control	10	NR	2	NR	1 (NR)	NR			
					3. Self-monitor control	10	NR	2	NR	1 (NR)	NR			
					4. No treatment control (2 weeks)	10	NR	NA	NR	1 (NR)	NR			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[18] Hammen & Glass (1975), Experiment 2	US	Young adults ( $M = NR$ )	University	Depression (based on screening with D30 & BDI)	1. Increase activities [Pleasant Activities]	4 or 5	NR	1	NR	1 (NR)	NR	Average score from daily recordings over 1 week	DACL, ED Scale	5 (low)
					2. Self-monitor	5 or 4	NR	1	NR	1 (NR)	NR			
[19] Hopko, Lejuez, LePage, et al. (2003)	US	Psychiatric inpatients ( $M = 30$ )	Clinical sample	Principal diagnosis of MDD	1. Behavioural activation treatment for depression [BATD]	10	~64	2	Ind	6 (20 min)	0	Pre, post	BDI	9 (mod)
					2. Supportive psychotherapy	15	~64	2	Ind	6 (20 min)	0			
[20] Jacobson, Dobson, et al. (1996); Gortner, et al. (1998)	US	Adults ( $M = 38$ )	Clinical / Community	DSM-III-R criteria for major depression; BDI $\geq$ 20; HRSD $\geq$ 14.	1. Behavioural activation [Contextual]	57	28	NR	Ind	20 (NR)	~8	Pre, post, 6-, 12-, 18, 24-month FU	BDI, HRSD	15 (high)
					2. Automatic thoughts (Behavioural activation & modification of dysfunctional thoughts)	44	23	NR	Ind	20 (NR)	~8			
					3. Cognitive therapy (Behavioural activation, automatic thoughts & core schema)	50	24	NR	Ind	20 (NR)	~8			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[21] Kornblith, et al. (1983)	US	Adults ( $M = 38$ )	Community	BDI $\geq 20$ ; SADS-RDC-major affective disorder	1. Comprehensive self-control [Self-Control]	16	0	12	Group	12 (90 min)	31	Pre, post, 3-month FU	BDI, MMPI-D, HRSD, RTIDS	13 (high)
					2. Self-monitoring plus self-evaluation	12	0	12	Group	12 (90 min)	0			
					3. Principles-only	15	0	12	Group	12 (90 min)	27			
					4. Psychotherapy	6	0	12	Group	12 (90 min)	17			
[22] Maldonado Lopez (1982)	SP	Adults ( $M = NR$ )	Community out-patient	Psychiatrist Diagnosis reactive depressive disorder	1. Cognitive restructuring	8	NR	10	Ind	10 (60 min)	0	Pre, post, FU	BDI, HRSD, SRDS	7 (mod)
					2. Behavioural assertive training [Pleasant Activities]	8	NR	10	Ind	10 (60 min)	0			
					3. Pharmacological control	8	NR	10	Ind	NA	0			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[23] McLean & Hakstian (1979, 1990)	CA	Adults ( $M = 39$ )	Community	(a) Between 20 and 60 years of age; (b) satisfying diagnostic criteria for clinical depression, and depressed for at least the last 2 months; (c) functionally impaired because of depression; (d) within or beyond the moderate range on two out of three psychometric tests for depression $MMPI-D \geq 25 / 29.5$ , $BDI \geq 23$ , $DACL \geq 14$ ; (e) fluent in English; (f) not receiving treatment for depression elsewhere.	1. Psychotherapy	51	~28	10	Ind	10 (60 min)	30	Pre, post, 3-month FU, 2.25-year FU	BDI, Mood index	12 (high)
					2. Relaxation Therapy	48	~28	10	Ind	10 (60 min)	26			
					3. Behavior Therapy [Contextual]	44	~28	10	Ind	10 (60 min)	5			
					4. Drug Therapy	53	~28	11	Ind	4 (15 min)	36			
[24] McNamara & Horan (1986)	US	Young adults ( $M = 23$ ; range = 19-31)	University clinic	Depressive episode, $BDI \geq 18$ , $HRSD \geq 20$	1. Cognitive therapy	~12	~27	8	Ind	8 (50 min)	~20	Pre, post, 2-month FU	BDI	10 (mod)
					2. Behaviour therapy [Pleasant Activities]	~12	~27	8	Ind	8 (50 min)	~20			
					3. Combined therapy	~12	~27	8	Ind	8 (50 min)	~20			
					4. High-demand control (Client-centered therapy)	~12	~27	8	Ind	8 (50 min)	~20			
[25] Meeks et al. (2008)	US	Older adults ( $M = 78$ )	Nursing Homes	Identified by staff as being depressed; $MMSE > 13$ ; $GDS > 11$ ; $SADS$ depressive disorder	1. BE-ACTIV (Pleasant Activities)	13	NR	10	Ind	10 (30-40 min)	23	Pre, post, 3-month FU	GDS, HRSD, SADS depression status	10 (mod)
					2. Treatment as usual Control	7	NR	10	NA	NA	43			



Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[26] Pace (1978) Study 1	AU	Young adults ( $M = NR$ )	University	Self-referred if they believed they had difficulty “controlling their moods”; SRDS > 32; Interview: no evidence of psychosis or other major problems. SRDS $M = 71$ , severe – extreme.	1. No monitoring, no activity instructions	20	30	20	Ind	1 (120 min)	35	Concurrent (10 x bi-weekly)	BDI, SRDS	8 (mod)
					2. No monitoring, activity instructions	20	30	20	Ind	1 (120 min)	35			
					3. Monitoring, no activity instructions	20	30	20	Ind	1 (120 min)	35			
					4. Monitoring and activity instructions [Pleasant Activities]	20	30	20	Ind	1 (120 min)	35			
[27] Padfield (1976) <sup>b</sup>	US	Low SES women (range = 21-56)	Community	Moderate depression (SRDS, GFCC)	1. Counseling	12	33	12	Ind	12 (NR)	0	Pre, post	SRDS	8 (mod)
					2. Behavioural [Pleasant Activities]	12	17	12	Ind	12 (NR)	0			
[28] Rehm et al. (1979)	US	Adults (range 21-60)	Community	MMPI: $F \leq 80T$ , $L \leq 60T$ , $D \geq 70T$ , $D > Hy$ , $D > Pt$ and $D$ among the highest elevations	1. Self-control [Self-Control]	14	0	6	Group	6 (NR)	0	Pre, post	BDI, MMPI-D	8 (mod)
					2. Assertion Skills	13	0	6	Group	6 (NR)	23			
[29] Rehm et al. (1987)	US	Adults ( $M = 39$ )	Community	BDI $\geq 20$ , MMPI-D $\geq 70T$ , SADS-RDC	1. Self-control combined behavioural- and cognitive-target	~46	0	10	Group	10 (90 min)	~26	Pre, post, 6-month FU	BDI, MMPI-D, HRSD, RTIDS	12 (high)
					2. Self-control behavioural-target [Self-Control]	~46	0	10	Group	10 (90 min)	~24			
					3. Self-control cognitive-target	~46	0	10	Group	10 (90 min)	~24			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[30] Rehm et al. (1981)	US	Adults ( $M = 39$ ; range 20-58)	Community	MMPI-D $\geq 70T$ , MMPI-Pt $\leq$ MMPI-D, MMPI-Hy $\leq$ MMPI-D; SADS-RDC major depressive disorder	1. Self-monitoring [Self-Control]	12	0	7	Group	7 (90 min)	25	Pre, post	BDI, MMPI-D	8 (mod)
					2. Self-monitoring and self-evaluation [Self-Control]	11	0	7	Group	7 (90 min)	0			
					3. Self-monitoring and self-reward [Self-Control]	12	0	7	Group	7 (90 min)	0			
					4. Self control [Self-Control]	12	0	7	Group	7 (90 min)	25			
					5. Waiting list (7 weeks)	16	0	7	NA	7 (90 min)	6			
[31] Rokke et al. (1999)	US	Older Adults ( $M = 66$ , range = 60-86)	Community	HRSD $\geq 10$ , HRSD $\geq 10$ , GDS $\geq 11$ ; either not currently on medication for depression or have taken the same dose of medication for a minimum of 3 months and still meeting the above criteria, not recurrently receiving any other psychotherapy	1. Waiting list (10 weeks)	29	69	NA	NA	NA	21	Pre, post, 3-month FU, 12-month FU	BDI, GDS, HRSD	9 (mod)
					2. Self-management training: Choice—cognitive	7	~50	10	Ind	10 (60 min)	14			
					3. Self-management training: Choice—behavioural [Self-Control]	8	~40	10	Ind	10 (60 min)	25			
					4. Self-management training: No choice—cognitive	11	~50	10	Ind	10 (60 min)	73			
					5. Self-management training: No choice—behavioural [Self-Control]	9	~40	10	Ind	10 (60 min)	78			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[32] Shaw (1977)	CA	Young adults (range = 18-26)	University	BDI $\geq$ 18, HRSD $\geq$ 20, VAS $\geq$ 40	1. Cognitive modification	8	38	4	Group	8 (120 min)	0	Pre, mid, post, 1-month FU	BDI, HRSD	8 (mod)
					2. Behaviour modification [Pleasant Activities]	8	25	4	Group	8 (120 min)	0			
					3. Nondirective	8	38	4	Group	8 (120 min)	0			
					4. Waiting list (4 weeks)	8	25	NA	NA	NA	0			
[33] Skinner (1984)	US	Adults ( $M = 34$ , Range = 20-61)	Community	BDI > 12	1. Cognitive	~10	28	4	Ind	5 (60 min)	~30	Pre, post	BDI	6 (mod)
					2. Behaviour [Pleasant Activities]	~10	38	4	Ind	5 (60 min)	~20			
					3. Self-assigned Cognitive	~10	12	4	Ind	5 (60 min)	~20			
					4. Self-assigned Behavioural	~10	50	4	Ind	5 (60 min)	~20			
					5. Self-monitoring control	~10	33	4	Ind	5 (60 min)	~10			
[34] Taylor & Marshall (1977)	CA	Young adults ( $M = 22$ , range = 18-26)	University	Self-reported depression $\geq$ 2 weeks; BDI $\geq$ 13; D30 $\geq$ 70T; no medication or other treatment	1. Cognitive	7	28	4	Ind	6 (40 min)	NR	Pre, post, 5-week FU	BDI, D30	6 (mod)
					2. Behavioural [Pleasant Activities]	7	28	4	Ind	6 (40 min)	NR			
					3. Cognitive & behavioural	7	28	4	Ind	6 (40 min)	NR			
					4. Waiting List (4 weeks)	7	28	NA	NA	NA	0			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[35] Thompson, et al. (1987) <sup>F</sup> ; Thompson & Gallagher (1984) <sup>P</sup> ; Gallagher-Thompson et al. (1990)	US	Older Adults ( <i>M</i> = 67)	Community	MDD (RDC); BDI $\geq$ 17; HRSD $\geq$ 14	1. Behavioural [Pleasant Activities]	~29	~32	12–16	Ind	16-20 (NR)	~14	Pre, 6-week mid, post, 12 months FU, 24 months FU	BDI, HRSD, GDS; BSI: Depression; SADS	11 (mod)
					2. Cognitive	~37	~41	12-16	Ind	16-20 (NR)	~27			
					3. Brief psychodynamic	~28	~33	12-16	Ind	16-20 (NR)	~14			
					4. Wait list (6 weeks)	20	~21	NA	NA	NA	5			
[36] Turner, Ward, & Turner (1979)	US	Young adults ( <i>M</i> = 24)	University	DACL $T \geq$ 70 and reported depression as primary concern.	1. Activities increase [Pleasant Activities]	14	50	4	Ind	5 (50 min)	NR	Pre, post	DACL	4 (low)
					2. Expectancy control	14	50	4	Ind	5 (50 min)	NR			
					3. Self-monitoring	14	50	4	Ind	5 (50 min)	NR			
					4. Attention-control	14	50	4	Ind	5 (50 min)	NR			
[37] Van den Hout et al. (1995)	ND	Adults ( <i>M</i> = 34, Range = 20 – 59)	Clinical	SCID-I, major depression and / dysthymia. Excluded if bipolar mood disorder; psychotic disorder, alcohol or drug dependence; anxiety disorder, PTSD. SRDS $\geq$ 50	1. Self-control therapy & standard treatment [Self-Control]	15	38	12	Group	12 (90 min)	~10	Pre, post, 13-week FU	SRDS, VROPSO M	8 (mod)
					2. Standard treatment (structured group therapy; creative therapy and physical exercise; social skills training and occupational therapy)	14	42	12	Group	NR	~10			

Table 5  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at post-test (%)	Measurements	Measures of Depression	Quality of research design (low = 0 – 17 = high)
[38] Wagner et al. (2007)	US	Adults ( $M = 34$ )	Hospital	PTSD Checklist $\geq 35$ ; CAPS-IV & SCID-I: PTSD	1. BA for physically injured trauma survivors [Contextual]	4	75	8	Ind	4-6 (60-90 min)	0	Pre, post	CESD	9 (mod)
					2. TAU—Community referral	4	0	8	NA	NA	0			
[39] Weinberg (1978)	US	Young adults ( $M = NR$ )	University	BDI $\geq 8$	1. Increased positive reinforcement [Pleasant Activities]	10	~12	4	Group	4 (60 min)	10	Pre, post, 2-month FU	BDI, MAACL-D	5 (low)
					2. Systematic rational restructuring	10	~12	4	Group	4 (60 min)	0			
					3. Emotional awareness training	10	~12	4	Group	4 (60 min)	20			
					4. Waiting list (4 weeks)	9	~12	NA	NA	NA	0			
[40] Wilson et al. (1983)	AU	Adults ( $M = 40$ ; range = 20-58)	Community	BDI $\geq 17$ ; no previous concurrent treatment with major tranquilizers or lithium; absence of other major physical or psychiatric disorders; self-reported duration of depression of at least 3 months; absence of suicidal intention or ideation	1. Behaviour therapy [Pleasant Activities]	9	25	8	Ind	8 (60 min)	11	Pre, mid, post, 5-month FU	BDI, HRSD	5 (low)
					2. Cognitive therapy	11	12	8	Ind	8 (60 min)	27			
					3. Waiting list (8 weeks)	9	22	NA	NA	NA	0			

*Note.* AU = Australia; BDI = Beck Depression Inventory; BDI-II = Beck Depression Inventory Second Edition; BSI-D = Brief Symptom Inventory Depression Scale; CA = Canada; CAPS-IV = Clinician-Administered PTSD Scale for *DSM-IV*; CESD = Centre for Epidemiological Studies Depression Scale; D30 = D30 Depression Scale; DACL = Depression Adjective Checklist; ED Scale = Elation-Depression Scale; FCC = Feelings and Concerns Checklist; FU = Follow-up; GDS = Geriatric Depression Scale; GFCC = Grinker Feelings and Concerns Checklist; HRSD = Hamilton Rating Scale for Depression; Ind = Individual; MAACL-D = Multiple Affect Adjective Checklist—Depression Scale; MDD = Major Depressive Disorder; MMPI-D = Minnesota Multiphasic Personality Inventory Depression Scale; MMSE = Mini-Mental State Examination; NA = Not Applicable; NR = Not Reported; ND = Netherlands; PFS = Personal Feelings Scales; PTSD = Post Traumatic Stress Disorder; RDC = Research Diagnostic Criteria; RHRSD = Revised Hamilton Rating Scale for Depression; RTIDS = Raskin Three Item Depression Scale; SADS = Schedule for Affective Disorders and Schizophrenia; SCID-I = Structured Clinical Interview for *DSM* Axis I Disorders; SP = Spain; SRDS = Zung Self-Rating Depression Scale; US = United States of America; VAS = Visual Analogue Scale; VROPSOM = Dutch version of the DACL.

<sup>a</sup>Data was obtained from the raw data presented in Barrera (1977) rather than Barrera (1979) because the latter paper does not provide the results of comparisons until 1-month follow-up when the two conditions compared have both received the

behavioural activation intervention.

<sup>b</sup>Padfield (1976) was excluded by Ekers and colleagues' (2008) meta-analysis on the grounds that there was insufficient reported data.

<sup>c</sup>Cuijpers and colleagues' (2007) meta-analysis includes Thompson and Gallagher (1984) and Thompson, Gallagher and Breckenridge (1987) as two separate studies; however, for this meta-analysis they were treated as a single study. The latter study was judged to be an extension of the former by recruiting more participants.

Table 6

*Effects of Behavioural Activation on Measures of Depression at Posttest for Participants Reporting Elevated Symptoms of Depression*

	N <sub>cmp</sub>	N <sub>prtcpnts</sub>	Hedges's g	95% CI	Q	I <sup>2</sup>
Comparison to Control						
All forms of BA	19	538	0.91***	0.63 to 1.19	38.60**	53.37
Pleasant Activities	11	308	0.92***	0.53 to 1.31	23.79**	57.97
Self-Control	5	147	0.73***	0.26 to 1.20	6.82	41.38
Contextual	1	14	1.81**	0.62 to 3.01	0.00	0.00
BATD	2	69	1.06	-0.04 to 2.16	4.60*	78.28
Comparison to CBT/CT						
All forms of BA	16	562	-0.01	-0.17 to 0.15	13.99	0.00
Pleasant Activities	11	243	-0.15	-0.40 to 0.10	10.21	2.08
Self-Control	3	111	-0.02	-0.34 to 0.31	0.61	0.00
Contextual	2	208	0.17	-0.10 to 0.45	0.20	0.00
BATD	0	--	--	--	--	--
Comparison to ADM						
All forms of BA	3	185	0.57	-0.15 to 1.29	9.32**	78.54
Pleasant Activities	1	16	1.60**	0.52 to 2.68	0.00	0.00
Self-Control	0	--	--	--	--	--
Contextual	2	169	0.28	-0.35 to 0.90	4.12*	75.70
BATD	0	--	--	--	--	--
Comparison to Other Interventions						
All forms of BA	22	788	0.38***	0.18 to 0.58	36.49*	42.46
Pleasant Activities	15	523	0.34***	0.15 to 0.53	15.85	11.68
Self-Control	4	103	0.51	-0.44 to 1.46	16.32**	81.62
Contextual	2	137	0.70***	0.34 to 1.06	0.49	0.00
BATD	1	25	0.69	-0.11 to 1.49	0.00	0.00

Note. -- = no data; N<sub>cmp</sub> = Number of comparisons; N<sub>prtcpnts</sub> = Number of participants.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

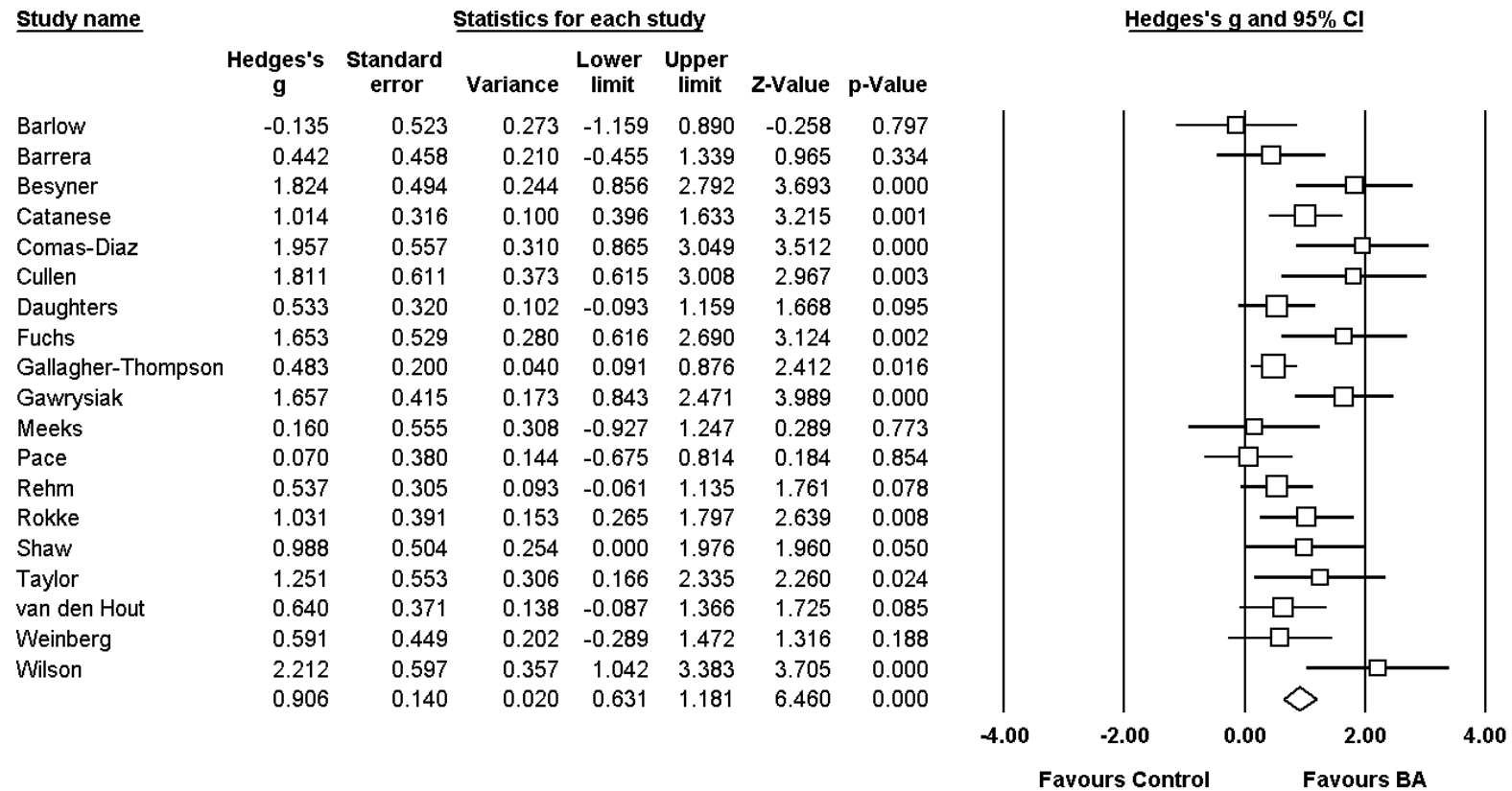


Figure 3. Hedges's  $g$  effect sizes of behavioural activation interventions compared to control conditions on measures of depression at posttest.



Subgroup analyses indicated that the pleasant activities, self-control contextual, and BATD variants of BA all produced large (and with the exception of BATD, significant) effect sizes, that did not differ significantly from each other ( $p = .417$ ). However, only one study included in these analyses tested contextual BA and only two studies tested BATD, which makes comparisons between these forms of BA and other forms of BA unreliable. The effect sizes and 95% confidence intervals of these comparisons are listed in Table 6. The effects obtained for patients with elevated depressive symptoms did not differ significantly from those meeting the criteria for MDD ( $p = .774$ ). The effects obtained for patients with mild, moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = 0.101$ ). Subgroup analysis did not find that the outcomes produced by graduate-level practitioners differed to those with post-graduate qualifications ( $p = .091$ ). However, practitioners with post-graduate qualifications were used in only two studies [13, 24] which again makes this comparison unreliable.

To account for heterogeneity, linear regression was used to investigate the influence of participant, intervention, and methodological characteristics. A number of variables were tested but failed to significantly account for variance in effect size, including: type of BA ( $R^2 = .11, p = .603$ ), type of control ( $R^2 = .06, p = .292$ ), severity of self-reported depression at pretest ( $R^2 = .14, p = .334$ ), level of self-reported activity at pretest ( $R^2 = .20, p = .520$ ), extent of differences between groups on outcome measures at pretest ( $R^2 = .15, p = .264$ ), population age ( $R^2 = .20, p = .175$ ), mode of intervention (i.e., group or individual;  $R^2 = .02, p = .613$ ), number of sessions ( $R^2 = .01, p = .76$ ), length of intervention ( $R^2 = .10, p = .183$ ), density of sessions ( $R^2 = .01, p = .963$ ), therapist experience ( $R^2 = .09, p = .245$ ), and quality of study ( $R^2 = .13, p = .337$ ).

Fifteen studies with a total of 588 participants contributed data to an analysis of dropout rate [1-4, 6, 7, 11, 14, 25, 26, 30, 31, 37, 39, 40]. The differential dropout rate of BA interventions against control conditions resulted in an effect size of -0.07, representing a negligible and nonsignificant difference favouring control conditions (95% CI: -0.30 to 0.16,  $p = .53$ ;  $Q = 13.23$ ).

BA interventions often try to increase participants' engagement in pleasant activities, it is therefore of interest to consider the impact of these interventions on measures of activity. Posttest comparisons between BA and control conditions on measures of activity (typically the Pleasant Events Schedule; MacPhillamy &

Lewinsohn, 1982) were possible in 13 studies [1–3, 11, 14, 15, 25, 26, 30, 31, 37, 39, 40], totaling 346 participants. These comparisons yielded a medium and significant mean effect size of 0.58 (95% CI: 0.37–0.80,  $p < .001$ ). Heterogeneity was small and nonsignificant ( $Q = 7.95$ ;  $p = .789$ ;  $I^2 = 0.00\%$ ). A funnel graph showed no evidence of asymmetry providing little indication of selection bias (Egger's test = -0.11; 95% CI: -1.75 to 1.97,  $p = .899$ ). The *fail-safe N* resulted in a figure of 79 studies which exceeded the *critical N* of 75 studies. The relationship between mean effect size for activity and mean effect size for mood failed to reach significance ( $r = .53$ ,  $p = .065$ ).

**Comparison with other treatments.** BA could be compared directly with other psychological treatments in 31 studies (Table 6). In 16 studies BA was compared with CBT/CT [3, 5, 8, 10, 13, 20, 22, 24, 29, 31-35, 39, 40]. The negligible pooled effect size of -0.01 in favour of CBT/CT was nonsignificant ( $p = .910$ ), and heterogeneity was small and nonsignificant ( $p = .526$ ). Although not reaching significance, there was some evidence of selection bias (Egger's regression intercept = -1.19; 95% CI: -2.50 to 0.11,  $p = .071$ ) and a funnel graph showed some asymmetry with smaller studies tending to show more pronounced beneficial effects in favour of CBT/CT. However, Duval and Tweedie's trim and fill method for correcting bias estimated that zero studies were missing. Subgroup analyses indicated that the pleasant activities variant of BA yielded a small effect in favour of CBT/CT, the self-control variant yielded a negligible effect in favour of CBT/CT and the contextual variant yielded a small effect in favour of BA. The effect sizes of the different variants of BA were not found to differ significantly from each other ( $p = .227$ ). Subgroup analysis also found that the effects obtained for patients with elevated depressive symptoms did not differ significantly from those meeting the criteria for MDD ( $p = .462$ ). The effects obtained for patients with mild, moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = 0.926$ ). Outcomes produced by practitioners with post-graduate level qualifications did not differ significantly from outcomes produced by graduate-level practitioners ( $p = .280$ ).

Three of the studies included in the BA versus CBT/CT comparison [5, 8, 20] used a CBT/CT intervention that clearly included a BA component. When these studies were removed to permit a purer comparison between interventions with a behavioural focus versus interventions with a cognitive focus, the pooled effect size

of -0.09 (95% CI: -0.29 to 0.12,  $p = .402$ ) in favour of CBT/CT was small and nonsignificant.

Ten studies comparing BA with CBT/CT reported data from both self-report depression measures and clinician or interviewer administered instruments [5, 8, 13, 20, 22, 29, 31, 32, 35, 40]. Both forms of data yielded negligible pooled effect sizes in favour of BA (0.00 and 0.00, respectively). These effect sizes did not differ significantly from each other ( $p = .981$ ).

Eleven studies with a total of 662 participants contributed data to an analysis of dropout rate [3, 8, 12, 20, 24, 29, 31, 33, 35, 39, 40]. The differential dropout rate of BA interventions against CBT/CT conditions resulted in an effect size of 0.02, representing a negligible and non-significant difference favouring BA conditions (95% CI: -0.21 to 0.26,  $p = .846$ ;  $Q = 4.87$ ,  $p = .900$ ;  $I^2 = 0.00$ ).

BA was compared with ADM in three studies [8, 22, 23]. The medium pooled effect size of 0.57 in favour of BA was nonsignificant. Heterogeneity was high and significant ( $p = .009$ ). There was no evidence of selection bias for this outcome (Egger's regression intercept = 3.56; 95% CI: -46.03 to 53.14,  $p = .529$ ). Subgroup analyses indicated that the one study that employed a pleasant activities variant of BA resulted in a large and significant effect size in favour of BA, and the two studies that employed the contextual variant of BA yielded a small effect size in favour of BA. The effect sizes of the different variants differed significantly from each other ( $p = .037$ ). All the patients included in the comparisons met the criteria for MDD. The effects obtained for patients with moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = .895$ ). Two studies contributed data to an analysis of dropout rate [8, 23]. The differential dropout rate of BA interventions against ADM conditions resulted in an effect size of 0.96, representing a large and significant difference favouring BA conditions (95% CI: 0.42 to 1.49,  $p < .001$ ;  $Q = 1.38$ ,  $p = .240$ ;  $I^2 = 27.53$ ).

In 22 studies BA was compared with psychotherapy or other interventions [2, 3, 10-14, 16-19, 21, 23-24, 26-28, 33, 35, 36, 38, 39]. The significant pooled effect size of 0.38 indicated a medium difference between BA and other treatments, favouring BA. There was no evidence of selection bias for this outcome (Egger's regression intercept = -0.68; 95% CI: -2.45 to 1.08,  $p = .431$ ). The *fail-safe N* was 118, which does not exceed the *critical N* of 120 studies. Heterogeneity was low to moderate, but significant ( $p = .019$ ). Subgroup analyses indicated that the contextual

and BATD variants of BA resulted in large effect sizes in favour of BA and the pleasant activities and self-control variants resulted in medium effect sizes in favour of BA, although only the pleasant activities and contextual effects were significant. The BATD variant was only applied in one study and the contextual variant in two studies. The effect sizes of the different variants of BA were not found to differ significantly from each other ( $p = .322$ ). Subgroup analysis also found no significant difference between effects obtained for patients with elevated depressive symptoms versus those meeting the criteria for MDD ( $p = .715$ ). The effects obtained for patients with mild, moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = .729$ ). Outcomes produced by practitioners with post-graduate level qualifications did not differ significantly from outcomes produced by graduate-level practitioners ( $p = .195$ ).

To account for heterogeneity, linear regression was used to investigate the influence of participant, intervention, and methodological characteristics. Only the extent of differences between groups on outcome measures at pretest significantly accounted for variance in effect size ( $R^2 = .35, p = .017$ ). Inspection of these data indicated that smaller differences in outcome measures at pretest were associated with larger study effect sizes. Other variables tested included: type of BA ( $R^2 = .06, p = .742$ ), type of comparison intervention ( $R^2 = .22, p = .643$ ), severity of self-reported depression at pretest ( $R^2 = .01, p = .895$ ), level of self-reported activity at pretest ( $R^2 = .23, p = .268$ ), population age ( $R^2 = .08, p = .435$ ), mode of intervention (i.e., group or individual;  $R^2 = .05, p = .345$ ), number of sessions ( $R^2 = .01, p = .734$ ), length of intervention ( $R^2 = .00, p = .952$ ), density of sessions ( $R^2 = .05, p = .604$ ), therapist experience ( $R^2 = .00, p = .794$ ), and quality of study ( $R^2 = .14, p = .225$ ).

Sixteen studies contributed data to an analysis of dropout rate [2, 3, 10-14, 16, 21, 23, 24, 26, 28, 33, 35, 39]. The differential dropout rate of BA interventions against psychotherapy or other conditions resulted in an effect size of -0.04, representing a negligible and nonsignificant difference favouring psychotherapy and other conditions (95% CI: -0.28 to 0.21,  $p = .762$ ;  $Q = 18.71, p = .227$ ;  $I^2 = 19.84$ ).

**Effects at follow-up.** BA could be compared directly with a control condition at one- to three-month follow-up in four studies [4, 25, 37, 39]. The effect of BA interventions against control conditions was significant, large (0.75), and in favour of BA (Table 7). Heterogeneity was low and nonsignificant. There was no evidence of selection bias for this outcome (Egger's regression intercept = -2.65; 95% CI: -10.72

to 5.42,  $p = .293$ ). The *fail-safe N* of 8 studies did not exceed the *critical N* of 30 studies.

BA could be compared directly with CBT/CT at one- to three-month follow-up in nine studies [3, 5, 10, 12, 22, 24, 31, 34, 39], at four- to six-month follow-up in four studies [13, 20, 29, 40], at seven- to 12-month follow-up in five studies [8, 13, 14, 20, 31], and at 13- to 24-month follow-up in three studies [8, 14, 20]. At each comparison point, the effect was small and nonsignificant with a pooled effect size ranging from -0.15 (in favour of CBT/CT) to 0.05 (in favour of BA; Table 7). There was no evidence of selection bias for any of these outcomes and heterogeneity was low and nonsignificant for each comparison except for the one- to three-month follow-up where significant moderate to high heterogeneity was observed.

BA could only be compared directly with ADM at one- to three-month follow-up in two studies [22, 23]. At this comparison point, the effect was small and nonsignificant ( $p = .604$ ; Table 7).

BA could be compared directly with other treatments at one- to three-month follow-up in nine studies [3, 10-13, 21, 23, 24, 39]. The pooled effect size of 0.43 indicated a medium and significant difference between BA and these other treatments in favour of BA. Heterogeneity was moderate to high and significant ( $p = .004$ ). There was no evidence of selection bias for this outcome (Egger's regression intercept = 1.77; 95% CI: -2.08–5.63,  $p = .313$ ). The *fail-safe N* resulted in a figure of 16 studies which did not exceed the *critical N* of 55 studies.

BA could only be compared with psychotherapy in one study at four- to six-month [13] and two studies at seven- to 12-month follow-up [13, 14]. These suggested a large and medium effect size in favour of BA respectively, although both were nonsignificant (Table 7).

Table 7

*Effects of Behavioural Activation on Measures of Depression at Follow-up for Participants Reporting Elevated Symptoms of Depression*

	N <sub>cmp</sub>	N <sub>prtcpnts</sub>	Hedges's g	95% CI	Q	I <sup>2</sup>
Comparison to Control						
1-3 months FU	4	102	0.75***	0.29 to 1.22	3.78	20.60
4-6 months FU	0	--	--	--	--	--
7-12 months FU	0	--	--	--	--	--
13-24 months FU	0	--	--	--	--	--
Comparison to CBT/CT						
1-3 months FU	9	189	-0.02	-0.44 to 0.39	16.84*	52.50
4-6 months FU	4	219	0.05	-0.22 to 0.31	0.90	0.00
7-12 months FU	5	226	-0.15	-0.42 to 0.13	2.00	0.00
13-24 months FU	3	203	-0.03	-0.33 to 0.26	0.80	0.00
Comparison to ADM						
1-3 months FU	2	96	0.10	-0.29 to 0.50	0.93***	0.00
4-6 months FU	0	--	--	--	--	--
7-12 months FU	0	--	--	--	--	--
13-24 months FU	0	--	--	--	--	--
Comparison to Other Interventions						
1-3 months FU	9	284	0.43*	0.01 to 0.85	22.54**	64.50
4-6 months FU	1	19	0.71	-0.18 to 1.60	0.00	0.00
7-12 months FU	2	71	0.32	-0.39 to 1.04	1.82	45.04
13-24 months FU	0	--	--	--	--	--

Note. -- = no data; N<sub>cmp</sub> = Number of comparisons; N<sub>prtcpnts</sub> = Number of participants.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Patients with MDD.** Of particular interest were the effects of BA on patients meeting the diagnostic criteria for MDD. The effects of BA on measures of depression at posttest could be compared with control conditions in three studies [6, 30, 37]. A large and significant mean effect size of 0.82 was obtained in favour of BA (Table 8). Although nonsignificant, there was some evidence of selection bias for this outcome (Egger's regression intercept = 4.15; 95% CI: -6.46 to 14.76,  $p = .126$ ) and a funnel graph showed some asymmetry with a smaller study showing more pronounced beneficial effects in favour of BA. Nevertheless, Duval and Tweedie's trim and fill method for correcting bias estimated that zero studies were missing. The *fail-safe N* of eight studies did not exceed the *critical N* of 25 studies. Heterogeneity was low to moderate and nonsignificant. Although only based on three studies, subgroup analyses indicated that the self-control and contextual variants of BA both produced significant effect sizes that were medium and large in magnitude respectively. The differences between variants did not reach statistical significance ( $p = .060$ ). The effects obtained for patients with mild, moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = 0.166$ ).

The effects of BA on measures of depression at posttest could be compared with CBT/CT in six studies [8, 13, 20, 22, 29, 35]. A negligible and nonsignificant mean effect size of 0.04 was obtained in favour of BA. There was no evidence of publication bias for this outcome (Egger's regression intercept = -1.55; 95% CI: -4.00 to 0.90,  $p = .153$ ). Heterogeneity was very low and nonsignificant. Subgroup analyses indicated that the pleasant activities, self-control, and contextual variants of BA produced small and nonsignificant effect sizes, and that they did not differ significantly from each other ( $p = .361$ ). The effects obtained for patients with moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = 0.857$ ). Outcomes produced by practitioners with post-graduate level qualifications did not differ significantly from outcomes produced by graduate-level practitioners ( $p = .247$ ).

Table 8

*Effects of Behavioural Activation on Measures of Depression at Posttest for Patients Diagnosed with Major Depressive Disorder*

	$N_{\text{cmp}}$	$N_{\text{prtcpnts}}$	Hedges's $g$	95% CI	$Q$	$I^2$
Comparison to Control						
All forms of BA	3	96	0.82**	0.21 to 1.44	3.60	44.38
Pleasant Activities	--	--	--	--	--	--
Self-Control	2	82	0.58*	0.12 to 1.04	0.05	0.00
Contextual	1	14	1.81**	0.62 to 3.01	0.00	0.00
BATD	--	--	--	--	--	--
Comparison to CBT/CT						
All forms of BA	6	400	0.04	-0.16 to 0.23	3.61	0.00
Pleasant Activities	3	88	-0.14	-0.55 to 0.27	1.37	0.00
Self-Control	1	104	-0.09	-0.50 to 0.31	0.00	0.00
Contextual	2	208	0.17	-0.10 to 0.45	0.20	0.00
BATD	--	--	--	--	--	--
Comparison to ADM						
All forms of BA	3	185	0.57	-0.15 to 1.29	9.32**	78.54
Pleasant Activities	1	16	1.60**	0.52 to 2.68	0.00	0.00
Self-Control	0	--	--	--	--	--
Contextual	2	169	0.28	-0.35 to 0.90	4.12*	75.70
BATD	0	--	--	--	--	--
Comparison to Other Interventions						
All forms of BA	5	262	0.30	-0.16 to 0.77	11.59*	65.49
Pleasant Activities	2	69	0.23	-0.23 to 0.69	0.04	0.00
Self-Control	1	39	-0.48	-1.11 to 0.16	0.00	0.00
Contextual	1	129	0.74***	0.37 to 1.12	0.00	0.00
BATD	1	25	0.69	-0.11 to 1.50	0.00	0.00

Note. -- = no data;  $N_{\text{cmp}}$  = Number of comparisons;  $N_{\text{prtcpnts}}$  = Number of participants.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



The effects of BA on measures of depression at posttest could be compared to psychotherapy and other interventions in five studies [13, 19, 21, 23, 35]. A small nonsignificant mean effect size of 0.30 was obtained in favour of BA. There was no evidence of selection bias for this outcome (Egger's regression intercept = -2.34; 95% CI: -10.70 to 6.01,  $p = .438$ ). Heterogeneity was moderate to high and significant. Subgroup analyses indicated that the contextual and BATD variants of BA produced large effect sizes in favour of BA, the pleasant activities variant produced a small effect size in favour of BA, and the self-control variant produced a medium effect in favour of psychotherapy. Only the contextual comparison was significant, and the effects produced by these different variants of BA differed significantly from each other ( $p = .009$ ). The effects obtained for patients with moderate and severe levels of self-reported depression at pretest did not differ from each other ( $p = .344$ ). Outcomes produced by practitioners with post-graduate level qualifications were significantly greater than outcomes produced by graduate-level practitioners ( $p = .013$ ).

**Effects at follow-up for patients with MDD.** For patients diagnosed with MDD, BA could be compared with control conditions in only one study at one- to three-month follow-up [37]. The effect size of 0.47 suggested a medium, but nonsignificant, difference in favour of BA (Table 9).

Table 9

*Effects of Behavioural Activation on Measures of Depression at Follow-up for Patients Diagnosed with Major Depressive Disorder*

	N <sub>cmp</sub>	N <sub>prtcpnts</sub>	Hedges's g	95% CI	Q	I <sup>2</sup>
Comparison to Control						
1-3 months FU	1	29	0.47	-0.25 to 1.19	0.00	0.00
4-6 months FU	0	--	--	--	--	--
7-12 months FU	0	--	--	--	--	--
13-24 months FU	0	--	--	--	--	--
Comparison to CBT/CT						
1-3 months FU	2	36	-0.20	-0.83 to 0.42	0.52	0.00
4-6 months FU	3	203	0.03	-0.25 to 0.31	0.72	0.00
7-12 months FU	4	215	-0.12	-0.40 to 0.16	1.51	0.00
13-24 months FU	3	205	-0.03	-.33 to 0.26	0.80	0.00
Comparison to ADM						
1-3 months FU	2	96	0.10	-0.29 to 0.50	0.93	0.00
4-6 months FU	0	--	--	--	--	--
7-12 months FU	0	--	--	--	--	--
13-24 months FU	0	--	--	--	--	--
Comparison to Other Interventions						
1-3 months FU	3	179	0.06	0.59 to 0.70	6.83*	70.73
4-6 months FU	1	19	0.71	-0.18 to 1.60	0.00	0.00
7-12 months FU	2	71	0.32	-0.39 to 1.04	1.82	45.04
13-24 months FU	1	48	-0.45	-1.14 to 0.25	0.00	0.00

Note. -- = no data; N<sub>cmp</sub> = Number of comparisons; N<sub>prtcpnts</sub> = Number of participants.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

BA could be compared directly with CBT/CT at one- to three-month follow-up in two small studies [13, 22]. These yielded an effect size of -0.20 suggesting a small, but nonsignificant, difference in favour of CBT/CT. Heterogeneity was very low and nonsignificant. At four- to six-month follow-up comparisons were possible in three studies [13, 20, 29]. These yielded a negligible and nonsignificant effect size of 0.03 in favour of BA. There was no evidence of selection bias for this outcome (Egger's regression intercept = -1.31; 95% CI: -8.52 to 5.90,  $p = .260$ ). Heterogeneity was very low and nonsignificant. At seven- to 12-month follow-up comparisons were possible in four studies [8, 13, 14, 20]. These yielded a small and nonsignificant effect size of -0.12 in favour of CBT/CT. There was no evidence of publication bias for this outcome (Egger's regression intercept = 1.38; 95% CI: -6.29 to 9.05,  $p = .521$ ). Heterogeneity was very low and nonsignificant. Three studies permitted a comparison at 13- to 24-month follow-up [8, 13, 20]. These yielded a negligible and nonsignificant effect size of -0.03 in favour of CBT/CT. There was no evidence of publication bias for this outcome (Egger's regression intercept = 2.87; 95% CI: -26.86 to 21.11,  $p = .370$ ). Heterogeneity was very low and nonsignificant.

BA could be compared with ADM conditions at one- to three-month follow-up in two studies [22, 23]. The effect size of 0.10 suggested a small, nonsignificant, difference in favour of BA. Heterogeneity was very low and nonsignificant.

BA could be compared directly with psychotherapy and other treatments at one- to three-month follow-up in three studies [13, 21, 23]. The pooled effect size of 0.06 indicated a small nonsignificant difference in favour of BA. There was no evidence of selection bias for this outcome (Egger's regression intercept = -1.46; 95% CI: -56.67 to 53.75,  $p = .794$ ). Heterogeneity was moderate to high and significant ( $p = .033$ ). At four- to six-month follow-up BA could be compared with psychotherapy and other conditions in only one study [13]. The effect size of 0.71 suggested a large, but nonsignificant, difference in favour of BA. At seven- to 12-month follow-up BA could be compared with psychotherapy in two studies [13, 14]. The pooled effect size of 0.32 indicated a medium, but nonsignificant, difference in favour of BA. Heterogeneity was low to moderate and nonsignificant ( $p = .177$ ). At 13- to 24-month follow-up BA could be compared with psychotherapy in one study [14]. The pooled effect size of -0.45 indicated a medium, but nonsignificant, difference in favour of psychotherapy.

**Empirically validated criteria.** Eight studies satisfied the randomisation,

sample size and treatment manual standards required by the American Psychological Association's Division 12 Task Force on Promotion and Dissemination of Psychological Procedures [4, 8, 14, 16, 20, 23, 29, 35] (Chambless et al., 1998; Task Force on Promotion and Dissemination of Psychological Procedures, 1995). Five used a sample of patients who met the criteria for MDD [8, 20, 23, 29, 35], one recruited carers of older adults with physical or mental disability (a sizable proportion of whom were subsequently determined to have a depressive disorder) [14], and one study used university students who reported elevated symptoms of depression [16]. Three were based on pleasant activities [14, 16, 35], three on contextual BA [8, 20, 23], and one on behavioural self-control [29]. Five studies showed BA to be equivalent to an already established treatment [8, 20, 23, 35] or psychological placebo [16]. One study found BA to be superior to a waiting list control group [14] (Table 10). Based on these outcomes, the contextual variant of BA satisfies the well-established designation for the treatment of MDD. The pleasant activities variant of BA satisfies the probably efficacious designation by demonstrating effectiveness but being flawed by heterogeneity of the client samples (Task Force on Promotion and Dissemination of Psychological Procedures, 1995).

### **Discussion**

These results provide clear indication that BA interventions are effective in the treatment of depression in adults. For individuals with elevated scores on self-report depression measures, the overall effect size of 0.91 in favour of BA over control conditions is large, and comparable with the effect size found by previous meta-analyses (Cuijpers et al., 2007; Ekers et al., 2008). For patients meeting the diagnostic criteria for MDD the overall effect size of 0.82 remained large and significant. Comparisons of BA with CBT/CT indicated that these treatments are equally effective. There is also evidence that BA interventions have equivalent holding power to CBT/CT interventions for up to 24 months. Comparisons of BA with ADM did not find a difference in terms of their effect on depression, although there was evidence that BA is more acceptable to patients, with fewer patients dropping out of BA treatments.

Table 10

*Outcomes of Behavioural Activation Studies Satisfying APA Division 12 Task Force Criteria for Methodological Rigour*

Study	BA Variant	Client Sample	Outcome at Post-test	Outcome at FU
Dimidjian et al. (2006); Dobson et al. (2008)	Contextual	Adults with MDD	High Severity: BA = ADM > CT Low Severity: BA = ADM = CT	pCT = pBA = cADM (1 year FU); pCT = pBA > pcADM (2 year FU)
Gallagher-Thompson et al. (2000)	Pleasant Activities	Carers of older adults with physical or mental disability	LS > PS = WL	--
Graf (1977)	Pleasant Activities	University students, BDI>12	MRA > CA & AM	--
Jacobson et al. (1996); Gortner et al. (1998)	Contextual	Adults with MDD	BA = AT = CT	BA = AT = CT (2 year FU)
McLean & Hakstian (1979, 1990).	Contextual	Adults with MDD	BA > ADM = Psychotherapy = Relaxation	BA = ADM > Psychotherapy (3 month FU) BA > ADM = Psychotherapy = Relaxation (2.25 year FU)
Rehm et al. (1987)	Self-Control	Adults with MDD	SC <sub>C</sub> = SC <sub>B</sub> = SC <sub>B&amp;C</sub>	SC <sub>C</sub> = SC <sub>B</sub> = SC <sub>B&amp;C</sub> (6 month FU)
Thompson et al. (1987)	Pleasant Activities	Older adults with MDD	BA = CT = BP > WL	--

Note. ADM = Antidepressant Medication; AT = Automatic Thoughts; BA = Behavioural Activation; BDI = Beck Depression Inventory; BP = Brief Psychodynamic; CA & AM = Increase Control Activities and Activity Monitoring; cADM = Continued Antidepressant Medication; CT = Cognitive Therapy; FU = Follow-up; LS = Life Satisfaction; MDD = Major Depressive Disorder; MRA = Increase Mood Related Activities; pcADM = Prior Continued Antidepressant Medication; pBA = Prior Behavioural Activation; pCT = Prior Cognitive Therapy; PS = Problem Solving; WL = Waiting List; SC<sub>B</sub> = Self Control—Behavioural Target; SC<sub>B&C</sub> = Self Control—Combined Behavioural and Cognitive Target; SC<sub>C</sub> = Self Control—Cognitive Target.

An interesting finding of the present research was that although more recent versions of the BA approach, such as Jacobson and colleagues' contextual BA, generally yielded greater intervention effects compared with earlier variants, all variants produced effects of similar magnitude and differences between them were not statistically significant. Nevertheless, a focused evidence review indicated that Jacobson and colleagues' contextual BA has the strongest evidence base and satisfies the APA's Division 12 Task Force's well-established designation for the treatment of MDD.

There is a significant gap between the demand for psychological therapy services and the available supply (Bebbington et al., 2000; Lovell & Richards, 2000). One proposal to overcome this problem is to increase efficiency of provision through the adoption of least intrusive and least costly interventions within stepped care models (Marks et al., 2003; National Collaborating Centre for Mental Health, 2004; Scogin, Hanson, & Welsh, 2003). BA interventions are comparatively simple and easy to understand for depressed patients, and do not require difficult or complex skills from patients and therapists (Lejuez, Hopko, & Hopko, 2001). There is evidence that experienced CT practitioners are required to achieve good outcomes in moderate to severe major depression (DeRubeis et al., 2005; Scott, 1996; Shaw et al., 1999). Importantly, Study 1 of this thesis did not find evidence for a differential effect based on severity of initial depression, or that post-graduate practitioners are more effective than graduate-level practitioners.

It would seem that the simplicity of BA interventions also makes them suitable for a broad range of populations. The present meta-analysis included studies with samples of patients who were severely depressed, illicit drug users with elevated depressive symptoms, and the depressed elderly indicating the approach is suitable for both. The BA approach has also been successfully applied to children and adolescents (e.g., Reynolds & Coats, 1986; Stark et al., 1987) and similar interventions involving scheduling leisure activities or the presentation of favourite stimuli have also been trialed with depressed dementia patients (e.g., Teri et al., 1997), and with individuals with severe or profound intellectual and multiple disabilities to increase indices of happiness (e.g., Green & Reid, 1996; Lancioni et al., 2007; Logan et al., 1998; Yu et al., 2002). Kanter, Busch, and Rusch (2009) also present a compelling argument that BA's emphasis on modifying environmental context and behaviour may be a better fit for culturally diverse clients than

treatments that emphasise individual internal change.

BA interventions have been demonstrated to be effective when delivered in a variety of formats including group therapy, brief individual therapy, and longer-term individual therapy. The approach would also appear to be suitable for self-help applications. Internet-based CBT protocols which incorporate BA components have already been developed and show promising results (e.g., Andersson et al., 2005; Christensen, Griffiths, Korten, Brittliffe, & Groves, 2004; Mckinnon, Griffiths, & Christensen, 2008; Meyer et al., 2009; Perini, Titov, & Andrews, 2008, 2009). Bibliotherapy BA protocols (e.g., Addis & Martell, 2004; Hopko & Lejuez, 2007; Veale & Willson, 2007) have also been developed but await evaluation. Delivering BA via the internet, print, or other media would involve no, or minimal, therapist input and might represent an accessible, efficient and effective method of delivering empirically supported psychological services for MDD, particularly when used in combination with other modes of delivery (Andrews & Titov, 2009). In summary, BA appears to be a good candidate as a simple first-line treatment and has the potential for deriving the greatest benefit from available therapeutic resources.

Although the evidence base on BA offers much to appreciate, some limitations warrant attention. First, the present study did not find that the different variants of BA produce significantly different outcomes; however, the failure to determine this might be due to insufficient spread of studies across different BA conditions. Many of the comparisons between the different variants of BA included only one or two studies for one or more of the comparison groups, making such comparisons unreliable. The more recent contextual BA and BATD had the smallest number of randomised controlled trials devoted to them. A number of small trials suggest that BATD has great promise, but only three trials of BATD met the inclusion criteria of the present meta-analysis and none satisfied the APA's Division 12 Task Force criteria for methodological rigour. A research priority should be to subject BATD to a high-quality efficacy trial. Moreover, while having a comparatively greater research base, the number of quality trials of the behavioural self-control variant of BA is still limited and only one trial satisfied the quality standards required by the APA's Division 12 Task Force on Promotion and Dissemination of Psychological Procedures. Similarly, the pleasant activities variant, while achieving the probably efficacious designation, missed out on the well-established designation by the heterogeneity of the client samples in existing trials. It is of clinical importance to

determine whether more complex versions of BA offer the additional benefit to warrant their use. Consequently, more high-quality research trials investigating the variants of BA are needed.

A related limitation is that some of the variants, including Jacobson and colleague's BA, are omnibus in style—comprising a variety of intervention procedures but without a clear picture of which procedures really matter. If it is true that all variants of the approach produce effects of similar magnitude this would suggest that some of the treatment components incorporated in some variants are unnecessary for good outcomes. Interest in BA approaches was renewed by a component analysis of CT (Jacobson et al., 1996), but the present evidence indicates that further dismantling research is needed. This is an idea also made by Martell, Addis, and Dimijian (2004). BA interventions are already attractive because of their apparent simplicity; however, making treatment programs leaner and more efficient could further enhance their attractiveness to practitioners, render the procedures more teachable, and increase treatment viability, and thus perhaps reach even more patients who need their benefits.

More research on the change processes that account for observed outcomes in treatment are needed. At present, we know much more about what outcomes BA interventions produce than about what actually causes the outcomes. Assisting individuals to be more active is a defining feature of BA, but in contrast to earlier forms of BA, contemporary versions of BA do not suggest that individuals should simply engage in more pleasurable activities, but rather they should engage in activities that help them achieve their specific valued goals (Martell, et al., 2001, 2010). The present study found that BA was associated with a medium increase in activity, but that while the relationship between activity and mood approached, it failed to reach significance. Notably however, the majority of the measures used related to participation in pleasant activities and not (avoidance of) goal directed action which has more recently been theorised to be implicated in the development and maintenance of depression. We need more studies in which proposed mediators are identified a priori and carefully measured on a repeated basis.

Recently, three measures which tap hypothesised processes of change in BA have been developed, the Cognitive-Behavioral Avoidance Scale (Ottenbreit & Dobson, 2004) which measures avoidance, the Environmental Reward Observation Scale (Armento & Hopko, 2007) which measures environmental reward, and the



Behavioral Activation for Depression Scale (Kanter et al., 2007; Kanter, Rusch, Busch, & Sedivy, 2009) which assesses goal-directed activation and avoidance/rumination. The validity of the use of daily diaries to assess the reward value of activities has also been demonstrated (Hopko, Armento et al., 2003). Kanter and colleagues (2007) encourage the weekly administration of an assessment battery consisting of measures of goal-directed activation, avoidance and environmental reward over the course of treatment. It is hoped that the use of these approaches may lead to an increased understanding of the processes underlying therapeutic improvement. Such an understanding will improve prospects for understanding and addressing impediments in treatment, training practitioners by teaching them what change processes they need to effect rather than simply what techniques to use, and identifying principles that can be used in refining interventions.

It may also be noted that, with the exception of comparisons with CBT/CT interventions, few studies have examined whether BA has lasting effects beyond three months. Further research should seek to clarify whether the effects achieved by BA are maintained over time. The present review included more studies than previous reviews due to the inclusion of recent and unpublished data. The decision to include unpublished data was made to avoid any systematic bias in the size of identified effects from only including published data. No systematic difference in the quality of studies was observed between published and unpublished studies, but nevertheless interventions and the quality of included trials varied considerably across studies. Perhaps as a consequence, more heterogeneity was obtained for some comparisons than those reported by Cuijpers et al. (2007). When necessary an attempt was made to account for this by the use of linear regression of participant, intervention, and methodological characteristics. Also, in one of the comparisons there was evidence of significant selection bias favouring BA. Although the adjustment for this bias reduced the magnitude of effect size estimate, both estimates remained large. Nevertheless, caution should be exercised in interpreting these comparisons.

The research conducted in the past three decades show that BA may be considered a well-established treatment for depression that has advantages over alternative treatments. More research on the variants of BA is needed to determine whether simpler variants of the approach are as effective as more complex versions. Future research should use clinical samples, larger numbers of participants, longer

follow-up to confirm sustainability of treatment effects, and investigate specific processes of change.

## Chapter 4—Study 2

### Behavioural Activation for Well-being<sup>1</sup>

#### Introduction

The previous study reported evidence that behavioural activation (BA) is effective in reducing the symptoms of depression in individuals with elevated symptoms of depression. The present study sought to examine the effect of BA on well-being.

Evidence supporting the idea that it is possible to increase well-being has steadily been accumulating. Sin and Lyubomirsky (2009) recently conducted a meta-analysis of positive psychology interventions (PPIs); that is, interventions or intentional activities that aim to cultivate positive feelings, behaviours and/or cognitions. The results revealed that PPIs enhance well-being and ameliorate depressive symptoms, and that these effects are enhanced for individuals with depression. Consequently, the authors recommended that clinicians incorporate positive psychology techniques into their clinical work. Importantly, interventions excluded from Sin and Lyubomirsky's meta-analysis were those aimed at "fixing, remedying or healing something that is pathological or deficient" since these "do not fit the definition of a PPI" (Sin & Lyubomirsky, 2009, p. 468). While there is increasing recognition for the potential of PPIs to enhance well-being, less is known about the potential of existing clinical interventions.

One of the best potential routes to achieving sustainable increases in well-being is to focus on engagement in a multifaceted life, through the pursuit of personally relevant and valued goals (King, 2008). Individuals should make a habit of initiating activities in support of these goals while at the same time varying the focus and timing in the way they implement these activities. People might be advised that trying to increase happiness by accumulating wealth or particular objects (e.g., a bigger house or a new television) may not be a successful strategy in the longer-term, because they will tend to habituate to such stable factors (Lyubomirsky, Sheldon et al., 2005).

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<sup>1</sup> An earlier version of this chapter was accepted for publication as Mazzucchelli, T., Kane, R., & Rees, C. (2010). Behavioral activation interventions for well-being: A meta-analysis. *The Journal of Positive Psychology*, 5, 105-121.

BA is consistent with recommendations for increasing happiness. Although BA interventions have traditionally been associated with the treatment of depression there is little that differentiates these interventions from some behaviourally focused PPIs other than the intent with which they are used. Also, it is of note that, in what many consider to be the first positive psychology intervention study, Fordyce (1977) tested an “activities program” that involved increasing participation in pleasant activities against an early version of his multi-component Fundamentals happiness program. This activities program proved to be as effective as the Fundamentals program in increasing well-being over a two week period. In another study, Fordyce (1983) found that the behaviourally focused “lifestyle” components of the Fundamentals program had a more rapid effect on measures of well-being and could account for the gains made by the full program, at least for those participants who showed a weakness in this area.

If it can be established that BA is effective in increasing the well-being of a normative sample it would indicate that BA is a parsimonious option, effective not only in treating depression but also for increasing the well-being of individuals without depression. The field of positive psychology would be presented with an existing technology for increasing well-being and this might save time and energy that would otherwise be devoted to the development of new interventions focused on increasing well-being. It may also provide important insights into how to prevent illness and promote well-being.

Although BA seems to be a promising intervention approach to increase psychological well-being no formal meta-analysis of BA interventions has been conducted. I decided, therefore, to conduct a meta-analysis to examine the effects of BA on well-being.

## **Method**

**Identification and selection of studies.** As in Study 1, a computer search (using PsycINFO and Medline databases) was conducted to find articles, chapters and dissertations published between January 1970 and September 2008 that included the terms activity scheduling, behavioural activation or behavioral activation, pleasant events or pleasant activities. Reference lists of all articles were searched for additional articles. Also, an attempt was made to obtain additional data relevant to this study by contacting all researchers who were known to have conducted research on BA. Twenty-three researchers were contacted by email. Studies were included in

the meta-analysis if the effect of a BA intervention was compared to a comparison condition in a randomised controlled trial, and the effect was assessed using a measure of one or more components of psychological well-being (e.g., positive affect, happiness, life satisfaction, quality of life, self-esteem). No language restrictions were applied and unpublished dissertations, where available, were included so as to describe the universe of studies. Over 592 articles, chapters and theses were reviewed. A treatment was considered to be BA when it primarily involved strategies to prompt participants to engage with, or act on, the environment so as to increase positive reinforcement and undermine punishment.

Thirty-seven percent of the reviewed works were not empirical studies. Other works were excluded for a variety of reasons, namely: the interventions did not reflect the BA approach (33%), the BA approach was confounded with other treatment components such as the modification of thoughts (11%), a measure of well-being was not used (8%), there was no comparison condition (6%), and insufficient information was provided to extract effect sizes (2%).

**Quality assessment.** The methodological quality of each study was assessed using the same nine criteria described in Study 1. This resulted in each study being allocated a numerical rating from 0 to 17. Studies scoring a rating greater than 11 were considered to be of high quality, those between 6 and 11, of moderate quality, and those below 6, of low quality. No studies were excluded on the basis of methodological quality.

**Meta-analysis.** Standardised mean difference effect sizes were calculated using the same methods described in Study 1. In calculations of effect sizes for well-being, only those instruments that were capable of measuring components of psychological well-being were used. If more than one well-being measure was used, the mean of the effect sizes was calculated, so that each study (or comparison group) only had one effect size. Where studies permitted two comparisons under the same category (e.g., CT/CBT and ADM) I entered these comparisons separately but halved numbers in the behavioural arm to avoid double counting and inaccurate weighting of trials. Results in the unpredicted direction (i.e., the comparison group experienced greater increases in well-being compared to the BA group) were recorded as negative values.

As in Study 1, Hedges's (1981) correction for small sample bias was applied to all effect sizes. Because the present study accumulated data from studies that have

been performed by researchers operating independently and using different populations, a common effect size was not assumed. Consequently, mean effect sizes were calculated with the random-effects model. Comprehensive Meta-analysis (Version 2.2.046; Borenstein et al., 2007) was used to calculate pooled mean effect sizes. The subgroup analyses as implemented in Comprehensive Meta-analysis Version 2.2.046 were used to examine whether the effect sizes of specific subgroups differed from each other.

As an indicator of homogeneity, Cochran's heterogeneity statistic  $Q$  was calculated (Cochran, 1954). The  $I^2$  statistic was used to estimate heterogeneity (Higgins et al., 2003). In the event of significant heterogeneity (indicated by a significant  $Q$ ), linear regression was used to investigate the relationship between study characteristics and effect size. Selection and other biases were examined using a funnel graph (Light & Pillemer, 1984). Asymmetry was tested using Egger's weighted regression test (Egger et al., 1997). If asymmetry was found to be significant, Duval and Tweedie's (2000) "trim and fill" method was used to estimate the number of missing studies that might exist and the unbiased effect size. Finally, the *fail-safe N* and the *critical N* were estimated in order to address the file drawer problem. An alpha level of .05 was used for all statistical tests.

## Results

**Description of studies.** Twenty studies, with a total of 1,353 participants (484 in the BA conditions, and 869 in the comparison conditions) met the inclusion criteria and were included in the current study. Selected characteristics of the included studies are described in Table 11. (Note: throughout the following sections numbers within square brackets refer to the study numbers listed in Table 11.) Participants were mostly adult university students [3-9, 13, 16, 18], although seven studies recruited adults from the community or from clinical settings [2, 10-12, 17, 19, 20], two studies recruited older adults from senior citizen apartment buildings [1, 14], and one study recruited children from an elementary school [15]. Most studies recruited participants showing elevated or clinical levels of depressive symptomatology [2, 7-12, 15-20], but six studies recruited participants with minimal symptoms [3-6, 13, 14] and two studies recruited some participants with minimal symptoms and some participants showing elevated symptoms [1, 9]. Most BA interventions consisted of simply encouraging participants to increase their participation in pleasant activities [2-4, 7-10, 12, 13, 15, 16, 18, 19], but two were

concerned with becoming more active at a broader “lifestyle” level [5, 6], three focused on increasing pleasant activities in the context of behavioural self-control (Fuchs & Rehm, 1977) [1, 14, 17], and two were consistent with Jacobson and colleagues’ (2001) contextual BA approach [11, 20]. Control conditions consisted of waiting list [1, 2, 10, 14, 15, 18, 19], treatment as usual (without BA) [17, 20], placebo course activities [4, 6], and no instruction control [13]. CT and CBT conditions consisted of interventions based on Beck’s (1976) or Ellis’s (1962) treatment procedures [2, 18, 19], or self-control interventions that included both a behavioural and a cognitive focus (Rehm, Kaslow, & Rabin, 1987) [15]. Other psychological interventions included increasing “control” activities and self-monitoring [3, 7-9, 16], Fordyce’s (1977) Fundamentals happiness program and variants [4-6], nondirective support [2, 12, 18], brief psychodynamic therapy [11], relaxation [11], or problem solving [10]. One study included an ADM condition involving amitriptyline [11]. The quality of studies ranged from low [3, 5, 6, 8-10, 16, 18, 19] to high [11, 15]. Nine studies were judged to be moderate in quality [1, 2, 4, 7, 12-14, 17, 20].

**Effects of BA at posttest.** BA could be compared against control conditions in 10 studies [1, 2, 4, 6, 10, 13, 15, 17-19] totaling 11 contrasts involving 465 participants. These yielded a moderate and significant pooled effect size of 0.52 favouring BA. This main analysis is presented as a forest plot in Figure 4. Heterogeneity was low and nonsignificant. A funnel graph showed no evidence of asymmetry providing little indication of selection bias (Egger’s regression intercept = 0.73; 95% CI -1.38 to 2.84,  $p = .453$ ). The *fail-safe N* resulted in a figure of 67 studies, which exceeded the *critical N* of 65 studies indicating that the significance of this effect is unchallengeable.

Subgroup analysis indicated that the interventions yielded moderate effects for both participants with minimal symptoms of depression and participants with elevated symptoms of depression, and that these effects did not differ significantly from each other ( $p = .955$ ). Low quality studies yielded a large pooled effect whereas moderate quality studies yielded a moderate pooled effect. The one high quality study produced a negligible effect. These effects did not differ significantly from each other ( $p = .241$ ). The effect sizes and 95% confidence intervals of these comparisons are listed in Table 12.

Table 11

*Selected Characteristics of Controlled and Comparative Studies on Behavioural Activation for Well-being*

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at posttest (%)	Measurements	Measures of well-being	Quality of research design (low, 0 – 17, high)
[1] Barlow (1986)	US	Elderly ( $M = 77$ )	Community (Senior citizen apartment buildings)	Age $\geq 65$ (Excluded if actively suicidal, moderately or severely demented, or receiving treatment for depression) Low depressed subgroup (CES-D $< 16$ , $M = 8.74$ ). High depressed subgroup (CES-D $\geq 16$ , $M = 22.28$ )	1. Self-control [Self-control]	25	~6	6	Group	6 (90 min)	~9	Pre, post.	LSI-A	9 (mod)
					2. Waiting-list (6 week)	24	~6	NA	NA	6 (90 min)	~9			
[2] Besyner (1979)	US	Adults ( $M = 42$ )	Community	Self-reported depression of at least 2 weeks duration; BDI $\geq 13$	1. Cognitive therapy	10	40	4	Group	4 (120 min)	0	Pre, post, 1-month FU	TSCS	9 (mod)
					2. Behaviour therapy [Pleasant Activities]	14	~27	4	Group	4 (120 min)	21			
					3. Nonspecific therapy	10	~33	4	Group	4 (120 min)	10			
					4. Waiting list (4 week)	16	~18	NA	NA	4 (120 min)	31			
[3] Dobson & Joffe (1986)	US	Young adults ( $M = 21$ )	University	Availability (students of an undergraduate psychology course)	1. Self-monitor	22	27	2	NR	3 (NR)	0	Average score from daily recordings over 2 1-week periods	DAACL, MR	5 (low)
					2. Behaviour [Pleasant Activities]	20	40	2	NR	3 (NR)	0			
					3. Cognitive / behaviour	23	26	2	NR	NA	0			
[4] Fordyce (1977), Study 1	US	Young adults ( $M = 23$ )	Community College	Availability (students of undergraduate psychology courses)	1. Insight	48	~46	2	Group	NR	0	Pre, post, 2-month FU	HM	8 (mod)
					2. Fundamentals	44	~46	2	Group	NR	0			
					3. Activities [Pleasant Activities]	50	~46	2	Group	NR	0			
					4. Placebo course activities	60	~46	2	Group	NR	0			



Table 11  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at posttest (%)	Measurements	Measures of well-being	Quality of research design (low, 0 – 17, high)
[5] Fordyce (1983), Study 5	US	Young adults ( $M = 23$ )	Community College	Availability (students of undergraduate psychology courses)	1. Fundamentals 2. Life-style 1/3 [Lifestyle]	~57 ~24	~48 ~48	10 10	Group Group	NR NR	~13 ~13	Pre, post	POI-TR, POI-SR, HM	5 (low)
[6] Fordyce (1983), Study 6	US	Young adults ( $M = 25$ )	Community College	Availability (students of undergraduate psychology courses)	1. Fundamentals 2. Personality 1/3 3. Attitude and values 1/3 4. Life-style 1/3 [Lifestyle] 5. Placebo course activities	~14 ~10 ~12 ~8 ~13	~37 ~37 ~37 ~37	6 6 6 6	Group Group Group Group	NR NR NR NR	NR NR NR NR	Pre, 2-week mid, 4-week mid, post	HM, DACL	5 (low)
[7] Graf (1977)	US	Young adults ( $M = 19$ )	University	BDI > 12	1. Increased mood-related activities [Pleasant Activities] 2. Increased control activities 3. Activity monitoring condition	30 30 30	~43 ~43 ~43	2 2 2	Ind Ind Ind	1 (60 min) 1 (60 min) 1 (60 min)	30 10 27	Pre, post	DACL	10 (mod)
[8] Hammen & Glass (1975), Experiment 1	US	Young adults ( $M = \text{NR}$ )	University	Mild to moderate depression (based on screening with D30, FCC & PFS)	1. Increase activities [Pleasant Activities] 2. Expectancy control 3. Self-monitor control 4. No treatment control (2 weeks)	10 10 10 10	NR NR NR NR	2 2 2 NA	NR NR NR NR	1 (NR) 1 (NR) 1 (NR) 1 (NR)	NR NR NR NR	Average score from daily recordings over 2 weeks	DACL, ED Scale	5 (low)

Table 11  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at posttest (%)	Measurements	Measures of well-being	Quality of research design (low, 0 – 17, high)
[9] Hammen & Glass (1975), Experiment 2	US	Young adults ( $M = \text{NR}$ )	University	Non-depressed and depressed (based on screening with D30 & BDI)	1. Increase activities [Pleasant Activities]	~12	NR	1	NR	1 (NR)	NR	Average score from daily recordings over 1 week	DACL, ED Scale	5 (low)
					2. Self-monitor	~12	NR	1	NR	1 (NR)	NR			
[10] Lovett & Gallagher (1988)	US	Adults ( $M = 59$ )	Community	Family member caregivers of frail elders 25.9% experiencing a major depressive episode and 22.4% a minor depressive episode (based on SADS)	1. Life satisfaction [Pleasant Activities]	~33	~17	10	Group	10 (120 min)	~42	Pre, post	PGCMS	4 (low)
					2. Problem-solving	~28	~17	10	Group	10 (120 min)	~42			
					3. Waiting list	~27	~17	NA	NA	NA	~42			
[11] McLean & Hakstian (1979, 1990)	CA	Adults ( $M = 39$ )	Community	(a) Between 20 and 60 years of age; (b) satisfying diagnostic criteria for clinical depression, and depressed for at least the last 2 months; (c) functionally impaired because of depression; (d) within or beyond the moderate range on two out of three psychometric tests for depression MMPI-D $\geq 25$ / 29.5, BDI $\geq 23$ , DACL $\geq 14$ ; (e) fluent in English; (f) not receiving treatment for depression elsewhere.	1. Psychotherapy	37	~28	10	Ind	10 (60 min)	30	Pre, post, 3-month FU, 2.25-year FU	Average satisfaction index, Mood index	12 (high)
					2. Relaxation Therapy	38	~28	10	Ind	10 (60 min)	26			
					3. Behaviour Therapy [Contextual]	40	~28	10	Ind	10 (60 min)	5			
					4. Drug Therapy	39	~28	11	Ind	4 (15 min)	36			

Table 11  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at posttest (%)	Measurements	Measures of well-being	Quality of research design (low, 0 – 17, high)
[12] Padfield (1976)	US	Adults (range = 21-56)	Community	Women with moderate depression (SRSD, GFCC)	1. Counseling	12	33	12	Ind	12 (NR)	0	Pre, post	DACL	8 (mod)
					2. Behavioural [Pleasant Activities]	12	17	12	Ind	12 (NR)	0			
[13] Reich & Zautra (1981)	US	Young adults ( $M = NR$ )	University	Availability (students of undergraduate psychology courses)	1. Increase 12 activities [Pleasant Activities]	~49	NR	2	NR	2 (NR)	5	Pre, post (after 4 weeks)	PQLS	8 (mod)
					2. Increase 2 activities [Pleasant Activities]	~49	NR	2	NR	2 (NR)	5			
					3. No instruction control	~49	NR	2	NR	2 (NR)	5			
[14] Rokke (1985)	US	Elderly ( $M = 77$ )	Community (subsidised housing projects)	Age > 65 (Excluded if receiving treatment for depression, suicidal, evidencing signs of dementia.)	1. Life satisfaction [Self-control]	21	5	6	Group	6 (90 min)	0	Pre, post	LSI-A	7 (mod)
					2. Waiting-list (6 week)	20	5	NA	NA	NA	0			
[15] Stark et al. (1987)	US	Children ( $M = 11$ )	Elementary school	CDI > 16; parental permission	1. Self-control	9	56	5	Group	12 (45-50 min)	~5	Pre, post, 8-week FU	CSEI	12 (high)
					2. Behavioural problem solving [Pleasant Activities]	10	60	5	Group	12 (45-50 min)	~5			
					3. Waiting list (5 week)	9	56	NA	NA	NA	0			

Table 11  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at posttest (%)	Measurements	Measures of well-being	Quality of research design (low, 0 – 17, high)
[16] Turner, et al. (1979)	US	Young adults ( $M = 24$ )	University	DACL $T \geq 70$ and reported depression as primary concern.	1. Activities increase [Pleasant Activities]	14	50	4	Ind	5 (50 min)	NR	Pre, post	DACL	4 (low)
					2. Expectancy control	14	50	4	Ind	5 (50 min)	NR			
					3. Self-monitoring	14	50	4	Ind	5 (50 min)	NR			
					4. Attention-control	14	50	4	Ind	5 (50 min)	NR			
[17] Van den Hout et al. (1995)	ND	Adults ( $M = 34$ , Range = 20 – 59)	Clinical (Day treatment centre of a psychiatric hospital)	SCID-I, major depression and / dysthymia. Excluded if bipolar mood disorder; psychotic disorder, alcohol or drug dependence; anxiety disorder, PTSD. SRDS $\geq 50$	1. Self-control therapy & TAU [Self-Control]	15	38	12	Group	12 (90 min)	~10	Pre, post, 13-week FU	SES, VROPSO M	8 (mod)
					2. TAU (structured group therapy; creative therapy and physical exercise; social skills training and occupational therapy)	14	42	12	Group	NR	~10			
[18] Weinberg (1978)	US	Young adults ( $M = \text{NR}$ )	University	BDI $\geq 8$	1. Increased positive reinforcement [Pleasant Activities]	10	~12	4	Group	4 (60 min)	10	Pre, post, 2-month FU	MAAD, POI-TR, POI-SR	5 (low)
					2. Systematic rational restructuring	10	~12	4	Group	4 (60 min)	0			
					3. Emotional awareness training	10	~12	4	Group	4 (60 min)	20			
					4. Waiting list (4 weeks)	9	~12	NA	NA	NA	0			

Table 11  
(Continued)

Study	Country	Age group and age (years)	Recruitment	Inclusion criteria	Condition	Cell size at baseline	Male participants (%)	Length of intervention (weeks)	Format or Mode	Number of sessions (session length)	Attrition at posttest (%)	Measurements	Measures of well-being	Quality of research design (low, 0–17, high)
[19] Wilson et al. (1983)	AU	Adults ( <i>M</i> = 40; range = 20-58)	Community	BDI $\geq$ 17; no previous concurrent treatment with major tranquilizers or lithium; absence of other major physical or psychiatric disorders; self-reported duration of depression of at least 3 months; absence of suicidal intention or ideation	1. Behaviour therapy [Pleasant Activities]	9	25	8	Ind	8 (60 min)	11	Pre, mid, post, 5-month FU	MRs	5 (low)
					2. Cognitive therapy	11	12	8	Ind	8 (60 min)	27			
					3. Waiting list (8 weeks)	9	22	NA	NA	0				
[20] Wright (2003)	US	Adults ( <i>M</i> ~ 53)	Clinical (Specialised inpatient PTSD unit of a Veteran Affairs Medical Centre)	Exposed to combat during military service, having a diagnosis of PTSD. Literate in English. Aged between 18 and 75 years. Excluded if physically unable to participate in activities, actively suicidal, actively psychotic, actively using alcohol or drugs.	1. TAU	31	100	4	NA	NA	32	Pre, 1-month FU	ComQol	11 (mod)
					2. TAU & Behavioural Activation [Contextual]	29	100	4	Group	8 (60-90 min)	17			

*Note.* AU = Australia; BDI = Beck Depression Inventory; CA = Canada; CDI = Child Depression Inventory; CES-D = Centre for Epidemiological Studies Depression Scale; ComQol = Comprehensive Quality of Life Scale-Adult Fifth Edition; CSEI = Coopersmith Self-Esteem Inventory; D30 = D30 Depression Scale; DACL = Depression Adjective Checklist; ED Scale = Elation-Depression Scale; FCC = Feelings and Concerns Checklist; FU = Follow-up; GFCC = Grinker Feelings and Concerns Checklist; HM = Happiness Measures; Ind = Individual; LSI-A = Life Satisfaction Index A; MAAD = Multiple Affect Adjective Check-List; MMPI-D = Minnesota Multiphasic Personality Inventory—Depression Scale; MRs = Mood Ratings; NA = Not Applicable; ND = Netherlands; NR = Not Reported; PFS = Personal Feelings Scales; PGCMS = Philadelphia Geriatric Centre Morale Scale; POI-SR = Personal Orientation Inventory-Support Ratio; POI-TR = Personal Orientation Inventory-Time Ratio; PQLS = Perceived Quality of Life Scale; PTSD = Post Traumatic Stress Disorder; SADS = Schedule for Affective Disorders and Schizophrenia; SCID-I = Structured Clinical Interview for *DSM* Axis I Disorders; SES = Self-esteem Scale; SRDS = Zung Self-Rating Depression Scale; TAU = Treatment As Usual; TSCS = Tennessee Self-Concept Scale; US = United States of America; VROPSOM = Dutch version of the DACL.

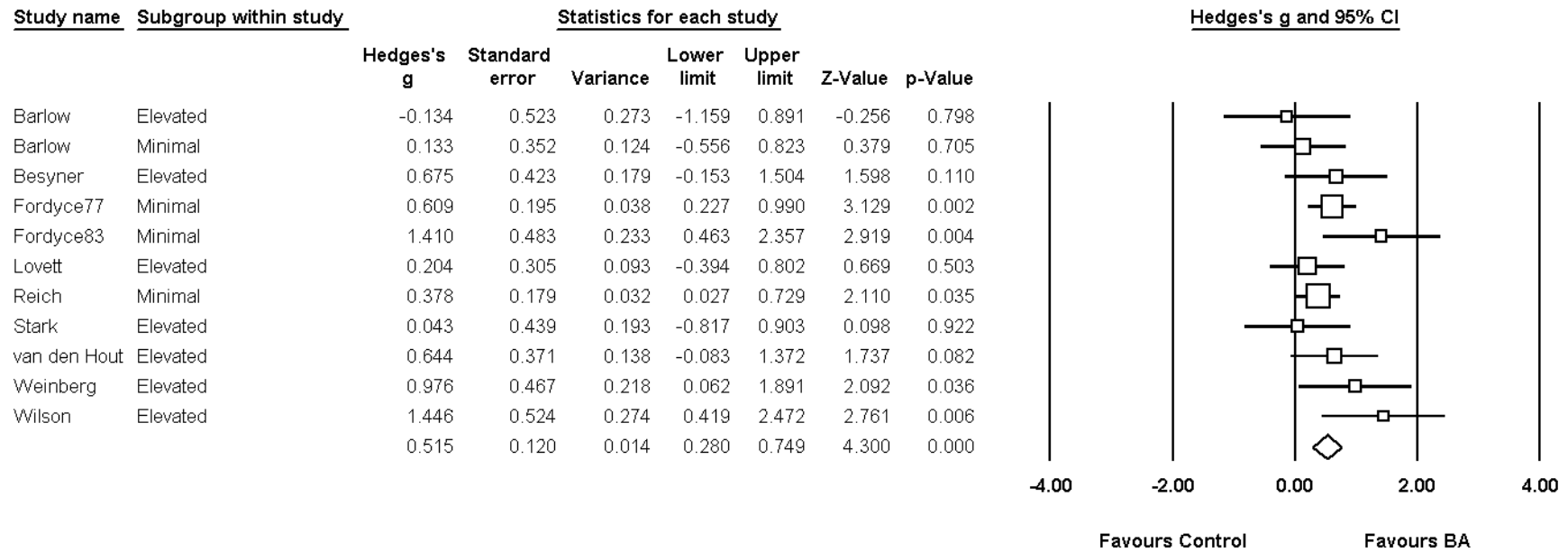


Figure 4. Hedges's g effect sizes of behavioural activation interventions compared to control conditions on measures of well-being at posttest.

Table 12

*Effects of Behavioural Activation on Measures of Well-being: Overall Results and Subgroup Analyses*

	N <sub>cmp</sub>	N <sub>prtcpts</sub>	Hedges's <i>g</i>	95% CI	<i>Q</i>	<i>I</i> <sup>2</sup>
Comparison to Control at Posttest						
All Participants	11	465	0.52***	0.27 to 0.77	13.52	26.08
Nonclinical	4	303	0.53**	0.18 to 0.88	5.41	44.53
Elevated symptoms	7	162	0.51**	0.15 to 0.88	8.12	26.11
High quality	1	19	0.04	-0.82 to 0.90	0.00	0.00
Moderate quality	6	347	0.45***	0.23 to 0.67	3.44	0.00
Low quality	4	99	0.93**	0.27 to 1.58	7.06	57.48
Comparison to Other Interventions at Posttest						
All other interventions	19	825	0.09	-0.10 to 0.29	27.85	35.38
Nonclinical	5	318	-0.02	-0.36 to 0.32	6.99	42.77
Elevated symptoms	14	507	0.14	-0.10 to 0.39	19.79	34.32
High quality	3	218	0.18	0.55 to 0.91	8.81*	77.30
Moderate quality	5	272	0.14	-0.16 to 0.43	4.81	16.89
Low quality	11	335	-0.01	-0.24 to 0.22	10.54	5.13
CT/CBT	4	71	-0.10	-0.73 to 0.53	5.20	42.28
Other psychological	14	684	0.09	-0.12 to 0.31	19.92	34.75
ADM	1	70	0.47	-0.04 to 0.98	0.00	0.00
Comparison at 1-3 month follow-up						
To Control	3	78	0.36	-0.31 to 1.02	4.32	53.72
Nonclinical	0	0	--	--	--	--
Elevated symptoms	3	78	0.36	-0.31 to 1.02	4.32	53.72
High quality	0	0	--	--	--	--
Moderate quality	2	59	0.04	-0.46 to 0.55	0.03	0.00
Low quality	1	19	1.17*	0.23 to 2.11	0.00	0.00
To all other interventions	7	236	0.28	-0.17 to 0.72	12.77*	53.01
Nonclinical	0	0	--	--	--	--
Elevated symptoms	7	236	0.28	-0.17 to 0.72	12.77*	53.01
High quality	3	175	-0.11	-0.88 to 0.67	9.03*	77.85
Moderate quality	2	31	0.75*	-0.04 to 1.46	0.54	0.00
Low quality	2	30	0.57	-0.16 to 1.30	0.02	0.00
CT/CBT	3	48	-0.04	-1.20 to 1.12	8.07*	75.23
Other psychological	3	129	0.57**	0.16 to 0.98	0.89	0.00
ADM	1	59	0.06	-0.47 to 0.60	0.00	0.00

*Note.* -- = no data. ADM = Antidepressant Medication. CT/CBT = Cognitive Therapy and Cognitive Behavioural Therapy. N<sub>cmp</sub> = Number of comparisons. N<sub>prtcpts</sub> = Number of participants.  
\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

All 10 studies attempted to increase participants' engagement in pleasant events, it is therefore of interest to consider the impact of these interventions on activity. Posttest comparisons between BA and control conditions on measures of activity (typically, activity lists derived from the Pleasant Events Schedule; MacPhillamy & Lewinsohn, 1982) were possible in seven studies [1, 2, 13, 14, 16, 17, 18] giving a total of 294 participants. These yielded a moderate and significant mean effect size of 0.37 (95% CI: 0.14 to 0.60,  $p = .002$ ) in favour of BA. Heterogeneity was negligible and nonsignificant ( $Q = 5.74$ ;  $p = .570$ ;  $I^2 = 0.00\%$ ). A funnel graph showed no evidence of asymmetry, providing little indication of selection bias (Egger's regression intercept = 0.52; 95% CI -1.53 to 2.58,  $p = .558$ ). The *fail-safe N* resulted in a figure of 12 studies, which did not exceed the *critical N* of 45 studies indicating that the significance of this effect is not unchallengeable. The relationship between mean effect size for activity and mean effect size for SWB was not significant ( $r = .44$ ,  $p = .329$ ).

**Comparison to other treatments at posttest.** BA could be compared directly to other interventions in 14 studies [2-12, 15, 16, 18, 19]) totaling 19 contrasts involving 825 participants. The pooled effect size indicating the difference between BA and other interventions was 0.09 (95% CI: -0.10 to 0.29,  $p = .355$ ) in favour of BA. Heterogeneity was low to moderate and nonsignificant ( $p = .064$ ). A funnel graph showed little evidence of asymmetry providing little indication of selection bias (Egger's regression intercept = -1.04; 95% CI -2.81 to 0.73,  $p = .232$ ).

Subgroup analyses indicated that the interventions yielded a small effect for participants with elevated symptoms of depression and a negligible effect for participants with minimal symptoms of depression and that these effects did not differ significantly from each other ( $p = .459$ ). High and moderate quality studies yielded a small pooled effect in favour of BA, whereas low quality studies yielded a negligible pooled effect. These effects did not differ significantly from each other ( $p = .708$ ). Studies which compared BA to CT/CBT yielded a small pooled effect size in favour of CT/CBT. Studies which compared BA to other psychological interventions yielded a small pooled effect size in favour of BA. The one study that compared BA to ADM yielded a moderate effect in favour of BA. These effects did not differ significantly from each other ( $p = .315$ ). The effect sizes and 95% confidence intervals of these comparisons are listed in Table 12.



**Effects at follow-up.** The effects of BA compared to a control condition at follow-up could be calculated in only three studies [17, 18, 20] totaling 78 participants. All of these participants reported elevated symptoms of depression. The pooled effect size indicated a moderate, but nonsignificant ( $p = .295$ ) difference in favour of BA. Heterogeneity was moderate but nonsignificant ( $p = .115$ ). A funnel graph appeared somewhat asymmetrical with a smaller study having more pronounced benefits in favour of BA, however this asymmetry did not reach significance (Egger's regression intercept = 9.85; 95% CI -8.49 to 28.19,  $p = .093$ ). Subgroup analysis indicated that the two moderate quality studies yielded a negligible pooled effect whereas the low quality study yielded a large and significant effect. These effects were significantly different from each other ( $p = .038$ ). The effect sizes and 95% confidence intervals of these comparisons are listed in Table 12.

BA could be compared to other treatments at follow-up in 4 studies [2, 11, 15, 18] totaling 7 contrasts involving 236 participants (Table 12). All of these participants reported elevated symptoms of depression. The pooled effect size indicated a small, but nonsignificant ( $p = .225$ ), difference in favour of BA. Heterogeneity was moderate and significant ( $p = .047$ ). A funnel graph appeared somewhat asymmetrical with one study [15] yielding a large effect in favour of a comprehensive self-control intervention, however this asymmetry was nonsignificant (Egger's regression intercept = -0.02; 95% CI: -4.74 to 4.70,  $p = .991$ ).

To account for heterogeneity, linear regression was used to investigate the influence of participant, intervention, and methodological characteristics. The number ( $R^2 = .60$ ,  $p = .040$ ) and density ( $R^2 = .84$ ,  $p = .003$ ) of sessions significantly accounted for variance in effect size. Inspection of these data indicated that increased number and density of sessions was associated with greater effect sizes in favour of other treatments. Other variables tested included: type of comparison intervention ( $R^2 = .25$ ,  $p = .556$ ), severity of self-reported depression at pretest ( $R^2 = .07$ ,  $p = .561$ ), level of self-reported activity at pretest ( $R^2 = .21$ ,  $p = .540$ ), population age ( $R^2 = .45$ ,  $p = .302$ ), extent of differences between groups on outcome measures at pretest ( $R^2 = .07$ ,  $p = .561$ ), mode of intervention (i.e., group or individual;  $R^2 = .00$ ,  $p = .979$ ), length of intervention ( $R^2 = .02$ ,  $p = .773$ ), therapist experience ( $R^2 = .00$ ,  $p = .979$ ), and quality of study ( $R^2 = .45$ ,  $p = .302$ ).

Subgroup analyses indicated that the high quality studies yielded a small pooled effect in favour of other psychological interventions, whereas the moderate

quality studies yielded a large and significant pooled effect in favour of BA and the low quality studies yielded a moderate effect in favour of BA. These effects were not found to differ significantly from each other ( $p = .254$ ). The studies comparing BA to CT/CBT yielded a negligible pooled effect size. The studies comparing BA to other psychological interventions yielded a moderate and significant pooled effect size in favour of BA. The one study that compared BA to ADM yielded a small effect in favour of BA. These effects did not differ significantly from each other ( $p = .263$ ). The effect sizes and 95% confidence intervals of these comparisons are listed in Table 12.

### **Discussion**

These results provide evidence that BA interventions can increase the well-being of recipients and that they are equally effective regardless of depression status. The overall effect size of 0.52 is moderate in size and, although smaller than the large effect sizes achieved on measures of depressive symptomatology when BA interventions are applied to depressed populations (Cuijpers et al., 2007; Ekers et al., 2008; Study 1 of this thesis), is comparable in size to the mean effect on measures of well-being achieved by PPIs (0.61; Sin & Lyubomirsky, 2009).

A number of studies permitted comparisons between BA interventions and other psychological interventions. These comparisons indicated that BA and other interventions are equally effective in increasing well-being at posttest, but that BA interventions and CT/CBT interventions may be more successful than other psychological interventions at maintaining increases in well-being at follow-up periods of up to three months.

Seligman (2002) proposed three components of a happy life: positive emotion, engagement and meaning. It might be argued that contemporary BA interventions target all three of these components by encouraging engagement in life through commitment to meaningful and achievable goals that are likely to result in increased rates of positive reinforcement and positive feelings (for discussions on how personal goals influence behaviour and promote purpose, meaning, and positive affect see Cantor, 1990; Deci & Ryan, 2000; Emmons, 1986, 1996; Klinger, 1975; and Little 1983). It is perhaps not surprising then that BA interventions can not only reduce symptoms of depression but also boost well-being. What is more intriguing is the evidence that other psychological interventions might be just as effective as BA and PPIs at helping recipients attain life's positives. Measures of well-being are not

routinely used in psychotherapy research and it is perhaps because of this that their potential in this area has passed relatively unnoticed. This shortcoming should be redressed in future research.

The present study's finding that BA interventions can increase well-being indicates that BA should be added to the growing number of viable interventions in the field of positive psychology. Two attractive aspects of the BA approach are (a) intervention protocols already exist, and (b) in its simplest form, it is suitable for a broad range of target populations including those that cannot be treated with more complex interventions. For instance, interventions involving the presentation of favourite stimuli, or scheduling leisure activities, have been piloted with individuals with severe or profound intellectual and multiple disabilities to increase indices of happiness (e.g., Green & Reid, 1996; Lancioni et al., 2007; Yu et al., 2002). The approach would also appear to be suitable for individuals with dementia (e.g., Teri et al., 1997).

As stated in Chapter 3, BA interventions have been effectively delivered in a variety of formats including group therapy, brief individual therapy, and longer-term individual therapy. The approach might also lend itself to self-help applications in the form of bibliotherapy (e.g., Addis & Martell, 2004; Hopko & Lejuez, 2007; Veale & Willson, 2007) or computer-based interventions (e.g., Meyer, Berger, Caspar, Beevers, Andersson, & Weiss, 2009). These formats would be suited for people who want to increase their psychological well-being with minimal cost or practitioner contact.

A moderate increase in activity (mostly reflecting increased participation in pleasant activities) for BA conditions relative to control conditions was observed. This result is consistent with the goal of increasing participation in pleasant activities, which was the focus of early versions of the BA approach (e.g., Lewinsohn, 1976). Notably 65% of the studies included in this analysis might be considered "traditional" in this regard. Recent variants of the BA approach for depression have expanded on this form of BA by emphasising an ideographic approach where each participant's circumstances, interests and values are taken into account, and avoidance behaviours are analysed and addressed (e.g., Jacobson et al., 2001; Lejuez, Hopko, LePage et al., 2001; Martell et al., 2001, 2010). Study 1 of this thesis found some evidence that contemporary versions of BA might be more effective for depression than earlier variants. Future research should examine if

these contemporary versions, when adapted for nonclinical populations, result in greater intervention effects.

It would also be of interest to investigate other interventions that might augment BA. Dobson and Joffe (1986) found that participants who were instructed to think about the pleasurable or beneficial aspects of their activities before and after engaging in them, in addition to increasing their participation in pleasant activities, showed a greater improvement on outcome measures over a two-week period compared to those who increased their participation in pleasant activities alone. Bryant and Veroff (2007) have documented a number of ways the enjoyment of positive experiences might be intensified or prolonged in this way. Future studies should investigate potential synergies that might be achieved by combining these two approaches.

Despite the intriguing findings and possibilities of the present study they should be considered with caution because of several limitations. First, the number of studies included in the present study was small. In particular, the number of comparisons for nonclinical populations, CT/CBT interventions and for comparisons at follow-up was small. Second, several studies were included with small sample sizes, which tends to provide a less stable estimate of effect size. Third, several studies were “pilot like” and short in duration. Sin and Lyubomirsky (2009) found that PPIs of longer duration were relatively more likely to produce greater gains in well-being. In this way, it is possible that some studies included in the present meta-analysis may have “undersold” BA. Fourth, most studies did not assess the sustainability of effects by conducting follow-up assessments. The question of whether interventions are effective for the long-term is at least as important as their efficacy in the short-term. Finally, the quality of well-being measures used in studies varied in their focus and quality. Clearly there is much that can be done in improving the literature base of this intervention as it relates to fostering well-being. Despite these limitations, confidence in the overall conclusion that BA interventions can increase well-being is bolstered by the fact that, when compared to control conditions: (a) heterogeneity was low to moderate, (b) 91% of comparisons pointed in the same positive direction, and (c) the number of unpublished studies reporting null results needed to reduce the calculated effect to the point of non-significance is high and exceeds the critical number of studies.

This study presents encouraging data about the potency of BA interventions to not only treat depression but also build well-being. BA offers a ready intervention technology that can be adapted to a range of populations in both clinical and nonclinical settings. It remains to be seen what the true potential of BA might be in terms of preventing illness and promoting well-being, and what the approach might contribute to the field of positive psychology.

### Chapter 5—Study 3

## Group Behavioural Activation and Mindfulness Therapy for the Well-Being of Nonclinical Adults: A Preliminary Open Trial<sup>1</sup>

### Introduction

Study 2 reported evidence that behavioural activation (BA) is effective in increasing well-being in nonclinical individuals and individuals with elevated symptoms of depression. The present study sought to examine the effects of a group BA and mindfulness intervention on nonclinical adults.

Happiness, or subjective well-being (SWB), is usually defined as a combination of frequent positive affect, infrequent negative affect and a high level of satisfaction with life (Diener et al., 1991; Diener et al., 1999). Individuals reporting low levels of well-being are at twice the risk of suffering a major depressive episode (Keyes, 2002). This finding, along with evidence that positive emotions can speed recovery from the physiological effects of negative emotions (Fredrickson & Levenson, 1998; Tugade & Fredrickson, 2004), improve broad-minded coping skills (Fredrickson & Joiner, 2002), and prevent depressive relapses (Fava et al., 1998; Fava & Ruini, 2003) suggest that increasing well-being may serve to protect individuals from mental health problems. In addition to this, greater recognition of the positive impact SWB can have on many desirable life outcomes including career success, marriage and health (for reviews see Lyubomirsky et al., 2005, and Pressman & Cohen, 2005) has resulted in increased attention to the factors that contribute to well-being and how an individual's level of well-being can be increased (e.g., Seligman, Rashid, & Parks, 2006; Seligman et al., 2005).

Evidence supporting the idea that it is possible to increase well-being has steadily been accumulating (e.g., Sin & Lyubomirsky, 2009). Study 2 of this thesis reported evidence that BA may enhance well-being in normative populations. This is an important finding since it would suggest that BA may be a parsimonious intervention, not only having utility as a treatment for depression, but also as a preventive strategy to protect against illness and promote psychological well-being.

A number of variants of BA have been developed. Jacobson and colleagues'

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<sup>1</sup> An earlier version of this chapter was accepted for publication as Mazzucchelli, T. G., Rees, C. S., & Kane, R. T. (2009). Group behavioural activation and mindfulness therapy for the well-being of non-clinical adults: A preliminary open trial. *The Cognitive Behaviour Therapist*, 2, 256-271.

contextual approach (Jacobson et al., 2001) emphasises the role of an individual's life circumstances and avoidance in depression (Jacobson, 1994). Certain aspects of a person's life circumstances can trigger depression and particular ways of responding to these circumstances can maintain it. Avoidance (e.g., of interpersonal situations, occupational or daily-life demands, and distressing thoughts or feelings) is viewed as a coping strategy to avoid the short-term distress associated with pursuing potentially mood-enhancing reinforcers at the longer-term cost of reducing opportunities to contact these very reinforcers and by creating or exacerbating life problems. Increased activation and engagement is presented as a strategy to break this cycle.

The initial objective of Jacobson and colleagues' individually delivered BA protocol is to increase patients' awareness of avoidance patterns by monitoring and reviewing daily behaviour. Once these patterns are recognised, the principal objective becomes one of helping patients identify and reengage with activities and situations that are reinforcing and consistent with their long-term goals. Many of the same behaviourally focused activation strategies used in cognitive therapy (Beck et al., 1979) are used in this approach including self-monitoring mood and activity, structuring and scheduling daily activities, and exploring alternative behaviours related to achieving goals. In addition, this protocol includes the establishment or maintenance of routines, and behavioural strategies for targeting rumination, including an emphasis on the function of ruminative thinking and on moving attention away from the content of ruminative thoughts toward direct, immediate, experience.

BA interventions differ in terms of their complexity. Jacobson and colleagues' protocol includes a significant emphasis on helping patients understand the function of their behaviour. It also includes components not included within other BA interventions such as "attending to experience" or "mindfulness." While this protocol has the strongest evidence base (Study 1 of this thesis), it remains to be seen whether all the components included in this intervention are necessary.

Mindfulness has roots in Buddhist and other contemplative traditions where conscious attention and awareness are actively cultivated. Mindfulness has been defined as "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgementally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145). In line with this definition, research has

proposed that mindfulness consists of a number of facets, such as nonreactivity, observational awareness, acting with awareness and concentration, describing, and nonjudgemental attitude towards experience (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006).

Recently, attention has been given to the concept of mindfulness since research has shown that its enhancement through training results in desirable outcomes for a variety of medical conditions and psychological presentations including chronic pain, anxiety disorders, substance abuse, insomnia, and anger management (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004). MBCT which incorporates mindfulness in an attempt to change an individual's awareness of, and relationship to, unwanted thoughts and feelings, has also been found to prevent relapse in recurrent depression (Teasdale, Segal, Williams, Ridgeway, Lau, & Soulsby, 2000). There have been few studies, however, of the use of mindfulness meditation to specifically enhance well-being (for a review of relevant mindfulness research see Fredrickson, 2008).

A great deal of the research with BA and mindfulness has been conducted with clinical populations and it is important to look at how interventions like these could serve a preventative role in mental health. However to be cost effective, efficient methods of delivering these interventions need to be found. Also, the minimally sufficient components necessary for such interventions to be effective need to be established. The aim of the present research is to determine whether a group contextual BA intervention can be used in a "real world" setting to increase the well-being of nonclinical individuals. In pursuing this aim, the present research hoped to take an initial step towards developing a group intervention protocol to enhance well-being.

Two primary hypotheses were formulated.

H1: From pre- to post-test there will be a reduction in psychological distress and an increase in subjective well-being.

H2: These effects will be maintained at a one-month follow-up.

A number of key constructs relating to BA and mindfulness were measured as a preliminary step to investigating mechanisms of change. This exploratory investigation prompted a secondary hypothesis.

H3: A measure of positive activity change and measures of mindfulness will increase in response to the intervention.



## Method

**Participants.** The Curtin University of Technology Human Research Ethics Committee approved the research protocol. Participants were recruited from the community via a press media feature article advertising courses “for people interested in increasing their happiness level” (McKimmie, 2007, p. 5). Individuals interested in participating were scheduled for an on-site evaluation to ascertain study eligibility and provide written informed consent. Individuals were screened using the Mini International Neuropsychiatric Interview (Sheehan et al., 1998). Those who did not meet the criteria for a major Axis I psychiatric disorder according to the *Diagnostic and Statistical Manual of Mental Disorders* (4<sup>th</sup> edition, American Psychiatric Association, 1994) were eligible to participate and, once written informed consent was obtained (Appendix A), were assigned to one of two therapy groups based on availability. Individuals who met the criteria for a major Axis I psychiatric disorder were offered alternative treatment.

Of the 19 volunteers who completed the intake assessment, 18 were eligible for participation. Two volunteers declined because of difficulty accessing scheduled groups, resulting in 16 participants who commenced the intervention. The one excluded volunteer was screened out because of major depression.

Of the 16 participants who commenced the intervention ten (62%) were female, and the average age was 51.4 years ( $SD = 10.4$  years, range = 39 – 72). All participants were caucasian, which is representative of the 93% caucasian ancestry of the Western Australian population (Department of Immigration and Citizenship and Office of Multicultural Interests, 2008). With respect to marital status, 11 (69%) were married or in a de facto relationship, 3 (19%) were single, and the remaining 2 (12%) were divorced or widowed. With respect to educational level, 14 (88%) had completed high school, and 12 (75%) had also completed a university degree or diploma.

**Research design.** A 2 (Therapy Group: 1, 2) x 4 (Time: pretest, post-BA, postmindfulness, follow-up) mixed design was employed. The 16 participants were assigned to one of two-therapy groups ( $n = 5$ ;  $n = 11$ ). Ideally, the research design should have included an ethically sound wait-list control group; however, practical considerations relating to the availability of participants and therapists rendered the wait-list control group design unviable. Because the primary interest of the present study was the effectiveness of BA on well-being, the BA module was provided

before the mindfulness module so that the latter did not contaminate the impact of the former. Outcome measures were completed prior to the initial intervention session, after the BA module (at the 4<sup>th</sup> intervention session), after the mindfulness module (at the 8<sup>th</sup> intervention session), and 4 weeks after the intervention had concluded (see Table 13).

### **Measures.**

***Psychological distress.*** The *Depression Anxiety Stress Scales 21* (DASS-21; Lovibond & Lovibond, 1995) is a 21-item questionnaire that assesses symptoms of depression, anxiety and stress in adults (see Appendix B). The DASS-21 is widely used with high reliability for the Depression ( $\alpha = .88$ ), Anxiety ( $\alpha = .82$ ), Stress ( $\alpha = .90$ ) scales, and good discriminate and concurrent validity (Henry & Crawford, 2005).

***Subjective well-being.*** Measures of subjective well-being used in this study included the *Happiness Measures* (HM), the *Positive and Negative Affect Scales* (PANAS), and the *Satisfaction with Life Scale* (SWLS). The HM (Fordyce, 1988) is a 2-item scale which uses an 11-point happiness/unhappiness intensity scale and a question asking for respondent to estimate the percentage of time spent in “happy”, “unhappy”, and “neutral” moods. In this study, the HM was used to measure happiness over “the last month” (see Appendix C). The scale is reported to be sensitive to change, have a high degree of stability, relative freedom from response bias, and evidence supporting its convergent, construct, concurrent and discriminative validity (Fordyce, 1988).

The PANAS (Watson et al., 1988) is a 20-item schedule that measures positive affect (PA) and negative affect (NA). The PANAS is internally consistent (alpha reliabilities range from .86 to .90 for PA and from .84 to .87 for NA) and has excellent convergent and discriminant validity against lengthier measures of the underlying mood factors. In this study the PANAS was used to measure affect “during the past few weeks” (see Appendix D).

The SWLS (Diener, Emmons, Larsen, & Griffen, 1985) is a well-validated 5-item instrument that is considered to provide a measure of the cognitive component of well-being (Pavot & Diener, 2008; Pavot et al., 1991; see Appendix E).

Table 13

*Experimental Design of Study*

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Behavioural Activation				Mindfulness							
OX	X	X	XO	X	X	X	XO				O

*Note.* O = Outcome measures administered. X = Exposure to intervention.

***Activity and Circumstantial Change.*** The 8-item *Activity and Circumstances Change Questionnaire* (ACCQ; Sheldon & Lyubomirsky, 2006) was used to assess the extent to which participants experienced both activity change (e.g., a change in goals, projects, or strivings; diet, exercise, or other self-maintenance activity; conscious attitudes or mental approach to life) and circumstantial change (e.g., monetary situation; living arrangements; relationship status). On each item, participants respond on a 5-point scale (1 = no positive change; 5 = much positive change; see Appendix F). The ACCQ has factorial validity, and although reliability is reported to be low for the two factors (Activity,  $\alpha = .60$ ; Circumstances,  $\alpha = .47$ ) this might be understandable given that people would not be expected to report experiencing every activity change or every circumstantial change on the list (Sheldon & Lyubomirsky, 2006).

***Mindfulness.*** The 39-item Five-Factor Mindfulness Questionnaire (FFMQ; Baer et al., 2006) was used as an index of mindfulness. This measure yields a score for five elements of mindfulness: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. High scores on the FFMQ are reflective of the presence of this quality or skill. The FFMQ has factorial validity, and good discriminant and concurrent validity (Baer et al., 2006; see Appendix G).

***Participant satisfaction.*** Client satisfaction questionnaires included 8 items on participant satisfaction (e.g., “In an overall sense, how satisfied are you with the program you received?”) and either 16 items that rated the usefulness of each of the components of the BA module (see Appendix H), or 4 items that rated the usefulness of each of the components of the mindfulness module (see Appendix I). Satisfaction items were rated on a 7-point Likert-type scale ranging from 1 (*very dissatisfied*) to 7 (*very satisfied*). Program components were rated from 1 (*no, definitely not useful*) to 7 (*yes, very useful*).

### **Procedure.**

***Intervention.*** The BA module sought to identify and promote engagement with reinforcing activities and contexts consistent with each participant’s long-term goals. Specific content included psychoeducation regarding well-being and happiness, setting long- and short-term goals, self-monitoring activity and mood using activity logs in order to identify the impact of particular activities on mood, structuring and scheduling daily activities, identifying and understanding avoidance

using a version of the Trigger Response Avoidance Pattern/Alternative Coping (TRAP/TRAC) model, making conscious decisions about behaviour (i.e., ACTION—Assess how this behaviour serves you, Choose to either avoid or activate, Try out whatever behaviour has been chosen, Integrate any new behaviours into a routine, Observe the outcome, Never give up), strategies to overcome procrastination and avoidance (such as graded task assignments, managing situational contingencies, acting toward a goal), and exploring alternative behaviours related to achieving goals. This module was based heavily on the protocol developed by Martell and colleagues (2001), although content focused on increasing well-being rather than treating depression. See Appendix J for detailed summaries of session content. Notable deviations from the Martell's protocol included omitting instruction in attending to experience or mindfulness. Also, since participants were not depressed, it did not make sense to include a behavioural formulation of individuals' present emotional state, although functional analysis of particular avoidance behaviours was incorporated into this module. Participants received a workbook (Mazzucchelli, 2007) and attended four weekly 2-hour group sessions over four weeks.

In Martell and colleagues' (2001) protocol attending to experience or mindfulness could be incorporated throughout the BA intervention. However, since their protocol does not provide specific guidelines as to how to teach individuals to engage in attention to experience, or particular activities that allow this component to be separated from the rest of the intervention, the mindfulness module used in the study was based on sessions one, two and five of the protocol detailed by Segal, Williams and Teasdale (2002). Participants attended three weekly 2-hour group sessions that included live meditation practice. Participants were also given handouts relating to the practice of mindfulness meditation, and encouraged to monitor their home practice. The module deviated from the protocol described by Segal et al. (2002) by being shorter and removing discussions on depression and the cognitive model of emotions. Mindfulness was presented as a skill by which participants could (a) become more conscious of the choices they make in their behaviour on a day-to-day basis, (b) substitute for ruminative thinking, and (c) savour positive experiences. See Appendix J for detailed summaries of session content.

In the final session homework, the content from both modules, positive changes that had occurred over the course of the intervention, and ideas to maintain

these changes were reviewed. At the conclusion of this session the postintervention questionnaire booklet was completed. See Appendix J for a detailed summary of the content of this session.

**Facilitators.** The intervention was facilitated by four postgraduate clinical psychologist trainees. Two facilitators led each subgroup. Facilitators participated in a weekly on-site supervision meeting chaired by TM, a registered clinical psychologist who had been in practice for 13 years, has a behaviour therapy background, training in meditation, and experience in delivering both. The facilitators had previous exposure to both BA and MBCT through their postgraduate training.

**Statistical analysis.** The last observation carried forward method was used to replace missing data. This involved replacing missing data with the last observed response, a common and conservative method to estimate intervention effects (Hollis & Campbell, 1999). For each outcome, changes across time were tested with a 2 (Therapy Group: 1, 2) X 4 (Time: pretest, post-BA, postmindfulness, follow-up) mixed ANOVA. A univariate approach was preferred to a multivariate approach because the research questions focused on individual outcomes rather than on an emergent or latent system of outcomes. In addition, alpha levels for the main analyses remained at .05 because each ANOVA was hypothesis-driven. Bonferroni corrections were applied to all follow-up tests. Although difficult to calculate the exact intervention effect size required for this analysis to reject the null hypothesis, with 16 participants it is clear that effects would need to be large in order to be detected with a power of .80 ( $d = 0.75$  for a two-tailed  $t$ -test; Faul, Erdfelder, Lang, & Buchner, 2007). Treatment effect sizes were calculated using Cohen's  $d$  statistic (Cohen, 1988):  $d = d' / \sqrt{[1 - r]}$ , where  $d' = [M_{\text{initial}} - M_{\text{post}}] / SD_{\text{pooled}}$ .

For the clinical significance analysis, in order for a pre-post change to qualify as clinically significant, it had to be statistically reliable. Pre-post change was defined as reliable if it could be transformed into a reliable change score with a value greater than 1.96 (Jacobson & Truax, 1991). Due to the heterogeneous nature of the sample, a test for clinically significant change was run for each primary outcome measure selecting only those cases where the preintervention score was such that it could show clinically significant change. For measures of psychological distress, clinically significant improvement was defined as (a) a preintervention score in the clinical range, (b) a reliable change score greater than 1.96, and (c) a mid-, post-

intervention and/or a follow-up score that was in the nonclinical range. Clinical cut-off scores were based on published normative data for each primary outcome measure. A score was deemed to be in the clinical range if it was greater than or equal to the cut-off score. For the DASS-21 stress, depression, and anxiety scales cut-off scores were 7, 5, and 10 respectively. For measures of well-being, clinically significant improvement was defined as (a) a preintervention in the below-average or average range, (b) a reliable change score greater than 1.96, and (c) a movement from the below-average range at preintervention to the average or above-average range at mid, post- and/or follow-up, or a movement from the average range at preintervention to the above-average range at mid, post and/or follow-up. Consistent with past research, a score of  $\pm 1$  *SD* from the mean of a normative group on a measure of well-being was considered “average” (Wise, 2004). For the HM, the average range for the intensity scale was 6 to 8, and the average range for the percent of time happy scale was 33 to 75. For the PANAS, the average range for the PA scale was 25 to 39, and the average range for the NA scale was 6 to 35. For the SWLS, the average range was 19 to 30.

## Results

**Participant attendance.** The average number of sessions attended by the 16 participants was 6 out of a possible 8 ( $SD = 2.55$ ). Completion of each module was defined as attending at least 3 of the 4 sessions. On the basis of this, 13 (81%) participants completed the BA module and 10 (62%) participants completed the Mindfulness module. The attrition rate was not significantly different across subgroups post-BA,  $\chi^2(1, N = 16) = 0.01, p = .931$ , or postmindfulness,  $\chi^2(1, N = 16) = 0.95, p = .330$ . This attrition is comparable with studies of treatment for patients with depression (Simons, Levine, Lustman, & Murphy, 1984). Participants who failed to complete the BA module reported more anxiety at pretest than those that completed the BA module ( $M_{\text{dropouts}} = 6.33, SD = 3.05; M_{\text{completers}} = 2.08, SD = 2.25$ ),  $t(14) = 2.79, p = .015$ . Reasons cited for attrition, collected via a dropout survey form (Appendix K), included illness ( $n = 2$ ), holidays or competing commitments ( $n = 3$ ), and dissatisfaction with the intervention ( $n = 1$ ). The latter participant did not attend after the first session because he did not believe that the BA approach would make him any happier. Similarly, another participant who withdrew because of competing commitments noted that he was seeking strategies that would give him “peace of mind” or “calmness.” Despite dropping out of the intervention, in most

cases participants still participated in the evaluation meaning that only two participants failed to complete questionnaire booklets at the post-BA assessment period, and three participants failed to complete questionnaire booklets at follow-up.

**Primary outcome measures.** At pretest the mean DASS-21 scores fell within the normal range for depression, anxiety and stress. The mean PANAS scores fell within the normal range, but the mean SWLS score fell within the slightly dissatisfied range. The mean HM intensity score and time happy scores also fell slightly more than one standard deviation below the mean of a normative sample. Table 14 presents the mean scores and standard deviations on each study variable at preintervention, post-BA, postmindfulness, and at follow-up. For each outcome, changes across time were tested with a 2 (Therapy Group: 1, 2) X 4 (Time: pretest, post-BA, postmindfulness, follow-up) mixed ANOVA. Significant Therapy Group X Time interactions were investigated to determine whether they had confounded the main effect for time. Only one outcome, the Intensity item of the HM, showed a significant Therapy Group X Time interaction. Further investigation indicated that the treatment effect was *qualitatively* different across the two therapy groups at postmindfulness and follow-up. This prevented any general statements being made about treatment effects on these occasions for this particular outcome.

Significant decreases over time were found on the Depression and Stress scales of the DASS-21 and on the NA scale of the PANAS. Significant increases over time were found for the Time Happy item of the HM and on the PA scale of the PANAS<sup>2</sup>. Follow-up tests revealed a significant increase in Time Happy from pretest to postmindfulness, and in PA from pretest to post-BA and from pretest to postmindfulness. *F*-values and *p*-values for these tests are reported in Table 14. These results support Hypothesis 1.

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<sup>2</sup> When Bonferroni corrections were applied, two of the reported time effects failed to emerge, namely: DASS-21: Depression ( $p > .017$ ) and PANAS: NA ( $p > .025$ ). Consequently, these effects should be interpreted with caution.



Table 14

*Effects for Major Study Variables Using Last Observation Carried Forward to Replace Missing Data*

Variable	1. Pretest	2. Post-BA	3.	4. FU	<i>F</i> ratio for effects				Significant pairwise multiple comparisons
	Postmindfulness				Interaction		Time		
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	
DASS-21: Depression	5.19 (4.07)	3.88 (3.54)	3.19 (4.42)	3.69 (3.91)	0.25	.864	2.90	<b>.046</b>	None
DASS-21: Anxiety	2.88 (2.87)	2.69 (2.02)	2.00 (3.25)	1.88 (3.10)	1.08	.366	0.73	.539	None
DASS-21: Stress	7.50 (3.93)	5.12 (3.24)	3.81 (4.18)	5.19 (4.05)	0.76	.524	4.36	<b>.009</b>	None
HM: Intensity of Happiness	4.94 (2.54)	5.75 (2.49)	6.06 (2.44)	5.69 (2.70)	3.02	<b>.040</b>	2.19	.103	None
HM: % of Time Happy	28.62 (22.09)	43.44 (25.35)	53.12 (25.02)	46.56 (23.86)	1.41	.252	7.00	<b>.001</b>	<b>1 vs 3</b>
PANAS: Positive Affect	25.75 (8.84)	31.31 (9.68)	33.00 (9.10)	30.06 (10.29)	1.36	.269	8.03	<b>.000</b>	<b>1 vs 2 &amp; 3</b>
PANAS: Negative Affect	21.81 (8.04)	17.25 (6.01)	13.75 (16.58)	18.00 (8.32)	1.14	.345	3.03	<b>.040</b>	None
Satisfaction with Life	18.38 (5.74)	19.56 (6.89)	21.25 (6.84)	20.50 (7.95)	0.30	.825	1.31	.284	None
ACCQ: Circumstances	7.13 (3.31)	8.00 (4.38)	8.27 (3.86)	6.93 (4.17)	0.66	.584	1.33	.278	None
ACCQ: Activity	9.67 (3.75)	11.87 (4.66)	12.07 (4.40)	9.27 (5.56)	1.68	.187	3.77	<b>.018</b>	None
FFMQ: Observe	26.27 (6.63)	26.73 (6.78)	28.27 (6.10)	27.80 (5.45)	1.36	.271	2.11	.115	None
FFMQ: Describe	28.07 (7.02)	28.20 (6.35)	31.00 (6.84)	30.80 (7.38)	4.68	<b>.007</b>	16.09	<b>.000</b>	<b>1 vs 3 &amp; 4;</b> <b>2 vs 3 &amp; 4</b>
FFMQ: Act with Awareness	24.07 (5.72)	24.67 (5.69)	26.00 (6.86)	25.67 (6.49)	1.14	.343	3.46	<b>.025</b>	None
FFMQ: Nonjudge	22.47 (6.95)	24.47 (6.99)	26.33 (6.14)	26.60 (8.11)	0.19	.902	4.99	<b>.005</b>	<b>1 vs 3</b>
FFMQ: Nonreact	19.53 (3.87)	19.13 (4.19)	21.27 (4.22)	20.73 (4.45)	0.17	.915	2.80	.053	None

*Note.* Figures in bold indicate a significant result. ACCQ = Activity and Circumstances Change Questionnaire; BA = Behavioural Activation; DASS-21 = Depression Anxiety Stress Scales 21; FFMQ = Five-Factor Mindfulness Questionnaire; FU = Follow-up; HM = Happiness Measures; PANAS = Positive and Negative Affect Scales.

Pretest to post-BA effect sizes (Cohen's  $d$ , 1988) were in the moderate range for Depression (0.34), Stress (0.65), Intensity of Happiness (0.32), Time Happy (0.62), PA (0.60) and NA (0.62). Postmindfulness the effect sizes were in the large range for Stress (0.91), Time Happy (1.04) and PA (0.81) and the moderate range for Depression (0.47), Intensity of Happiness (0.45), NA (0.62) and Satisfaction with Life (0.44). At follow-up the effect size for Stress (0.58) and Time Happy remained large (0.78), while moderate effect sizes were observed for Depression (0.38), Anxiety (0.33), PA (0.44) and NA (0.47). These results are consistent with Hypothesis 2.

***Clinical significance analysis.*** In order to provide an indication of the proportion of participants who benefited from the intervention, the proportion of participants who evidenced both statistically reliable (Jacobson & Truax, 1991) and clinically significant change (Wise, 2004) was determined. Table 15 gives the percentage of participants at each stage of the intervention who showed clinically significant changes across outcomes. Up to 50.0% ( $M = 23.7\%$ ) of participants who commenced the intervention and were capable of showing clinically significant improvement on at least one outcome measure did show such clinically improvement on outcome measures after the BA module. This figure increased to 100.0% ( $M = 35.7\%$ ) after the mindfulness module. At 1-month follow-up, up to 75% ( $M = 22.6\%$ ) of participants were still showing clinically significant improvement. These results provide support for Hypothesis 2. No participants demonstrated a clinically significant deterioration on outcome measures after the BA module, but one participant showed a clinically significant deterioration after the mindfulness module (one on the DASS-21: Stress scale and the PANAS: Negative Affect scale). At follow-up a different participant showed a clinically significant deterioration on the PANAS: Positive Affect scale.

Table 15

*Percentage of Participants Who Showed Clinically Significant Change*

Variable	Post-Behavioural Activation		Postmindfulness		Follow-up	
	Improvement	Deterioration	Improvement	Deterioration	Improvement	Deterioration
DASS-21: Depression	40.0% (2/5)	0.0% (0/11)	60.0% (3/5)	0.0% (0/11)	20.0% (1/5)	0.0% (0/11)
DASS-21: Anxiety	25.0% (1/4)	0.0% (0/12)	25.0% (1/4)	0.0% (0/12)	25.0% (1/4)	0.0% (0/12)
DASS-21: Stress	50.0% (2/4)	0.0% (0/12)	100.0% (4/4)	8.3% (1/12)	75.0% (3/4)	0.0% (0/12)
HM: Intensity of Happiness	12.5% (2/16)	0.0% (0/8)	6.2% (1/16)	0.0% (0/8)	0.0% (0/16)	0.0% (0/8)
HM: % of Time Happy	25.0% (4/16)	0.0% (0/6)	50.0% (8/16)	0.0% (0/6)	25.0% (4/16)	0.0% (0/6)
PANAS: Positive Affect	30.8% (4/13)	0.0% (0/9)	38.5% (5/13)	0.0% (0/9)	23.1% (3/13)	11.1% (1/9)
PANAS: Negative Affect	6.2% (1/16)	0.0% (0/15)	0.0% (0/16)	6.7% (1/15)	0.0% (0/16)	0.0% (0/15)
Satisfaction with Life	0.0% (0/16)	0.0% (0/7)	6.2% (1/16)	0.0% (0/7)	12.5% (2/16)	0.0% (0/7)

*Note.*  $n = 16$ . Number of participants who showed clinically significant change out of those possible in parentheses. DASS-21 = Depression Anxiety Stress Scales 21; HM = Happiness Measures; PANAS = Positive and Negative Affect Scales.

**Process measures.** Significant time effects were found for the Activity scale of the ACCQ and the Act with Awareness and Nonjudge subscales of the FFMQ<sup>3</sup>. A significant Therapy Group X Time interaction and time effect was found for the Describe subscale of the FFMQ. Further investigation indicated that the treatment effect was *qualitatively* different across the two therapy groups at post-BA and follow-up which prevented any general statements being made about treatment effects on these occasions for this particular outcome. From post-BA to postmindfulness, however, the treatment showed the same trend in each of the two therapy groups. Follow-up tests revealed a significant increase in the Describe and Nonjudge subscales of the FFMQ from pretest to postmindfulness and in the Describe subscale of the FFMQ from pretest to follow-up, from post-BA to postmindfulness, and from post-BA to follow-up. *F*-values and *p*-values for these tests are reported in Table 14. These results support Hypothesis 3.

Pretest to post-BA effect sizes were all negligible or small except positive activity change which was in the moderate range (0.50). Pretest to postmindfulness effect sizes were in the moderate range for positive activity change (0.58), and Nonjudge (0.58) and the moderate range for Describe (0.42) and Nonreact (0.43). At follow-up the effect sizes for Describe (0.38) and Nonjudge (0.54) were in the moderate range. These results support Hypothesis 3.

**Satisfaction measures.** Twelve participants completed satisfaction questionnaires after the BA component and 13 after the mindfulness component. Participants rated both components highly ( $M = 5.42$ ,  $M$  range = 4.00 - 7.00, post-BA;  $M = 5.41$ ,  $M$  range = 4.20 - 6.83, postmindfulness), indicating that the majority of participants were “satisfied” or “very satisfied” with the program and its effects.

## Discussion

This preliminary study of the effectiveness of a group delivered BA and mindfulness intervention is encouraging with significant and large decreases in psychological distress and increases in several indices of subjective well-being. Improvements in outcome measures were observed after the BA component which then continued through the mindfulness component of the intervention. There was also evidence of maintenance at 1-month follow-up. Half of the participants reported a clinically significant improvement in the amount of time they felt happy after the

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<sup>3</sup> When Bonferroni corrections were applied one of the reported time effects failed to emerge, namely: FFMQ: Act with Awareness ( $p > .01$ ). Consequently, this effect should be interpreted with caution.

intervention, and a quarter of participants at follow-up. The effect sizes for the primary outcome measures achieved in this study compare favourably to other studies that have attempted to increase measures of well-being (Study 2; Sin & Lyubomirsky, 2009). The intervention also demonstrated a high level of acceptability as indicated by the good ratings on the client satisfaction questionnaires. These results are important since they are consistent with the notion that BA may not only be effective in treating depression, but also have utility as a preventive strategy for nonclinical populations to protect against illness and promote psychological well-being.

Consistent with expectations, over the course of the intervention a significant increase in positive activity was observed, but not circumstances. Also, a significant increase in facets of mindfulness was observed after the mindfulness phase of the intervention. It is noteworthy that well-being effects were greater after the mindfulness component. This is consistent with the hypothesis that participants' acquisition of mindfulness skills interact with increased activity to enhance the impact of BA. However, other explanations are also possible. For instance, it is possible that the mindfulness component added nothing and that the well-being effects were greater because of the accumulated benefit over time from the BA component, or even that the good result after mindfulness was due to the mindfulness component alone. Since the present study was an evaluation of a single intervention made up of two discrete phases, it is not possible to conclude which of these possibilities explains the present results. A study which compares these two modules or in which some participants receive mindfulness first and then BA and other participants receive these components in the reverse order would clarify the issue. In any case, the notion that mindfulness is a useful component of contextual BA cannot be ruled out.

It is also possible that the different components of this intervention are suited to different individuals. In the present study one participant verbally reported that he did not find the meditation useful. Another participant dropped out noting that he was seeking "peace of mind" and "meditation or calmness training." The finding that anxiety was significantly related to early drop out is interesting. BA does not specifically equip individuals with skills to manage anxiety and it is tempting to speculate that if the mindfulness module had been scheduled first, or a rationale had been provided for the relevance of BA for anxiety, these participants may not have

been lost to the intervention. Perhaps BA is useful for individuals who are not actively engaged with reinforcing activities, for others it is more important to build skills that allow the cultivation of “calmness” and observation and savouring of the rewarding experiences that are already occurring. Each of these possibilities highlights the importance of individualised formulations when selecting appropriate interventions.

While gains were maintained at 1-month follow-up, they were not maintained at the same (large) level as they were immediately post-intervention. This is not unexpected given that measures of process also declined indicating a return of (particularly) positive activity to preintervention levels. The present intervention included suggestions to maintain therapeutic behaviour such as holding regular reviews of progress, refining goals, anticipating times of high stress and planning ahead as to how to maintain behaviours during these times. The outcome of this study suggests that further emphasis should be put into this area. It has also been suggested that increased well-being will only sustain if strategies to impede adaptation are employed in an ongoing fashion (Lyubomirsky, Sheldon, et al., 2005). It is possible that adaptation also contributed to the reduction in therapeutic gains at follow-up and suggestions to address adaptation might also be usefully incorporated into future protocols.

The implications of this research for the practitioner are that clients who do not meet the criteria for a mental disorder will benefit from exposure to BA techniques such as setting personal life goals, scheduling activities, monitoring activity and mood, identifying and understanding patterns of avoidance, and developing strategies to overcome this avoidance. Training in mindfulness skills may further enhance these benefits. Thus, practitioners are encouraged to incorporate these techniques into their clinical work. Practitioners may wish to deliver such interventions in a group format, as was done in this study; however, clients may also benefit from receiving these ideas individually, perhaps as a relapse prevention strategy or to boost well-being after recovering from a mental health condition.

A number of limitations of the present research must be acknowledged. As this was an open trial we cannot conclude that the improvements seen were not a function of other uncontrolled variables such as practitioner contact or merely the passage of time. However, the changes produced on measures of positive activity change and mindfulness suggests some degree of specificity of this intervention.

There was significant attrition—19% for the BA module and 38% for the mindfulness module. Attrition was not generally associated with the intervention. Only one participant reported this to be the reason for dropping out of the intervention. It is more likely that attendance at group sessions for a voluntary intervention served as a disincentive for those who experienced very busy lives. However, the high rate of attrition in the context of the small sample size is a limitation.

Participants were recruited from the community through the local print media, effectively selecting themselves. Although this limits the ability to generalize results to the broader population, those who enrolled in the program were likely representative of those who would be interested in such an intervention. This lends external validity to the study (Chambless & Hollon, 1998).

These limitations point to the current findings as being promising but preliminary. The results justify further research using randomised, controlled trials with larger sample sizes and longer follow-up. Comparison conditions comparing the different intervention components or counterbalancing the order of the intervention components would clarify the relative effectiveness of the two components. Potential moderators and mediators of intervention effects such as preference for intervention component, preintervention activity level and avoidance also need to be investigated.

This study provides the first evidence that a BA and mindfulness based group program is acceptable and can be effective in increasing the well-being of nonclinical adults. The results also provide some evidence that gains can be maintained over time. BA and mindfulness meditation interventions may provide a useful framework for further research with nonclinical populations who wish to enhance their well-being and learn skills that may protect them against depression and other mental health problems.

## Chapter 6—General Discussion

The overall aim of this project was to investigate the potential of behavioural activation (BA) to enhance well-being. Specifically, the goals were to conduct quantitative reviews of the existing empirical research on the utility of BA for both treating depression and increasing well-being, and to pilot a variant of BA specifically tailored to increase well-being with a nonclinical sample. This chapter will summarise the major findings of the three studies described in this thesis and examine the implications of these findings for the future use of BA. Recommendations for future research will also be discussed.

### Major Findings

**Applications of BA for treating depression.** The results of Study 1 provide a clear indication that BA interventions are effective in the treatment of depression in adults. For individuals with elevated scores on self-report depression measures, the overall effect size of 0.91 in favour of BA over control conditions is large, and comparable with the effect size found by previous meta-analyses (Cuijpers et al., 2007; Ekers et al., 2008). For patients meeting the diagnostic criteria for major depressive disorder (MDD) the overall effect size of 0.82 remained large and significant. Comparisons of BA with cognitive behaviour therapy/cognitive therapy (CBT/CT) indicated that these treatments are equally effective. There is also evidence that BA interventions have equivalent holding power to CBT/CT interventions for up to 24 months. Comparisons of BA with antidepressant medication did not find a difference in terms of their effect on depression, although there was evidence that BA is more acceptable to patients, with fewer patients dropping out of BA treatments.

An interesting finding of Study 1 was that although more recent versions of the BA approach, such as Jacobson and colleagues' contextual BA, generally yielded greater intervention effects compared with earlier variants, all variants produced effects of similar magnitude and differences between them were not statistically significant. However, this failure to find a statistical difference may be due to an insufficient spread of studies across the different BA conditions, and it might be noted that a focused evidence review indicated that Jacobson and colleagues' contextual BA has the strongest evidence base and satisfies the APA's Division 12 Task Force's well-established designation for the treatment of MDD.



Study 1 also failed to find any participant, intervention or methodological characteristic that was significantly associated with intervention outcome. This suggests that BA may be equally effective regardless of an individual's severity of depression or level of activity prior to the intervention, whether the BA intervention is delivered individually or as group, the number or frequency of sessions, or the experience of the practitioner. Existing evidence suggests that BA may be a robust intervention, little affected by a range of variables that can complicate the delivery of interventions in clinical settings.

**Applications of BA for increasing well-being.** The results of Study 2 provided evidence that BA interventions can increase the well-being of recipients and that they are equally effective regardless of depression status. The overall effect size of 0.52 is moderate in size and, although smaller than the large effect sizes achieved on measures of depressive symptomatology when BA interventions are applied to depressed populations (Study 1 of this thesis), is comparable in size to the mean effect on measures of well-being achieved by positive psychology interventions (0.61; Sin & Lyubomirsky, 2009).

A number of studies permitted comparisons between BA interventions and other psychological interventions. These comparisons indicated that BA and other interventions are equally effective in increasing well-being at posttest, but that BA and CT/CBT interventions may be more successful than other psychological interventions at maintaining increases in well-being at follow-up periods of up to three months.

Study 3 investigated the effectiveness of a group delivered BA and mindfulness intervention in decreasing psychological distress and increasing well-being in a nonclinical sample. It found that the intervention was associated with significant and large decreases in psychological distress and increases in several indices of subjective well-being. Improvements in outcome measures were observed after the BA component which then continued through the mindfulness component of the intervention. There was also evidence of maintenance at 1-month follow-up. Half of the participants reported a clinically significant improvement in the amount of time they felt happy after the intervention, and a quarter of participants at follow-up. The effect sizes for the primary outcome measures achieved in this study compare favourably to other studies that have attempted to increase measures of well-being (Study 2; Sin & Lyubomirsky, 2009). The intervention also demonstrated

a high level of acceptability as indicated by the good ratings on the client satisfaction questionnaires.

### **Unique Contribution of this Research**

This research provides several unique contributions to the literature in terms of understanding BA. Study 1 represents a significant extension of previous meta-analyses by more than doubling the number of included studies compared to the previous largest meta-analysis (Ekers et al., 2008). Further, in addition to examining the effects of BA relative to other therapeutic approaches, this study was the first to examine the differential effectiveness of different variants of BA. Also, Study 1 is the first meta-analysis to consider whether the effects obtained with participants reporting elevated symptoms of depression are still shown with participants who satisfy the criteria for MDD. Finally, Study 1 included a focused evidence review using the criteria developed by the Task Force within Division 12 (Society of Clinical Psychology) of the APA to determine whether any of the BA variants represent a well-established or probably efficacious treatment of depression (Chambless et al., 1998; Task Force on Promotion and Dissemination of Psychological Procedures, 1995).

Importantly, and in the spirit of positive psychology, this research broadened the focus of a clinical intervention beyond the direct alleviation of suffering and investigated its application to the promotion of well-being (Seligman & Csikszentmihalyi, 2000). Study 2 is the first meta-analysis to examine the effect of BA on psychological well-being, and possibly the first meta-analysis to examine the effect of any intervention of depression on well-being. As this study established that BA is effective in increasing the well-being of a normative sample, it indicated that BA is a parsimonious option, effective not only in treating depression but also for increasing the well-being of individuals without depression. This effectively presents the field of positive psychology with an existing technology for increasing well-being.

Study 3 adds to only a handful of studies testing the effectiveness of BA for increasing well-being amongst a normative sample. Further, it is the first to investigate the effectiveness of contextually based BA with this population. The study demonstrated that the intervention is acceptable and can be effectively delivered in a group format, which is important given that to be cost effective efficient methods of delivering these interventions need to be found. Also, Study 3

demonstrated that it is possible to modularise the mindfulness component of BA from the rest of the contextual BA protocol, laying the foundation for a more rigorous component analysis.

### **Mechanisms of Change**

The behavioural theory of depression proposes that BA is effective because it results in an increase in positive reinforcement. Although the present research indicates that BA is an efficacious treatment for depression, existing research is not sufficient to confirm the behavioural theory of depression. Study 1 found evidence that BA and CBT/CT are equally effective. It is possible that both BA and CBT/CT are effective because they operate on common mechanisms. Perhaps both are effective because they lead to increases in positive reinforcement. Alternatively, it may be that the initial behaviour change affected by BA leads to changes in beliefs and cognitions that are a necessary component for lasting emotional or behavioural change (as assumed by the cognitive model). Indeed, it has been suggested that behaviour change (and therefore BA) may represent a particularly effective means of changing cognitions (Bandura, 1977; Hollon, 2001; Martell et al., 2004).

The failure to find differences between psychological treatments for depression is not without precedent. Past reviews of the literature have found that active treatments do better than no treatment, and usually, they do better than placebo treatment conditions, but in comparison with other active treatments few differences are found or effects are substantially reduced (e.g., Cuijpers et al., 2008; Rehm, 1995; Robinson, Berman, & Neimeyer, 1990). It may be that a large portion of the effect achieved by active interventions is due to elements that are common to all of them (Rosenzweig, 1936).

**Elements common to effective therapies.** A number of authors have noted common elements in effective therapies. Rehm et al. (1987) noted that all active interventions for depression seem to provide a plausible rationale for depression, a clear action plan, a call to action, and progress feedback. Seligman and Peterson (2003) have noted that all good therapies involve paying attention, building rapport and trust, encouraging the patient to open up, naming the problem, and requiring that the patient pay for services. In addition to these, Seligman and Peterson suggest that almost all therapies also use a number of other “deep” but often overlooked strategies that are being studied by the field of positive psychology. These include strategies such as narration which requires patients to tell the stories of their life, a

strategy which can be powerfully positive in its own right (Csikszentmihalyi, 1993; Pennebaker, 1997). Another strategy is the instilling of hope (Seligman, 1991; Snyder, Ilardi, Michael, & Cheavens, 2000). Also almost all therapies help patients build a variety of strengths such as interpersonal skill, rationality, perseverance, and future-mindedness (Seligman, 2002). Seligman and Peterson argue that such strategies might not only serve to undo negative emotions, but help individuals build pleasure, engagement and meaning.

Recently Hopko, Robertson, and Carvalho (2009) examined depressed cancer patients receiving BATD who experienced large symptom improvements within one between-session treatment interval. They reported that 50% of patients experienced sudden gains and that these gains were associated with improved treatment response and maintenance of gains at three-month follow-up. Patients were more likely to experience sudden gains if they had less severe depression and other problems before they commenced treatment. However, in an intriguing finding, among patients who had sudden gains, these gains occurred following zero (46%) or one session (31%), before the formal activation process typically begins in Session 3. This suggests that the beneficial effects of BATD may be, at least partially, independent of the activation process. Ilardi and Craighead (1994, 1999) noted a similar rapid early response in CBT for depression. They suggested that this might be due to factors such as the treatment rationale and the assignment of homework that may ameliorate patients' feelings of hopelessness at the beginning of treatment, a process that incites improvement across other depressive symptoms. In any case, Hopko and colleague's (2009) finding highlights the need for process-based research and suggests that assessments might usefully measure mediators, such as the therapeutic relationship (e.g., Hartley & Strupp, 1983; Horvarth & Greenberg, 1986; Morgan, Luborsky, Crits-Christoph, Curtis, & Solomon, 1982), hope (see Steed, 2002), or other kinds of cognitive change (e.g., Tang & DeRubeis, 1999).

Despite these elements that are common to almost all therapies, Martell et al. (2004) have suggested several ingredients that are unique to BA, as well as a number of ingredients that BA shares with a smaller number of contextual behavioural therapies, and which might also account for BA's effectiveness.

**Elements unique to BA.** BA teaches patients the idea that activity leads to more activity and an improvement in mood. Patients are told this idea and encouraged to test it out. Such experimentation may permit patients to make the

connection between activity and reinforcing consequences. Consequently, Martell et al. (2004) have suggested that patients may have been taught to follow a new rule; namely, “When feeling sad, get active” instead of, “When feeling sad, shut down.” Second, all variants of BA include a simple activation strategy, activity scheduling, where clients set activity goals and monitor progress. Study 1 of this thesis indicated the power of this strategy with evidence that this strategy alone might be as effective as more complicated versions of BA. Third, BA interventions employ the strategy of breaking tasks into their component parts, so that patients can achieve success in a graduated fashion. This may permit more immediate reinforcement of discrete actions. Finally, and unique to the contextual variant of BA, patients are taught to conduct a functional analysis of their behaviour, looking closely at antecedents and consequences of their behaviour.

At least two studies provide preliminary evidence that increases in activation may be an important element in the process of recovery from depression. Using a single-subject design, Gaynor and Harris (2008) provided evidence that increased activation is associated with clinical benefit. For two of four depressed adolescents who demonstrated remission following BA, increased activation appeared to be a mediator, whereas decreased dysfunctional thinking never emerged as a plausible mediator.

In a study reanalysing the data from Jacobson and colleague’s (1996) CT component analysis study, Andrusyna (2008) discovered sudden gains within one between-session treatment interval in 46% of patients in the BA condition. These gains were associated with lower depression levels at treatment termination and significantly lower relapse rates than non-sudden-gain responders during the 24-month follow-up period. When coding treatment session transcripts, Andrusyna found that patient reports of increased activation, but not cognitive changes, correlated strongly with these sudden gains. Also, that therapeutic alliance increased following and not directly prior to sudden gains. These results suggest that increases in activation may be an important mechanism in the process of recovery from depression. However, Andrusyna also found that BA sudden gainers experienced a better therapeutic alliance than non-sudden-gainers at session 2, supporting the importance of the therapeutic alliance in laying the early groundwork for later depression improvement.

**Elements common to other contextual behavioural therapies.** BA has

several ingredients in common with other newer behavioural therapies (Martell et al., 2004). First, like other contextual treatments such as acceptance and commitment therapy (ACT; Hayes, Stroschal, & Wilson, 1999), BA attempts to understand the depressed individual without pathologising the individual's thinking or behaving. For BA, the "symptoms" of depression experienced by the patient are considered understandable reactions to changes in the individual's life that signal that something has gone awry. The problem with depression, from a BA perspective, is the downward spiral in behaviour toward less productive activity (Martell et al., 2004).

Second, contextual BA emphasises the importance of individuals finding alternative ways of coping with uncomfortable emotional responses to environmental triggers other than engaging in avoidance behaviour. Consequently, BA is similar in form to in vivo exposure typical of CBT for anxiety disorders. BA differs from in vivo exposure in that the focus is specific to activities that are reinforcing for the individual and consistent with his or her goals, as opposed to those that are avoided because they cause fear or anxiety, but there is often considerable overlap (Wagner et al., 2007). By specifically targeting avoidance behaviour, BA is also consistent with other contextual approaches, such as ACT, that employ techniques that block experiential avoidance (Martell et al., 2004).

Third, BA encourages patients to act in a manner that is consistent with how they would like to feel or would like to be perceived by others. For instance, all BA interventions encourage depressed patients to become more active despite feelings of tiredness, or to attempt tasks even if they do not initially feel motivated to do so. This technique is similar to Kelly's (1955) fixed-role therapy, opposite action used in dialectical behaviour therapy (DBT; Linehan, 1993), and "committed action" in ACT (Hayes et al., 1999).

Fourth, in BA individuals are told that the aim of the intervention is to improve mood and increase well-being, but that it is normal to experience a variety of feelings as part of life. By encouraging individuals to act towards valued goals regardless of how they are feeling, rather than trying to feel a certain way prior to acting, individuals learn to accept their feelings and move forward in life in spite of them. The combination of acceptance elements in the change process is similar to some of the newer behaviour therapies such as ACT, DBT and Integrative Couple Therapy (Jacobson & Christensen, 1996).

Finally, contextual BA teaches individuals to manage rumination by attending

to their experience—paying attention to the sights, smells, tastes, and tactile sensations that make up the experience. In this way, BA is consistent with more explicit training in mindfulness and attention to the moment that is present in some other behavioural and cognitive therapies such as DBT, ACT, and mindfulness-based cognitive therapy (Segal et al., 2002).

**Potential for a unified treatment?** Although renewed interest in BA emerged from a component analysis of CT, it is clear that BA itself is comprised of a number of ingredients and that there is potential for it to be further dismantled in order to understand how BA is effective and to potentially further simplify it. Parsimony is the same goal being pursued by Barlow, Allen, and Choate (2004) who have suggested the possibility of distilling a set of psychological procedures that might be effective for any emotional disorder. Barlow and his colleagues have identified three therapeutic components that may be relevant to the treatment of emotional disorders generally. These three components include (a) altering antecedent cognitive reappraisals, (b) preventing avoidance, and (c) facilitating behavioural responses not associated with the emotion that is disordered. Interestingly, it might be argued that recent versions of BA incorporate all three of these components. First, contextual BA may alter antecedent cognitive appraisal of triggers by helping individuals recognise that they have some control over aversive environmental triggers and emotions. Namely, individuals can choose to either activate (choosing to engage in behaviour that will lead to feeling better) or avoid (choosing not to engage in helpful behaviours and consequently to not feel better). Perceiving some control over aversive situations may in itself result in less negative emotion (Abramson et al., 1989; Sanderson, Rapee, & Barlow, 1989). This perception of control may then facilitate the other two components described by Barlow et al. (2004). As noted previously, contextual BA emphasises the importance of patients finding alternative ways of coping with uncomfortable emotional responses to environmental triggers other than engaging in avoidance behaviour. Finally, BA encourages individuals to increase their proactive coping to environmental triggers by engaging in approach behaviour. In this way BA encourages the substitution of behavioural responses typically associated with sadness, fear and anxiety with responses associated with alternative emotions. It might be noted that similar strategies have also been used with good effect in other treatments such as ACT and DBT (Martell et al., 2001).

McHugh, Murray, and Barlow (2009) have reported promising preliminary

results for Barlow and colleagues' (Allen, McHugh, & Barlow, 2008) unified treatment protocol for emotional disorders, with results in the range of large effect sizes across a range of disorders. Other unified treatments have also shown promising results (see McEvoy, Nathan, & Norton, 2009, for a review). Adding confidence to the idea that BA may contain elements relevant for treating a range of emotional disorders is accumulating evidence that BA can be effective in the treatment of anxiety conditions. Hopko, Lejuez, and Hopko (2004), Hopko, Bell, Armento, Hunt, and Lejuez (2005), Hopko, Robertson, and Lejuez (2006), and Hopko et al. (2008) have reported on the effective application of BATD to treat individuals with co-morbid anxiety and depression. There have now been several applications of BA for post-traumatic stress disorder, in some cases coexistent with MDD (Jakupcak et al., 2006; Mulick & Naugle, 2004; Wagner et al., 2007; Wright, 2003). Recently Turner and Leach (2009) have also reported evidence that a BA intervention, not confounded with adjunctive treatment modalities such as relaxation training or gradual exposure, was successful in treating an individual with social phobia and generalized anxiety disorder.

In summary, BA appears to be comprised of a number of components. Preliminary evidence indicates that both elements shared with other therapies and elements specific to BA may account for therapeutic change. Further analysis of these and other potential mechanisms of change are required in order to better understand how BA works and to potentially make BA more efficient and effective.

**A simpler intervention?** Several authors have proposed that BA may be a simpler intervention to learn and implement than other therapies that show comparable efficacy (Dimidjian et al., 2006; Hollon, 2001; Jacobson et al., 1996; Jacobson & Gortner, 2000; Kanter, Busch et al., 2009; Lejuez, Hopko, LePage et al., 2001). This would seem to be a reasonable assumption when one considers the relative simplicity of the behavioural model and that the BA condition in Jacobson and colleagues' (1996) component analysis consisted of a subset of the full CT treatment. Also, that Study 1 of the thesis found that all variants of BA, including those that involved just the scheduling of pleasant activities produced effects of similar magnitude. Nevertheless, this assertion is yet to be formally tested. Cost-effectiveness analyses could address this question by considering the differential costs incurred by delivering different psychotherapies, such as the length of therapist training. However, Martell et al. (2004) note that it may be some time before this



question is adequately addressed, since the research demands of randomised controlled efficacy trials require substantial care (and allocation of time) in the supervision of therapists regardless of the psychotherapy being used.

### **Implications of Findings and Future Directions**

**For treatment of depression.** There is a significant gap between the demand for psychological therapy services and the available supply (Bebbington et al., 2000; Lovell & Richards, 2000). As noted in Chapter 3, one proposal to overcome this problem is to increase efficiency of provision through the adoption of least intrusive and least costly interventions within stepped care models (Marks et al., 2003; National Collaborating Centre for Mental Health, 2004; Scogin et al., 2003). There are good reasons to suppose that BA represents a comparatively simple psychotherapy which is easy to understand for depressed patients, and does not require difficult or complex skills from patients and therapists (Lejuez, Hopko & Hopko, 2001). Consequently, BA appears to be a good candidate as a simple first-line treatment. Further, Kanter, Busch et al. (2009) suggest that it may be possible to adopt stepped care approach within BA. Kanter, Busch et al. (2009) recommend that practitioners use a simple activation approach which is consistent with contextual BA but that largely follows the BATD approach in the first instance, and only employ more complicated procedures, such as focusing on avoidance, if the initial simple activation approach is not effective.

Perhaps because of its simplicity, BA has been found to be effective for a broad range of populations and when delivered in a variety of formats including group therapy, brief individual therapy, and longer-term individual therapy. The approach would also appear to be suitable for self-help applications with several protocols having already been developed. In summary, BA appears to be a good candidate as a simple first-line treatment and has the potential for deriving the greatest benefit from available therapeutic resources.

**For promoting well-being.** The present study's finding that BA interventions can increase well-being indicates that BA should be added to the growing number of viable interventions in the field of positive psychology. This is important since there is converging evidence that such interventions might not only result in many desirable life outcomes, but also act as a preventive strategy, effectively protecting individuals against illness (Fava & Ruini, 2003; Fredrickson & Levenson, 1998; Keyes, 2002; Lyubomirsky et al., 2005; Pressman & Cohen, 2005; Tugade &

Fredrickson, 2004). Thus the present research suggests that clients, regardless of their clinical status, will benefit from exposure to BA techniques such as setting personal life goals, scheduling activities, monitoring activity and mood, identifying and understanding patterns of avoidance, and developing strategies to overcome this avoidance. Training in mindfulness skills may further enhance these benefits. The challenge is to determine the minimally sufficient, cost-effective, intervention that will have a clinically significant impact on individuals' well-being. Study 3 demonstrated that it is possible to successfully deliver BA to a normative sample via eight group sessions, but ideally even more efficient methods of delivering this intervention should be developed and tested.

Although Study 3 did not identify any participants with a particularly adverse reaction to the intervention, practitioners should nevertheless exercise caution. BA encourages individuals to increase their rate of positively reinforced behaviour including the attainment of goals. However, this may have adverse consequences for some individuals. In particular, individuals with a vulnerability to BPD may be excessively responsive to BAS-related events such as goal striving and attainment potentially leading to hypomanic/manic symptoms (Depue & Iacono, 1989; Depue et al., 1987; Johnson, 2005; Urosevic et al., 2008). For this reason, practitioners should routinely screen participants for vulnerability to BPD and monitor their reaction to BA interventions.

**For treatment of anxiety.** There is a strong comorbidity between depressive and anxiety symptoms and disorders (Barlow, 2002; Mineka, Watson, & Clark, 1998), consequently it would be advantageous if a treatment could treat both simultaneously. As noted earlier, there is accumulating evidence that BA may be effective in the treatment of anxiety conditions. This points to the potential of BA as a parsimonious treatment of emotional disorders, and for the promotion of well-being. Further assessment of BA's efficacy with anxiety disorders is needed.

### **Limitations and Future Evaluations.**

The current research identified a number of avenues for further research.

**Need for more high quality studies.** Study 1 did not find that the different variants of BA produce significantly different outcomes; however, the failure to determine this might be due to insufficient spread of studies across different BA conditions. It is of clinical importance to determine whether more complex versions of BA offer the additional benefit to warrant their use. Consequently, more high-

quality research trials investigating the variants of BA are needed.

The deficit of high quality studies is even more acute as it relates to fostering well-being. Currently the number of randomised controlled studies assessing the impact of BA on well-being is small, especially involving nonclinical samples. Those studies that do exist typically have methodological shortcomings such as (a) small sample sizes, (b) interventions of short duration, (c) lacking longer-term follow-up, and (d) failing to use high quality measures of well-being. An investigation of BA using randomised prevention trial methods involving repeated long-term follow up and measures of diagnostic status and/or symptoms of depression and anxiety along with hypothesised mediators would be ideal to determine whether the skills taught in BA might not only increase well-being, but also prevent depression or other mental illness (Howe, Reiss, & Yuh, 2002). Significant prevention effects using targeted cognitive behavioural interventions have been found in adults (Muñoz et al., 1995), college students (Peden, Rayens, Hall, & Beebe, 2001; Seligman, Schulman, DeRubeis, & Hollon, 1999; Seligman Schulman & Tryon, 2007), adolescents (Clarke et al., 1995) and primary school age children (Cardemil, Reivich, & Seligman, 2002; Jaycox, Reivich, Gillham, & Seligman, 1994; Gillham, Reivich, Jaycox, & Seligman, 1995; Gillham & Reivich, 1999; Gillham, Hamilton, Freres, Patton, & Gallop, 2006; Yu & Seligman, 2002). However, it is not known whether a similar effect could be achieved using a purely behavioural intervention.

**Analysis of moderators and mediators.** As noted previously, we do not yet fully understand the processes through which BA is effective. Such an understanding is necessary to improve our prospects for addressing impediments in treatment, effectively train practitioners, and permit the further refinement of BA. Consequently, we need more studies in which proposed mediators are identified a priori and carefully measured on a repeated basis to demonstrate that they change before and predict changes in depression (Gaynor & Harris, 2008). While measures of processes hypothesised to be involved in the therapeutic impact of BA have been developed, such as environmental reward, goal directed activation, and avoidance, the discussion presented earlier in this chapter indicates the importance of investigating possible mediators BA shares with other therapies as well.

**Component analyses.** It has already been noted that some of the variants of BA, such as Jacobson and colleagues' contextual approach, comprise a variety of

intervention procedures but without a clear picture as to which procedures are causally active. If it is true that all variants of the approach produce effects of similar magnitude this would suggest that some of the treatment components incorporated in some variants are unnecessary for good outcomes. Study 3 demonstrated that it is possible to modularise the attention to experience component of contextual BA. Kanter, Busch et al. (2009) similarly advocate delivering a simple activation approach in the first instance and only using more complicated procedures, such as mindful valued activation, if the initial activation approach is not effective. Such modularisation provides the way forward to a component analysis of this intervention protocol.

**Economic analysis.** In this era of managed care, treatments for depression must not only demonstrate their clinical effectiveness, but also their relative cost effectiveness. A preliminary economic analysis by Dobson et al. (2008) suggested that the cost of BA, like CT, is less than paroxetine. However, this analysis was incomplete, as it did not consider many variables that are commonly included in more sophisticated analyses (e.g., Antonuccio, Thomas, & Danton, 1997). In particular, this analysis did not consider the differential costs incurred from delivering the different psychotherapies. If it is true that BA is less complicated than other therapies and may require less therapist training or achieve the same outcomes with a lesser dose of therapy, this would suggest that BA may have a comparative advantage over CT. Cost-effectiveness analyses are needed to determine whether this is the case (Barrera, 2009).

### **Summary and Conclusions**

The research conducted in the past three decades show that BA is a well-established treatment for depression that may have advantages over alternative treatments. There is evidence that BA is not only effective in treating depression, but also in building well-being. This has potentially important implications for increasing individuals' mental health and preventing the incidence of depression and other mental health problems. BA would appear to be well suited as a simple first-line treatment option within a stepped care model of service delivery. Nevertheless there is scope for more research on the variants of BA, and dismantling and testing the components of more complex versions of BA to determine the minimally sufficient BA intervention. Future research should investigate specific processes of change and whether BA is easier to disseminate than other evidence-based

psychotherapies.

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**Appendix A**  
**Participant Information Sheet and Consent Form**  
**HAPI: Happiness Activities & Processes Intervention**  
**Participant Information Sheet**

Curtin University of Technology's School of Psychology is conducting a research project aimed at understanding more about interventions to increase happiness and wellbeing. It is expected that this understanding will result in effective interventions to enhance individual's wellbeing and help refine psychological treatments for people who suffer from depression and anxiety. We are inviting members of the public who are 18-years or older to participate. The Curtin University of Technology Human Research Ethics Committee has approved this project.

*What will the project involve?*

Participation in the program will involve completing a set of questionnaires that will take about 30 minutes. These questionnaires will be concerned with happiness, goals, and the frequency of various activities. Participants will then be required to attend a group on a weekly basis over an 8-week period to obtain specific instructions on each subsequent week's tasks. Participants will be required to keep daily records of mood and activity. At the end of the 4<sup>th</sup> week, 8<sup>th</sup> week and 12<sup>th</sup> week, participants will again be asked to complete the original set of questionnaires.

*Why might I want to participate?*

The intervention being evaluated is grounded in theory and may increase your personal level of wellbeing and happiness. At the end of your participation in the study, you will receive individual feedback based on your responses to the assessment materials.

*What happens to the information collected?*

The principal researcher will keep all response booklets completed over the course of the study completely confidential and in a locked filing cabinet. Only the principal researcher will have access to the response booklets and identifying information will be kept separate from completed response booklets. While feedback on your own personal assessments will be made available to you, no individual results will be reported from this study.

*What if I decide I do not want to participate any more?*

You can withdraw from the project at any time without any negative consequences.

*How can I get more information?*

If you have any questions about any aspect of this research project, please contact Trevor Mazzucchelli (co-investigator) on 9301 3872 or Dr. Clare Rees (principal investigator) on 9266 3039.

*Concerns or Complaints?*

Should you have any concerns or complaints regarding your participation in this study, you may contact the *Curtin Human Research and Ethics Committee* on 9266 2784.

**HAPI: Happiness Activities & Processes Intervention**  
**Consent Form**

1. I have read *HAPI: Happiness Activities & Processes Intervention—Participant Information Sheet* and understand the aims and procedures of the study.
2. I understand that my participation is voluntary and that I can withdraw from the study at any time without negative consequences.
3. I understand that all information obtained will be kept confidential.
4. On the basis of the above information, I give my permission to participate in this project.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_ Postcode: \_\_\_\_\_

Telephone contact numbers: \_\_\_\_\_

Participant's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Witness's signature: \_\_\_\_\_

Office use

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Participant Number: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix B**  
**Depression-Anxiety-Stress Scales**  
**DASS-21<sup>1</sup>**

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

*The rating scale is as follows:*

0	Did not apply to me at all				
1	Applied to me to some degree, or some of the time				
2	Applied to me a considerable degree, or a good part of the time				
3	Applied to me very much, or most of the time				
1.	I found myself getting upset by quite trivial things.	0	1	2	3
2.	I was aware of dryness in my mouth.	0	1	2	3
3.	I couldn't seem to experience any positive feeling at all.	0	1	2	3
4.	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness) in the absence of physical exertion.	0	1	2	3
5.	I just couldn't seem to get going.	0	1	2	3
6.	I tended to over-react to situations.	0	1	2	3
7.	I had a feeling of shakiness (e.g., legs going to give way).	0	1	2	3
8.	I found it difficult to relax.	0	1	2	3
9.	I found myself in situations which made me so anxious I was most relieved when they ended.	0	1	2	3
10.	I felt that I had nothing to look forward to.	0	1	2	3
11.	I found myself getting upset rather easily.	0	1	2	3
12.	I felt that I was using a lot of nervous energy.	0	1	2	3
13.	I felt sad and depressed.	0	1	2	3
14.	I found myself getting impatient when I was delayed in any way (e.g., lifts, traffic lights, being kept waiting).	0	1	2	3
15.	I had a feeling of faintness.	0	1	2	3
16.	I felt that I had lost interest in just about everything.	0	1	2	3
17.	I felt I wasn't worth much as a person.	0	1	2	3
18.	I felt that I was rather touchy.	0	1	2	3
19.	I perspired noticeably (e.g., hands sweaty) in the absence of high temperatures or physical exertion.	0	1	2	3
20.	I felt scared without any good reason.	0	1	2	3
21.	I felt that life wasn't worthwhile.	0	1	2	3

<sup>1</sup> From *Manual for the Depression Anxiety Stress Scales* (2nd Ed.), by S. H. Lovibond and P. F. Lovibond, 1995, Sydney, NSW: Psychology Foundation of Australia. Reproduced with permission. Available from <[www.psy.unsw.edu.au/dass/](http://www.psy.unsw.edu.au/dass/)>. Copyright 1995 by the Psychology Foundation of Australia.

**Appendix C**  
**Happiness Measures**  
**EMOTIONS QUESTIONNAIRE<sup>2</sup>**

How happy or unhappy have you felt over the last month? Check the *one* statement below that best describes your average happiness over this period.

Check just one of these boxes!		10. Extremely happy (feeling ecstatic, joyous, fantastic!)
		9. Very happy (feeling really good, elated!)
		8. Pretty happy (spirits high, feeling good.)
		7. Mildly happy (feeling fairly good and somewhat cheerful.)
		6. Slightly happy (just a bit above neutral)
		5. Neutral (not particularly happy or unhappy.)
		4. Slightly unhappy (just a bit below neutral)
		3. Mildly unhappy (just a little low)
		2. Pretty unhappy (somewhat "blue, spirits down.)
		1. Very unhappy (depressed, spirits very low.)
		0. Extremely unhappy (utterly depressed, completely down.)

Consider your emotions a moment further. In the last month, what percent of the time have you felt happy? What percent of the time did you feel unhappy? What percent of the time did you feel neutral (neither happy nor unhappy)? Write down your best estimates, as well as you can, in the spaces below. Make sure the three figures add-up to equal 100%.

*Over the last week:*

The percent of time I felt happy	_____	%
The percent of time I felt unhappy	_____	%
The percent of time I felt neutral	_____	%
TOTAL:	100	%

<sup>2</sup> With kind permission from Springer Science+Business Media: *Social Indicators Research*, "A review of research on the Happiness Measures: A sixty second index of happiness and mental health," 20, 1988, p. 376, by M. W. Fordyce.

**Appendix D**  
**Positive and Negative Affect Scale**  
**THE PANAS<sup>3</sup>**

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This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few weeks. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
_____	interested	_____	irritable	
_____	distressed	_____	alert	
_____	excited	_____	ashamed	
_____	upset	_____	inspired	
_____	strong	_____	nervous	
_____	guilty	_____	determined	
_____	scared	_____	attentive	
_____	hostile	_____	jittery	
_____	enthusiastic	_____	active	
_____	proud	_____	afraid	

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<sup>3</sup> Copyright © 1988 by the American Psychological Association. Reproduced with permission. The official citation that should be used in referencing this material is Watson, D., Clark, L. A., Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070. No further reproduction or distribution is permitted without written permission from the American Psychological Association.



**Appendix E**  
**Satisfaction with Life Scale**  
**SWLS<sup>4</sup>**

---

Below are five statements that you may agree or disagree with. Using the 1 – 7 scale below indicate your agreement with each item by circling the point on the scale that you feel is most appropriate in describing you. Please be open and honest in your responding.

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

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

2. The conditions of my life are excellent.

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

3. I am satisfied with my life.

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

4. So far I have gotten the important things I want in life.

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

5. If I could live my life over, I would change almost nothing.

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

---

<sup>4</sup> From "The Satisfaction With Life Scale," by E. Diener, R. A. Emmons, R. J. Larsen and S. Griffin, 1985, *Journal of Personality Assessment*, 49, p. 72. Copyright 1985 by Routledge. Reprinted with permission.

**Appendix F**  
**Activity and Circumstances Change Questionnaire**  
**ACCQ<sup>5</sup>**

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**Circumstances**

1. Please rate the extent to which there has been some significant positive change in the circumstances of your life over the last 4 weeks, which has given you a boost since it occurred. "Circumstances" means "facts" about your life, such as living arrangement, monetary situation, or work / study load. For example, you may have moved to a better house, received an increase in pay, or finished a difficult project.

1	2	3	4	5
No positive change		Some positive change		Much positive change

2. To what extent has your monetary situation changed in the past 4 weeks (i.e., you have gained or lost money)?

1	2	3	4	5
No positive change		Some positive change		Much positive change

3. To what extent have your living arrangements changed in the past 4 weeks (i.e., you live in a better / worse place, or with a better / worse housemate)?

1	2	3	4	5
No positive change		Some positive change		Much positive change

4. To what extent has your relationship status changed in the past 4 weeks (i.e., you have acquired or lost a boyfriend / girlfriend)?

1	2	3	4	5
No positive change		Some positive change		Much positive change

**Activity**

1. Please rate the extent to which you have adopted some significant positive new goal or activity over the last 4 weeks, which has given you a boost since it occurred. "Goal / activity" means something you chose to do or get involved in, which takes effort on your part. For example, you may have joined a rewarding new group, club, or sports team; decided on a career direction which makes it clear what to focus on; or taken on some other important new project or goal in your life.

1	2	3	4	5
No positive change		Some positive change		Much positive change

---

<sup>5</sup> From "Achieving sustainable gains in happiness: Change your actions, not your circumstances," by K. M. Sheldon and S. Lyubomirsky, 2006, *Journal of Happiness Studies*, 7, pp. 62, 68, 75. Copyright 2006 by Springer. Adapted with permission.

2. To what extent have your goals, projects, or strivings changed in the past 4 weeks?

1	2	3	4	5
No positive change		Some positive change		Much positive change

3. To what extent has your diet, exercise, or other self-maintenance activity changed in the past 4 weeks?

1	2	3	4	5
No positive change		Some positive change		Much positive change

4. To what extent has your conscious attitudes or mental approach to life changed in the past 4 weeks?

1	2	3	4	5
No positive change		Some positive change		Much positive change

**Appendix G**  
**Five-Factor Mindfulness Questionnaire**  
**FIVE-FACTOR M QUESTIONNAIRE<sup>6</sup>**

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

1	2	3	4	5
never or very rarely true	rarely true	sometimes true	often true	very often or always true

- \_\_\_\_\_ 1. When I'm walking, I deliberately notice the sensations of my body moving.
- \_\_\_\_\_ 2. I'm good at finding words to describe my feelings.
- \_\_\_\_\_ 3. I criticise myself for having irrational or inappropriate emotions.
- \_\_\_\_\_ 4. I perceive my feelings and emotions without having to react to them.
- \_\_\_\_\_ 5. When I do things, my mind wanders off and I'm easily distracted.
- \_\_\_\_\_ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.
- \_\_\_\_\_ 7. I can easily put my beliefs, opinions, and expectations into words.
- \_\_\_\_\_ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- \_\_\_\_\_ 9. I watch my feelings without getting lost in them.
- \_\_\_\_\_ 10. I tell myself I shouldn't be feeling the way I'm feeling.
- \_\_\_\_\_ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- \_\_\_\_\_ 12. It's hard for me to find the words to describe what I'm thinking.
- \_\_\_\_\_ 13. I'm easily distracted.
- \_\_\_\_\_ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- \_\_\_\_\_ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.
- \_\_\_\_\_ 16. I have trouble thinking of the right words to express how I feel about things.
- \_\_\_\_\_ 17. I make judgements about whether my thoughts are good or bad.
- \_\_\_\_\_ 18. I find it difficult to stay focused on what's happening in the present.
- \_\_\_\_\_ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
- \_\_\_\_\_ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.

<sup>6</sup> From "Using self-report assessment methods to explore facets of mindfulness," by R. A. Baer, G. T. Smith, J. Hopkins, J. Krietemeyer, and L. Toney, 2006, *Assessment*, 13, pp. 34-35. Copyright 2006 by Sage. Adapted with permission.

1	2	3	4	5
never or very rarely true	rarely true	sometimes true	often true	very often or always true

- \_\_\_\_\_ 21. In difficult situations, I can pause without immediately reacting.
- \_\_\_\_\_ 22. When I have a sensation in my body, it's difficult for me to describe it because can't find the right words.
- \_\_\_\_\_ 23. It seems I am "running on automatic" without much awareness of what I'm doing.
- \_\_\_\_\_ 24. When I have distressing thoughts or images, I feel calm soon after.
- \_\_\_\_\_ 25. I tell myself that I shouldn't be thinking the way I'm thinking.
- \_\_\_\_\_ 26. I notice the smells and aromas of things.
- \_\_\_\_\_ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.
- \_\_\_\_\_ 28. I rush through activities without being really attentive to them.
- \_\_\_\_\_ 29. When I have distressing thoughts or images I am able just to notice them without reacting.
- \_\_\_\_\_ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
- \_\_\_\_\_ 31. I notice visual elements in art or nature, such as colours, shapes, textures, or patterns of light and shadow.
- \_\_\_\_\_ 32. My natural tendency is to put my experiences into words.
- \_\_\_\_\_ 33. When I have distressing thoughts or images, I just notice them and let them go.
- \_\_\_\_\_ 34. I do jobs or tasks automatically without being aware of what I'm doing.
- \_\_\_\_\_ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought / images is about.
- \_\_\_\_\_ 36. I pay attention to how my emotions affect my thoughts and behaviour.
- \_\_\_\_\_ 37. I can usually describe how I feel at the moment in considerable detail.
- \_\_\_\_\_ 38. I find myself doing things without paying attention
- \_\_\_\_\_ 39. I disapprove of myself when I have irrational ideas.

## Appendix H

### Post-BA Feedback Questionnaire

#### POST-INTERVENTION FEEDBACK QUESTIONNAIRE

---

This questionnaire will help us to evaluate the program we offered you. We are interested in your *honest opinions* about the service you have received, whether they are positive or negative. Please answer all questions.

*Please circle the response that best describes how you honestly feel.*

1. How would you rate the quality of the service you received?

1	2	3	4	5	6	7
Poor		Fair		Good		Excellent

2. Did you receive the type of help you wanted from the program?

1	2	3	4	5	6	7
No, definitely not		No, not really		Yes, generally		Yes definitely

3. To what extent has the program met your needs?

1	2	3	4	5	6	7
No, needs have been met		Only a few needs have been met		Most needs have been met		Almost all needs have been met

4. How satisfied were you with the *amount of help* you received?

1	2	3	4	5	6	7
Very dissatisfied		Dissatisfied		Satisfied		Very satisfied

5. Has the program helped you to develop skills that will be useful in your life?

1	2	3	4	5	6	7
No, definitely not		No, not really		Yes, generally		Yes definitely

6. Has the program helped you to deal more effectively with your time and behaviour?

1	2	3	4	5	6	7
No, it made things worse		No, it hasn't helped much		Yes, it has helped somewhat		Yes it has helped a great deal

7. In an overall sense, how satisfied are you with the program you received?

1	2	3	4	5	6	7
Very dissatisfied		Dissatisfied		Satisfied		Very satisfied

8. Would you recommend this intervention to others?

1	2	3	4	5	6	7
No, definitely not		No, not really		Yes, generally		Yes, definitely

9. Using the scale below, rate how useful you found the following components of the intervention:

1	2	3	4	5	6	7
No, definitely not useful		No, not very useful		Yes, somewhat useful		Yes, very useful

INTERVENTION COMPONENT	USEFULNESS RATING
Information about happiness and wellbeing	
Determining and prioritising your long-term goals	
Keeping and reviewing a weekly activity chart	
Listing activities toward goals	
Identifying activities you enjoy or may like to try	
Scheduling activities on a <i>weekly</i> basis	
Using a daily to-do list	
Scheduling activities on a <i>daily</i> basis	
Making minute-to-minute decisions	
Understanding procrastination	
Making conscious decisions about your behaviour	
Techniques to break avoidance patterns and get you started on important activities (e.g., break tasks into small steps, manage your environment, mental rehearsal of tasks, role play behaviours, act toward your goals)	
Tips to enhance energy and prevent burnout	
Phasing out the program	
Maintenance of change	
Choosing to give-up on a goal	

Do you have any other comments about this intervention—its strengths or weaknesses?

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Thank you

## Appendix I

### Post-Mindfulness Feedback Questionnaire

#### POST-INTERVENTION FEEDBACK QUESTIONNAIRE

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This questionnaire will help us to evaluate the *Mindfulness* component of the program we offered you. We are interested in your *honest opinions* about the service you have received, whether they are positive or negative. Please answer all questions.

*Please circle the response that best describes how you honestly feel.*

1. How would you rate the quality of the service you received?

1	2	3	4	5	6	7
Poor		Fair		Good		Excellent

2. Did you receive the type of help you wanted from the program?

1	2	3	4	5	6	7
No, definitely not		No, not really		Yes, generally		Yes definitely

3. To what extent has the program met your needs?

1	2	3	4	5	6	7
No, needs have been met		Only a few needs have been met		Most needs have been met		Almost all needs have been met

4. How satisfied were you with the *amount of help* you received?

1	2	3	4	5	6	7
Quite dissatisfied		Dissatisfied		Satisfied		Very satisfied

5. Has the program helped you to develop skills that will be useful in your life?

1	2	3	4	5	6	7
No, definitely not		No, not really		Yes, generally		Yes definitely

6. Has the program helped you to deal more effectively with your time and behaviour?

1	2	3	4	5	6	7
No, it made things worse		No, it hasn't helped much		Yes, it has helped somewhat		Yes it has helped a great deal

7. In an overall sense, how satisfied are you with the program you received?

1	2	3	4	5	6	7
Very dissatisfied		Dissatisfied		Satisfied		Very satisfied

8. Would you recommend this intervention to others?

1	2	3	4	5	6	7
No, definitely not		No, not really		Yes, generally		Yes, definitely





## Appendix J

### Group HAPI Session Checklists

#### GROUP HAPI SESSION 1 CHECKLIST

Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

#### Content Checklist

- |    |   |  |                          |
|----|---|--|--------------------------|
| 1. | Introduction (6 min)  |  | <input type="checkbox"/> |
|    | OH1   | <ul style="list-style-type: none"> <li>• Welcome and self-introduction (2 min)</li> <li>• Congratulate participants on making the commitment to participate (2 min)</li> <li>• Collect completed <i>Assessment Booklet One</i></li> </ul>  |                          |
|    | OH2   | <ul style="list-style-type: none"> <li>• Provide an overview of Group HAPI (2 min)</li> </ul>  |                          |
| 2. | Agenda (outline proposed session goals and gain consent from the group) (2 min) |  | <input type="checkbox"/> |
|    | OH3   | <ul style="list-style-type: none"> <li>• Working as a group</li> <li>• Happiness and Wellbeing</li> <li>• Life Goals</li> <li>• Keeping track of your behaviour</li> <li>• Homework tasks</li> </ul>   |                          |
| 3. | Working as a Group (34 min)   |  | <input type="checkbox"/> |
|    | OH4<br>OH5  | <ul style="list-style-type: none"> <li>• Exercise 1: Setting basic ground rules for the group (4 min)</li> <li>• Exercise 2: Getting to know you (15 min)</li> <li>• Exercise 3: What you would like to get out of the group sessions (15 min)</li> </ul>  |                          |
| 4. | Happiness and Wellbeing (23 min)  |  | <input type="checkbox"/> |
|    | OH6<br>OH7<br>OH8<br>OH9<br>OH10<br>OH11<br>OH12<br>OH13<br>OH14                | <ul style="list-style-type: none"> <li>• What is happiness (2 min)</li> <li>• Factors that determine happiness level (14 min)</li> <li>• Exercise 4: What determines your level of happiness? (7 min)</li> </ul>   |                          |
| 5. | Life Goals (29 min)   |  | <input type="checkbox"/> |
|    | OH15<br>OH16<br>OH17  | <ul style="list-style-type: none"> <li>• Introduce the importance of life goals (4 min)</li> <li>• Exercise 5: Determine your lifetime goals (5 min)</li> <li>• Exercise 6: List your goals for the next three years (5 min)</li> <li>• Exercise 7: List your six month goals (5 min)</li> <li>• Exercise 8: Review and revise your goal lists (5 min)</li> </ul>                                      |                          |
|    | OH18  | <ul style="list-style-type: none"> <li>• Exercise 9: Prioritise your goals (5 min)</li> </ul>  |                          |
| 6. | Keeping Track of Your Behaviour (6 min)   |  | <input type="checkbox"/> |
|    | OH19<br>OH20<br>OH21  | <ul style="list-style-type: none"> <li>• Introduce monitoring of behaviour and mood (3 min)</li> <li>• Exercise 10: Keeping track (3 min)</li> </ul>   |                          |
| 7. | Session Close (6 min)   |  | <input type="checkbox"/> |
|    | OH22  | <ul style="list-style-type: none"> <li>• Review the main points covered in the session (2 min)</li> <li>• Explain why the homework tasks are important (1 min)</li> <li>• Explain homework tasks (keeping track of daily activities over the next week using the activity chart) (2 min)</li> <li>• Outline the content of the next session and give a reminder of the day and time (1 min)</li> </ul> |                          |

Approximate total time: 1 hour 46 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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List the names of any participants still to return *Assessment Booklet One*:

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

## GROUP HAPI SESSION 2 CHECKLIST

Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

### Content Checklist

- |    |      |   |                          |
|----|------|---|--------------------------|
| 1. | OH23 | <b>Agenda</b> (outline proposed session goals and gain consent from the group) (2 min) <ul style="list-style-type: none"> <li>• Review of Session 1</li> <li>• Review of Homework</li> <li>• Activities to reach your goals</li> <li>• Enjoyable activities</li> <li>• Scheduling activities</li> <li>• To Do Lists</li> <li>• Making minute-to-minute decisions</li> <li>• Homework tasks</li> </ul>   | <input type="checkbox"/> |
| 2. | OH24 | <b>Previous Session Review</b> (5 min) <ul style="list-style-type: none"> <li>• Determinants of happiness and wellbeing (Genetic make-up; life circumstances; intentional activity)</li> <li>• Life Goals</li> <li>• Keeping track of your behaviour and feelings</li> </ul>  | <input type="checkbox"/> |
| 3. | OH25 | <b>Homework Review</b> (20 min) <ul style="list-style-type: none"> <li>• Exercise 1: Reviewing your activity chart (5 min)</li> <li>• Check how the participants went with monitoring their behaviour and feelings (15 min)</li> </ul>  | <input type="checkbox"/> |
| 4. | OH26 | <b>Identifying Activities To Reach Your Goals</b> (27 min) <ul style="list-style-type: none"> <li>• Introduce the importance of finding activities that are related to life goals (2 min)</li> <li>• Exercise 2: List activities toward your goals (10 min)</li> </ul>  | <input type="checkbox"/> |
|    | OH27 | <ul style="list-style-type: none"> <li>• Exercise 3: Prioritising activities (15 min)</li> </ul>  |                          |
| 5. | OH28 | <b>Enjoyable Activities</b> (11 min) <ul style="list-style-type: none"> <li>• Introduce enjoyable activities (1 min)</li> <li>• Exercise 4: Identify activities you currently enjoy or may like to try (10 min)</li> </ul>  | <input type="checkbox"/> |
| 6. | OH29 | <b>Planning and Managing Time</b> (38 min) <ul style="list-style-type: none"> <li>• Introduce the importance of advance planning and managing time (3 min)</li> </ul>   | <input type="checkbox"/> |
|    | OH30 | <ul style="list-style-type: none"> <li>• Introduce schedule activities (7 min)</li> </ul>   |                          |
|    | OH31 | <ul style="list-style-type: none"> <li>• Exercise 5: Schedule Activities (3 min)</li> </ul>   |                          |
|    | OH32 | <ul style="list-style-type: none"> <li>• Introduce To Do Lists (2 min)</li> </ul>   |                          |
|    | OH33 | <ul style="list-style-type: none"> <li>• Exercise 6: Make To Do Lists (15 min)</li> </ul>   |                          |
|    | OH34 | <ul style="list-style-type: none"> <li>• Introduce Daily Activity Schedules (3 min)</li> <li>• Making Minute-to-Minute Decisions (5 min)</li> </ul>   |                          |
| 7. | OH35 | <b>Session Close</b> (6 min) <ul style="list-style-type: none"> <li>• Review the main points covered in the session (2 min)</li> <li>• Explain homework tasks (plan activities using a To Do List and Daily Activity Schedule; Keep track of daily activities using a Daily Activity Schedule; Make minute-to-minute decisions throughout the next week by asking yourself the question, "What's the best use of my time right now?") (3 min)</li> <li>• Outline the content of the next session and give a reminder of the day and time (1 min)</li> </ul> | <input type="checkbox"/> |

Approximate total time: 1 hour 49 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

## GROUP HAPI SESSION 3 CHECKLIST

Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

### Content Checklist

- |    |                                      |  |                          |
|----|--------------------------------------|--|--------------------------|
| 1. | OH36                                 | <b>Agenda</b> (outline proposed session goals and gain consent from the group) (2 min) <ul style="list-style-type: none"> <li>• Review of Session 2</li> <li>• Review of Homework</li> <li>• Understanding procrastination</li> <li>• Making conscious decisions about your behaviour</li> <li>• Techniques to break avoidance patterns and get you started on important activities</li> <li>• Identifying more activities to reach your goals</li> <li>• Homework tasks</li> </ul>  | <input type="checkbox"/> |
| 2. | OH37                                 | <b>Previous Session Review</b> (5 min) <ul style="list-style-type: none"> <li>• Identifying happiness boosting activities (Activities to reach your goals; Enjoyable activities)</li> <li>• Managing time (Weekly plan; To Do Lists; Daily Activity Schedules; Making minute-to-minute decisions)</li> </ul>   | <input type="checkbox"/> |
| 3. | OH38                                 | <b>Homework Review</b> (17 min) <ul style="list-style-type: none"> <li>• Exercise 1: Reviewing your activity schedules (2 min)</li> <li>• Check how the participants went with monitoring their behaviour and feelings (15 min)</li> </ul>   | <input type="checkbox"/> |
| 4. | OH39<br>OH40<br>OH41<br>OH42         | <b>Understanding Procrastination</b> (19 min) <ul style="list-style-type: none"> <li>• Define procrastination / avoidance (2 min)</li> <li>• Contextual factors to consider (1 min)</li> <li>• Work through example of Overwhelming Tasks (3 min)</li> <li>• Work through example of Unpleasant Tasks (3 min)</li> <li>• Exercise 2: Putting procrastination in context (10 min)</li> </ul>  | <input type="checkbox"/> |
| 5. | OH43                                 | <b>Making Conscious Decisions About Your Behaviour</b> (5 min) <p>Outline the following steps:</p> <ul style="list-style-type: none"> <li>• Be aware of situations when you typically avoid</li> <li>• Recognise when you reach a decision time</li> <li>• Make a conscious choice as to what behaviour you wish to take</li> <li>• Notice the outcome of your behaviour</li> <li>• Integrate desirable behaviours into a daily routine</li> </ul>   | <input type="checkbox"/> |
| 6. | OH44<br>OH45<br>OH46<br>OH47<br>OH48 | <b>Techniques to Break Avoidance Patterns</b> (48 min) <ul style="list-style-type: none"> <li>• Introduce break tasks into small steps (2 min)</li> <li>• Exercise 3: Break tasks into smaller steps (10 min)</li> <li>• Introduce Manage your environment (3 min)</li> <li>• Exercise 4: Ideas for managing your environment (10 min)</li> <li>• Introduce Mentally rehearse tasks (2 min)</li> <li>• Exercise 5: Mentally rehearse tasks (6 min)</li> <li>• Introduce role play behaviours (2 min)</li> <li>• Exercise 6: Role play behaviours (2 min)</li> <li>• Introduce Act toward your goals (3 min)</li> <li>• Exercise 7: Acting toward your goals (8 min)</li> </ul> | <input type="checkbox"/> |
| 7. | OH49<br>OH50                         | <b>Identifying More Activities to Reach Your Goals</b> (17 min) <ul style="list-style-type: none"> <li>• Introduce identifying more activities to reach your goals (2 min)</li> <li>• Exercise 8: List and prioritise more activities toward goals (15 min)</li> </ul>   | <input type="checkbox"/> |



8. Session Close (6 min)

OH51

- Review the main points covered in the session (2 min)
- Explain homework tasks (plan activities using a *Weekly Plan* form, *To Do List* and using a *Daily Activity Schedule*; Keep track of daily activities using a *Daily Activity Schedule*. Make conscious decisions at times when tempted to avoid and make a note of the outcomes of your decisions; use the *Avoidance Worksheet*; try out two strategies for managing procrastination) (3 min)
- Outline the content of the next session and give a reminder of the day and time (1 min)

Approximate total time: 1 hour 59 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

**GROUP HAPI  
SESSION 4 CHECKLIST**

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Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

**Content Checklist**

- |    |      |   |                          |
|----|------|---|--------------------------|
| 1. | OH52 | <b>Agenda (outline proposed session goals and gain consent from the group) (2 min)</b><br><ul style="list-style-type: none"> <li>• Review of Session 3</li> <li>• Review of Homework</li> <li>• Tips to enhance energy and prevent burnout</li> <li>• Phasing out the program</li> <li>• Progress review</li> <li>• Maintenance of change</li> <li>• Problem solving for the future</li> <li>• Choosing to give-up on a goal</li> <li>• Refining your lifetime goals</li> <li>• Homework tasks</li> </ul>                                     | <input type="checkbox"/> |
| 2. | OH53 | <b>Previous Session Review (5 min)</b><br><ul style="list-style-type: none"> <li>• Understanding procrastination</li> <li>• Making conscious decisions about your behaviour</li> <li>• Techniques to break avoidance patterns and get you started on important activities (Break tasks down into small steps; Manage your environment; Mental rehearsal of tasks; Role play behaviours; Act toward your goals)</li> </ul>   | <input type="checkbox"/> |
| 3. | OH54 | <b>Homework Review (17 min)</b><br><ul style="list-style-type: none"> <li>• Exercise 1: Reviewing your activity schedules (2 min)</li> <li>• Check how the participants went with monitoring their behaviour and feelings (15 min)</li> </ul>   | <input type="checkbox"/> |
| 4. | OH55 | <b>Tips to Enhance Energy and Prevent Burnout (11 min)</b><br><ul style="list-style-type: none"> <li>• Review tips to enhance energy and prevent burnout (6 min)</li> <li>• Exercise 2: Taking care of yourself (5 min)</li> </ul>  | <input type="checkbox"/> |
| 5. | OH56 | <b>Phasing out the program (5 min)</b><br><b>Review suggestions for phasing out the program</b><br><ul style="list-style-type: none"> <li>• Put away program materials</li> <li>• Phase out monitoring</li> <li>• Phase out specific strategies</li> <li>• Experiment with different activities</li> <li>• Hold regular reviews of progress and refine your goals</li> </ul>  | <input type="checkbox"/> |
| 6. | OH57 | <b>Progress Review (10 min)</b><br><ul style="list-style-type: none"> <li>• Exercise 3: Identifying changes that have been made (10 min)</li> </ul>   | <input type="checkbox"/> |
| 7. | OH58 | <b>Maintenance of Change (18 min)</b><br><ul style="list-style-type: none"> <li>• Introduce the notion that maintenance will require ongoing effort (2 min)</li> <li>• Discuss how relapse is often related to periods of stress (1 min)</li> <li>• Review guidelines for maintaining change (plan for potential high-risk situations; be aware of the early warning signs; act quickly if problems occur; try out new strategies or routines) (5 min)</li> <li>• Exercise 4: Problem solving future high-risk situations (10 min)</li> </ul> | <input type="checkbox"/> |
| 8. | OH59 | <b>Choosing to Give-up on a Goal (17 min)</b><br><ul style="list-style-type: none"> <li>• Provide an orienting statement (2 min)</li> <li>• Discuss tips on how to make the process of disengaging from important goals easier (Choose an alternative path to a higher order goal; Scale-</li> </ul>  | <input type="checkbox"/> |



- back your current goal; Choose a different goal) (5 min)
  - Review guidelines for maintaining change (plan for potential high-risk situations; be aware of the early warning signs; act quickly if problems occur; try out new strategies or routines) (5 min)
  - Exercise 5: Disengaging from goals (5 min)
9. Refine your Goals (30 min)
- OH60 • Exercise 6: Refining your lifetime goals (15 min)
  - OH61 • Exercise 7: Identifying more activities towards your life goals (15 min)
  - OH62
  - OH63
10. Session Close (4 min)
- OH64 • Review the main points covered in the session (1 min)
  - Explain homework tasks (Put HAPI materials away somewhere handy and take steps to make scheduling and daily To Do List part of ongoing routine; Continue to use ideas that were presented throughout the program so far; Make a note of any other homework tasks you would like to complete) (2 min)
  - Outline the content of the next session and give a reminder of the day and time (1 min)

Approximate total time: 1 hour 59 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

**GROUP HAPI  
SESSION 5 CHECKLIST**

Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

**Content Checklist**

- |    |   |                          |
|----|---|--------------------------|
| 1. | Agenda (outline proposed session goals and gain consent from the group) (2 min)   | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Questionnaires</li> <li>• Introduction to the concept of mindfulness</li> <li>• Sitting meditation</li> <li>• Homework Tasks</li> </ul>  |                          |
| 2. | Questionnaires (20 min)   | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Complete <i>Assessment Booklet Three</i> (15 min)</li> </ul>   |                          |
| 3. | Raisin exercise (20 min)  | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Raisin exercise—On automatic pilot and mindfulness (10 min)</li> <li>• Feedback and discussion (10 min)</li> </ul>   |                          |
| 4. | Sitting Meditation (55 min)   | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Sitting meditation (45 min)</li> <li>• Feedback and discussion (10 min)</li> </ul>   |                          |
| 5. | Session Close (15 min)  | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Explain homework tasks (10 min)                             <ul style="list-style-type: none"> <li>• Sitting meditation—10 min for 6 out of 7 days</li> <li>• Mindfulness of a routine activity e.g., walking, bathing</li> <li>• Distribute CDs, handouts, and practice record forms</li> </ul> </li> <li>• Review the main points covered in the session—Brief psychoeducation (5 min)</li> <li>• Outline the content of the next session and give a reminder of the day and time (1 min)</li> </ul> |                          |

Approximate total time: 1 hour 52 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

**GROUP HAPI  
SESSION 6 CHECKLIST**

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Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_\_\_\_\_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

**Content Checklist**

- |    |   |                          |
|----|---|--------------------------|
| 1. | Agenda (outline proposed session goals and gain consent from the group) (2 min) <ul style="list-style-type: none"> <li>• Review of Homework</li> <li>• Mountain meditation</li> <li>• Lake meditation</li> <li>• Brainstorm</li> <li>• Homework tasks</li> </ul>  | <input type="checkbox"/> |
| 2. | Review of Homework (35 min) <ul style="list-style-type: none"> <li>• Review of sitting meditation (20 min)</li> <li>• Review of mindfulness of ordinary activities (15 min)</li> </ul>  | <input type="checkbox"/> |
| 3. | Mountain Meditation (25 min) <ul style="list-style-type: none"> <li>• Mountain meditation (20 min)</li> <li>• Feedback and discussion (5 min)</li> </ul>  | <input type="checkbox"/> |
| 4. | Lake Meditation (25 min) <ul style="list-style-type: none"> <li>• Lake meditation (20 min)</li> <li>• Feedback and discussion (5 min)</li> </ul>  | <input type="checkbox"/> |
| 5. | Brainstorm (15 min) <ul style="list-style-type: none"> <li>• Brainstorm—how might they extend this mindfulness state to other areas of their lives? (15 min)</li> </ul>   | <input type="checkbox"/> |
| 6. | Session Close (16 min) <ul style="list-style-type: none"> <li>• Explain homework tasks (10 min)                         <ul style="list-style-type: none"> <li>• Sitting meditation—20 min for 6 out of 7 days</li> <li>• Extend mindfulness to more routine activities e.g., walking, bathing</li> </ul> </li> <li>• Review the main points covered in the session (5 min)</li> <li>• Outline the content of the next session and give a reminder of the day and time (1 min)</li> </ul> | <input type="checkbox"/> |

Approximate total time: 1 hour 58 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

**GROUP HAPI  
SESSION 7 CHECKLIST**

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Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

**Content Checklist**

- |    |  |                          |
|----|--|--------------------------|
| 1. | Agenda (outline proposed session goals and gain consent from the group) (2 min)  | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Review of Homework</li> <li>• Sitting meditation</li> <li>• Homework tasks</li> </ul>   |                          |
| 2. | Review of Homework (35 min)  | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Review of sitting meditation (20 min)</li> <li>• Review of mindfulness of ordinary activities (15 min)</li> </ul>   |                          |
| 3. | Sitting Meditation (45 min)  | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Sitting meditation—awareness of breath, body, sounds, thoughts; noting how we relate to our experiences through the reactions we have to whatever thoughts, feelings, or body sensations arise; introducing a difficulty within the practice and noticing its effect on the body and reactions to it (40 min)</li> <li>• Feedback and discussion (5 min)</li> </ul>   |                          |
| 4. | Session Close (16 min)   | <input type="checkbox"/> |
|    | <ul style="list-style-type: none"> <li>• Explain homework tasks (10 min)                             <ul style="list-style-type: none"> <li>• Sitting meditation—20 min for 6 out of 7 days</li> <li>• Extend mindfulness to more routine activities e.g., walking, bathing</li> </ul> </li> <li>• Review the main points covered in the session (5 min)</li> <li>• Outline the content of the next session and give a reminder of the day and time (1 min)</li> </ul> |                          |

Approximate total time: 1 hour 38 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

## GROUP HAPI SESSION 8 CHECKLIST

Use this as a guide and as a record of what you covered in the session. Indicate with a tick (✓) if the item was covered. Leave blank if the item was omitted.

Date: \_\_\_\_\_ No. of Participants: \_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

### Content Checklist

- |   |                          |
|---|--------------------------|
| <p>1. Agenda (outline proposed session goals and gain consent from the group) <small>(2 min)</small></p> <ul style="list-style-type: none"> <li>• Review of Session 7</li> <li>• Review of Homework</li> <li>• HAPI review and integration</li> <li>• Review strategies for phasing out the program</li> <li>• Progress review</li> <li>• Maintenance of change</li> <li>• Future Goals</li> <li>• Final Assessment</li> <li>• Program Close</li> <li>• Celebration</li> </ul>  | <input type="checkbox"/> |
| <p>2. Previous Session Review <small>(2 min)</small></p> <ul style="list-style-type: none"> <li>• 40 minute sitting meditation</li> </ul>   | <input type="checkbox"/> |
| <p>3. Homework Review <small>(30 min)</small></p> <ul style="list-style-type: none"> <li>• Check how the participants went with their home meditation practice (Sitting meditation 6 out of 7 days, trying to include at least two 45 min meditations)           <ul style="list-style-type: none"> <li>• What they experienced?</li> <li>• When they did not do their practice or had difficulty finding time to do practice—what did they notice?</li> <li>• Mindfulness in everyday activities—what did they notice? <small>(15 min)</small></li> </ul> </li> </ul>  | <input type="checkbox"/> |
| <p>4. HAPI review and integration <small>(40 min)</small></p> <ul style="list-style-type: none"> <li>• How have you benefited from the mindfulness module? What have you found most useful? Why? What didn't you find useful? Why?</li> <li>• Can you remember what was in the activating for happiness module? What were the key messages in this part of the program? (e.g., Careful selection of goals. Experimenting with different activities. Strategies to be more successful with accomplishing activities. Achieving a balance of activities). What did you find most useful from this module? Why? What didn't you find least useful? Why?</li> <li>• Have you been able to continue your goals from the Activating for Happiness module over the past few weeks? What has got in the way? How can you overcome these problems?</li> <li>• How does the content from the two modules complement each other? Does any of the content seem to be incompatible? (e.g., doing versus being) Is it possible to transcend these incompatibilities? (e.g., Finding the right balance between acceptance and change; Need to have goals to give order and direction to behaviour, but enjoying the journey as well as the achievement of goals; Savouring the full range of emotional experiences; Experimenting with different activities to experience different emotional outcomes; Achieving greater flexibility in behaviour because more accepting of difficult emotions; Can respond to situations with choice rather than react automatically (less likely to engage automatic pilot); Behaviour is more approach- rather than avoidance-motivated).</li> </ul> | <input type="checkbox"/> |

- Summarise discussion
- 5. Review Strategies for Phasing out the program (3 min)   
 Review suggestions for phasing out the program
  - Put away program materials
  - Phase out monitoring
  - Phase out specific strategies
  - Experiment with different activities
  - Hold regular reviews of progress and refine your goals
- 6. Progress Review (3 min)   
 • Take a few moments to Identify changes that have been made (3 min)
- 7. Maintenance of Change (3 min)   
 • Introduce the notion that maintenance will require ongoing effort (2 min)  
 • Discuss how relapse is often related to periods of stress (1 min)  
 • Review guidelines for maintaining change (plan for potential high-risk situations; be aware of the early warning signs; act quickly if problems occur; try out new strategies or routines) (1 min)
- 8. Future Goals (10 min)   
 • Identifying future goals
- 9. Final Assessment (20 min)   
 • Complete *Assessment Booklet Three* (15 min)
- 10. Program Close (4 min)   
 • Close the session (summarise progress made and future goals, discuss future use of materials and referral options)  
 • Congratulate and thank the participants for participating in HAPI
- 11. Celebration   
 • Prompt the group to celebrate their achievement

Approximate total time: 1 hour 57 minutes

**Session Notes**

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**Additional Agenda Items** (note any additional content or major deviation from the set program)

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Signed: \_\_\_\_\_ Date completed: \_\_\_\_\_

**Appendix K**  
**Dropout Survey**

Dear XXXXX,

I understand that you were unable to continue with HAPI. Nevertheless, for research purposes, it would be very helpful if you would complete and return the enclosed (and the two subsequent) assessment booklets.

Also, it will help us for future planning if you would let us know why you were unable to continue with the course.

Once again, may I take this opportunity to thank you for your interest and participation in this project.

Sincerely,

Trevor Mazzucchelli  
Clinical Psychologist

I was unable to continue with HAPI because:

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I am willing to complete the 2 subsequent assessment booklets    Yes     No

Thank you for your feedback.

Office use

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Participant Number: \_\_\_\_\_

Date: \_\_\_\_\_