EXPLANATORY STYLE AND DEPRESSION:

THE ROLE OF ACTIVITY

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Dedicated to my parents

Howard Anthony and Sheila Elizabeth Findlay

For your continual love and support

And to my late grandmother

Lily Irene Findlay (Erb)

For teaching me that

"Every little bit helps…"

Abstract

Learned helplessness theory and its subsequent reformulation propose that a pessimistic explanatory style renders an individual vulnerable to depression. A large body of literature has supported this association within various samples and utilising a range of methodologies. No prior study has explored explanatory style and depression among a New Zealand sample of clinically depressed adults. Furthermore, no prior research has examined the role of activity level or activity type in relation to these variables. Given the importance of behavioural activation in recovery from depression, Study 1 aimed to bridge this gap. The sample consisted of 29 adult clients diagnosed with Major Depressive Disorder (MDD) and receiving a 20 session protocol of Cognitive Behaviour Therapy (CBT) as part of *The Depression Study*; a treatment outcome study conducted at Massey University, Albany, Auckland, New Zealand. Data were derived from intake assessment scores for explanatory style and depression severity, as measured via the *Attributional Style Questionnaire* (ASQ) and *Beck Depression Inventory–Second Edition* (BDI-II) respectively. Data were also derived from several activity level and activity type indices formulated for Study 1 by the use of information contained within activity charts; a tool used for a between-session task (homework) conducted early in CBT. Study 1 supported an association between a pessimistic explanatory style and depression severity and provisional support was found for the proposed model of the current project, implicating the role of activity among interactions between explanatory style and depression. In collecting data for Study 1 it became apparent that an adaptation to the activity chart may yield greater information particularly with regard to activity type, such as the extent to which social interaction occurred. Study 2 of the current research project aimed to compare the original activity chart with the adapted chart, by grouping *The Depression Study* clients according to whether they completed the original ($n = 15$) or the adapted ($n = 8$) activity chart, and comparing the data obtained. Mann-Whitney U tests confirmed that the adapted chart was more successful in collecting information regarding social interaction and ratings for mastery and pleasure. It is suggested that the adapted chart could be more beneficial in contrast to the chart typically used in CBT to date; this advantage could extend across both research and clinical settings for the examination of client activity.

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LITERATURE REVIEW

INTRODUCTION AND OVERVIEW

The current research project is concerned with the role of activity in the interplay between explanatory style and depression. Explanatory style is a psychological construct that refers to the way individuals explain the causes of events in their lives (Seligman, 1991). In the current project, a model is proposed which argues that these three variables, explanatory style, depression, and activity, are interrelated or reciprocally connected. Two bodies of literature are particularly relevant in this exploration; literature surrounding explanatory style, and literature relating to behavioural activation. With regard to explanatory style, an understanding of learned helplessness theory and its subsequent reformulation allows an appreciation of proposed links between explanatory style and depression. The behavioural activation literature is relevant given the proposed role of activity within the current project's model. No prior study has explored explanatory style and depression among a New Zealand sample of clinically depressed adults, and no prior research has examined the role of activity level or activity type in relation to these variables.

Cognitive Behaviour Therapy (CBT) for depression will be described, and cognitive mechanisms of change literature will be reviewed, although only briefly. The inclusion of these basic summaries is important for several reasons. First, the clients of *The Depression Study* were receiving CBT for depression. While factors relating to the process or outcome of therapy were not being investigated, the theory underpinning CBT forms the basis for discussions about the proposed model. Second, behavioural activation is an important component of CBT, and a tool used within this approach has been utilised to obtain data for the present research. Third, explanatory style has been considered to be a mechanism of change within CBT for depression. An appreciation of this involves a basic understanding of the cognitive mechanisms of change literature.

CHAPTER 1: Definition, History, and Theories of Explanatory Style

Explanatory style is a construct that has evolved over the years. It began with the development of learned helplessness theory, inspired by a phenomenon inadvertently discovered during classical conditioning experiments using dogs. Dogs that were subjected to inescapable electric shocks learned not to respond to future shocks, even when they could easily escape. After learned helplessness theory was developed it was tested via experiments, causing the theory to change and advance (Seligman, 1991). The current chapter is concerned with three major goals; outlining the history and evolution of the theories that have driven explanatory style, defining the construct alongside variations in terminology and related constructs, and providing background information concerning relevant research approaches. Whilst there will be reference to selected applicable studies, the bulk of the empirical research of foremost relevance is presented in Chapter 2. Prior to outlining the history and theories relevant to explanatory style, a basic description of depression is presented due to its relevance to these theories.

Major Depressive Disorder: Definition, prevalence, and assessment

References to states of depression date back as far as ancient Greek and Roman times. Early descriptions of depressive symptomatology closely resemble our current understanding of the illness, although theories surrounding the aetiology of depression have evolved significantly. Depression was once known as *melancholia*, a derivative of the word *melancholer* which translates into black bile. Hippocrates, in the fourth century B.C., believed that melancholia was caused by an excess of black bile. Since this time, advancements in our understanding of psychopathology have been influenced by three main approaches, the supernatural tradition, biological tradition, and the psychological tradition (Barlow & Durand, 2009). Over the years, a number of theories of depression have been proposed, arising from different disciplines and psychological orientations, including neurological, biochemical, psychoanalytic, and existential theories. The explanations offered by these theories have been unable to completely account for the diverse range of phenomena characteristic of depressive presentations (A. T. Beck, 1967), however they have influenced our current understanding. It would

appear likely that biological, psychological, and social factors collectively contribute to depression, although it is unclear exactly how these aspects are related (Barlow & Durand, 2009; Shelton, Hollon, Purdon, & Loosen, 1991).

The diagnostic term for depression is Major Depressive Disorder (MDD), according to the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition–Text Revision* (*DSM-IV-TR*; 2000). MDD is a common mental illness characterised by a variety of symptoms, as defined by diagnostic manuals such as the *DSM-IV-TR* (American Psychiatric Association, 2000) and the World Health Organisation's *International Classification of Diseases, 10th Revision* (*ICD-10*; 1994). In accordance with the *DSM-IV-TR*, the diagnosis of MDD requires the presence of at least one Major Depressive Episode (MDE). The MDE criteria outline the key symptoms that need to have been present for at least two weeks. Essential criteria include the presence of either low mood, and/or loss of interest in previously-enjoyed activities/anhedonia. Diagnosis also requires the presence of at least four additional symptoms from a list which includes feelings of worthlessness/guilt, sleep disturbance, suicidal ideation/thoughts of death, change in appetite and/or weight, psychomotor agitation/retardation, lack of concentration, and loss of energy/fatigue. The criteria require that the symptoms impact significantly on important areas of functioning (e.g., social or occupational), and that they are not better accounted for by a medical condition, different psychiatric condition, bereavement, or a substance (American Psychiatric Association, 1994). Once diagnosed, MDD can be assessed in terms of the severity of depression, by the use of self-report and observer-rated measures.

MDD is the most prevalent mood disorder, and has been shown to have lifetime prevalence rates in New Zealand of 20.3% for females and 11.4% for males, with an overall rate of 16.0% (Oakley Browne, Wells, & Scott, 2006). In terms of the 12-month prevalence rates in New Zealand, these were found to be 5.7% overall; 7.1% for females, and 4.2% for males (Oakley Browne et al., 2006). MDD is a considerable public health concern. In those with severe MDD, the mortality rate as a result of suicide can be as high as 15%. MDD[1] is associated with high comorbidity of physical

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[1]   While MDD is the diagnostic term, the colloquial term *depression* is more commonly used in the literature and will be used in discussions to follow.

and mental illnesses alike. It has a significant impact not only on the lives of the sufferer and those connected to the sufferer, but also on society in general (American Psychiatric Association, 1994).

Overall, an individual's experience of depression can be influenced by various biological, psychological, or social factors. Over the past few decades, explanatory style has proved to be a potentially important psychological factor relevant to depression. There are theoretical links between explanatory style and depression, which form the basis of the current project. As the origins of explanatory style lie within learned helplessness theory and a later reformulation, a discussion of these theories and their origins follows.

The learned helplessness theory

Learned helplessness theory was developed to explain a phenomenon discovered during behavioural experiments with dogs as early as 1964 (Seligman, 1991). The first publication to describe this phenomenon was an article by Overmier and Seligman in 1967. The article outlines experiments in which dogs had been exposed to electric shocks that they were unable to escape. Later the same dogs were put into new situations in which it was possible to escape from the shocks, however they failed to initiate normal escape or avoidance responses. Seligman and Maier (1967) demonstrated that the cause of this phenomenon was the uncontrollability of the initial shocks. One group of dogs were subjected to shocks that they could escape by pressing a panel. Another group of dogs were subjected to shocks that they were unable to escape despite their responses. When subsequently put into a new situation, the dogs that had been able to escape initial shocks displayed normal avoidance or escape behaviour, whereas those that were unable to escape the earlier shocks did not. This saw the beginning of the learned helplessness hypothesis; the dogs had learned that stopping the shocks was independent of their responses (Seligman & Maier, 1967). In other words, a dog that is subjected to inescapable shock learns that it has no control over this aversive phenomenon in its environment.

A decade of research in the area of learned helplessness followed, describing parallel phenomena seen in a number of different animals and in humans. Maier and Seligman (1976) reviewed the literature including the explanations that had been offered. The effects of uncontrollability are seen as falling under three different categories, namely motivation, cognition, and emotion. The learned helplessness hypothesis offers an explanation of the effects falling under these categories. With regard to motivational effects, a dog that learns that it has no control over shocks expects to have no control over them in the future, and consequently fails to learn ways to escape when subjected to shocks in the future. The uncontrollability expectancy leads to a reduction in motivation towards attempting to escape this adversity, hence a response initiation deficit is formed (Maier & Seligman, 1976; Peterson, Maier, & Seligman, 1993). In other words, the dog learns that it is unable to change the aversive circumstances and therefore develops expectations (an expectancy) that this will hold true in future aversive circumstances. This is an expectation based on the contingency that has developed. The expectancy has essentially formed from inappropriate generalisation from the uncontrollable experiences (S. Roth & Bootzin, 1974).

The cognitive deficits category refers to the fact that the expectancy interferes with future learning about the relationship between the dog's behaviour and shock (Peterson et al., 1993). Organisms have a propensity to recognise the contingent relationships that occur between their own behaviour and resultant outcomes. The experience of being subjected to uncontrollable aversive events has been shown to interfere with this propensity (Maier & Seligman, 1976). In other words, even when organisms respond successfully to escape adversity, they have difficulty learning that they have responded successfully. Their learning and their perception of control has been disrupted by their prior experience with uncontrollable aversive events (Maier & Seligman, 1976). Even if they do register that they have responded successfully, they may continue to expect future responding to be ineffective (Peterson et al., 1993). In summary, as a direct result of the expectancy, the organism makes no effort in the future to control the aversive circumstances and cannot recognise that the contingencies may have altered.

With regard to the emotional effects, experiments have demonstrated greater emotional disruption resulting from exposure to uncontrollable as opposed to controllable aversive events (Maier & Seligman, 1976). Controllable events are those that can be

manipulated by the organism, whereas uncontrollable ones are those that cannot be influenced regardless of behavioural response. It has been suggested that exposure to aversive events produces anxiety or fear initially, with depression being the result of a continuation of the experience and the realisation or learning that the event is uncontrollable (Maier & Seligman, 1976; Peterson et al., 1993; Seligman, 1975). The fear could disappear altogether with no resultant depressive symptoms if the organism learns that the event is controllable (Maier & Seligman, 1976; Seligman, 1975). This sequence has been observed in animals (Seligman, 1975) and, to a lesser degree, in humans (S. Roth & Bootzin, 1974).

The effects of uncontrollability were recognised in earlier research that, although prior to the development of learned helplessness theory, inferred helplessness as an explanation for the outcomes. For example, helplessness may be an explanation for the behaviour of Nazi concentration camp prisoners (Bettelheim, 1960, pp. 147-153). Guards convinced the prisoners that they had no hope, no influence over their environment, and their only way out was by their demise. The prisoners were described as walking corpses who surrendered completely to their environment until they shortly thereafter died (Bettelheim, 1960, pp. 151-153). Likewise, lack of control (or perceived lack of control) and the resultant hopelessness/helplessness has even been suggested as an explanation for sudden and unexplained (or "voodoo") death (Richter, 1957; S. Roth & Bootzin, 1974). Originally it appeared that intense fear could lead to sympathico-adrenal system activity that, if persistent and excessive, may cause death due to the acceleration of the heart and other corresponding physiological changes (Cannon, 1942). Subsequent observations during a study with rats suggested that overactivity of the parasympathetic system was more likely to be the cause of sudden death (Richter, 1957). Slowing of the heart was observed as a result of prolonged helplessness (Richter, 1957). These are two extreme examples of the potential impact of a lack of perceived control and its associated emotional disruption. Helplessness stemmed from experiencing uncontrollable adversity, coupled with corresponding maladaptive behaviours, potentially can have grave consequences including the experience of depression.

Despite a great deal of research supporting the learned helplessness theory, there were two major problems with the theory in its application to human learned helplessness (Abramson, Seligman, & Teasdale, 1978). First, it was unable to distinguish between universal helplessness (uncontrollable outcomes for everyone) and personal helplessness (outcomes that are uncontrollable for some but not others). Second, it was unable to explain general versus specific helplessness, or chronic versus acute helplessness. Consequently, a reformulation of the theory was proposed (Abramson, Seligman et al., 1978) based on attribution theory (Weiner, 1972, 1979).

The reformulated learned helplessness theory

The reformulated theory was designed to resolve the inadequacies outlined above. The theory asserted that when individuals find themselves to be helpless, they then ask themselves why they are helpless (Abramson, Seligman et al., 1978). It is this causal attribution that influences self-esteem and determines how chronic or generalised the deficits will be. Specifically, three attributional dimensions are vital in the explanation of human helplessness; namely internal versus external, stable versus unstable, and global versus specific (Abramson, Seligman et al., 1978; Seligman, Abramson, Semmel, & von Baeyer, 1979). With regard to the first dimension, if lack of control is attributed to internal factors as opposed to external factors then, according to the theory, lowered self-esteem will result. A discussion regarding the construct of self-esteem is presented towards the end of the current chapter, pertaining to related constructs. In terms of the second attributional dimension, whether lack of control is attributed to stable versus unstable factors will determine whether the deficits are extended across time or short-lived. Finally, with reference to the third dimension, if lack of control is attributed to global factors as opposed to specific ones, wider generalisation of the deficits will ensue (Seligman et al., 1979).

The reformulation proposed that there should be individual differences in attributional style and in accordance with this was the suggestion that a depressive attributional style exists (Abramson, Seligman et al., 1978). More specifically, those individuals who are prone to depression should have a tendency to attribute negative outcomes to factors that are internal, stable, and global. Seligman and colleagues (1979) expand on this by stating that a tendency to attribute positive outcomes to factors that are external,

unstable, and specific also leads to depression vulnerability. This depressive attributional style is otherwise known as a pessimistic explanatory style. At this point, it is necessary to understand the variation in terminology that exists in this body of literature.

Terminology of explanatory style

Attributional style has otherwise been referred to as explanatory style (Peterson, Buchanan, & Seligman, 1995; Peterson & Seligman, 1984). Although originally known as attributional style, it was suggested that the construct is more accurately depicted by the term explanatory style (Peterson et al., 1995; Peterson & Seligman, 1984). The objective of the new name was to clarify misleading implications resulting from the broad nature of the term attribution. Attribution is a term that refers to any characteristic of an outcome or event, which includes, but is not limited to, causal explanations for events (Peterson et al., 1995). The term explanatory style was adopted to capture the fact that causal explanations for events are the intended focus of the construct. In the interest of maintaining consistency, the term explanatory style will be used in the discussions to follow regardless of the terminology adopted by respective authors.

Explanatory style, as with most psychological variables, is subject to individual differences. The terminology employed to describe these individual differences in explanatory style warrants discussion. Comparing the explanatory style of individuals is commonly achieved in the literature by considering the construct along the dimensions of optimism and pessimism. In this way, the construct interfaces with the optimism and pessimism literature. Explanatory style is one of the two core means by which optimism and pessimism are operationalised and measured within research, and is therefore a prominent concept in this relevant literature.

Optimism and pessimism: Definition and research approaches

Optimism and pessimism are well-known concepts that are typically defined by outlining the opposing expectations of the members of each group. For instance, optimists have expectations of good outcomes occurring in the future, whereas

pessimists expect that bad things will happen (Carver & Scheier, 2003; Chang, 2001). The literature describes two main approaches used in optimism and pessimism research, and there are subtle differences across these approaches with regard to how these concepts are operationalised. The first approach centres around what is known as *dispositional optimism*, or generalised expectancies (Reivich & Gillham, 2003). According to this approach, optimism is a stable and generalised expectation that positive outcomes will occur across major life domains. Pessimists have a general tendency or disposition to expect negative outcomes across major life domains (Scheier & Carver, 1985). Stability is emphasised, such that the optimism or pessimism remains over time as well as across various situations or life domains (Wrosch & Scheier, 2003). This approach measures general expectations for the future, often by using self-report questionnaires such as the Life Orientation Test–Revised (LOT-R; Scheier, Carver, & Bridges, 1994). The items in this questionnaire *directly* assess expectations (e.g., "If something can go wrong for me, it will"). It has been suggested that dispositional optimism is more accurately depicted by the term *expectational optimism*, given the fact that other approaches to measuring optimism are also dispositions (Schueller & Seligman, 2008), as will become evident. In other words, the term *expectational*, in contrast to *dispositional*, depicts what is unique about this approach, hence will be used in the current project from this point forward.

The second approach to the study of optimism and pessimism is broader, with expectations measured *indirectly* via explanatory style. Instead of directly measuring expectations for the future, expectations are determined by analysing an individual's style of interpreting the cause of events (Peterson & Seligman, 1984). The causal explanations vary across the three different attributional dimensions previously described. Internal explanations are those by which the individual attributes the cause to themselves, as opposed to external explanations where the cause is attributed to circumstances or the specific situation. Stable explanations refer to causes that are enduring, whereas unstable explanations relate to causes that are transient. When the causal explanation is considered to impact on a variety of outcomes it is referred to as a global explanation. On the other hand, if the explanation relates only to the event concerned it is referred to as a specific explanation (Peterson & Seligman, 1984).

The fact that explanatory style is grounded in the optimism and pessimism literature is relevant in terms of the individual differences in explanatory style that were previously alluded to. As stated, the depressive attributional style previously described is also known as a pessimistic explanatory style. The opposite pattern of attributions would give rise to what is known as an optimistic explanatory style (Peterson & Steen, 2001). It could be argued that uncontrollability, or perceived uncontrollability, does not necessarily bring negative appraisals. An example of an optimistic explanatory style following exposure to an uncontrollable event may be helpful. There are instances where an individual may find comfort in the knowledge that they have done everything in their power to allay an aversive situation or achieve a desired outcome; such as being unsuccessful in a job application despite their best effort. In this case, the fact that the outcome is beyond the individual's control may permit them to accept their less-than-desirable outcome. However, perhaps this acceptance only occurred because the individual believed that despite not attaining the job, a better job will present itself in the future. In this hypothetical example, the optimistic individual has made an external, unstable, and specific attribution regarding the aversive event. This signifies yet again the enhancement of the reformulated theory over the original learned helplessness theory in the sense that uncontrollability by itself is not a sufficient precursor to a depressive response.

It is important to be aware that optimism and pessimism occurs along a continuum in the way it is measured. Hence, it would be inaccurate to describe individuals as *optimists* or *pessimists* unless they fall at the extremes of the continuum (Peterson et al., 1995). Explanatory style research has attempted to categorise individuals according to how optimistic or pessimistic their style presents, with the goal of comparing their explanatory style with health-related variables (e.g., Peterson, 1988). Of relevance is the existence of a large body of literature confirming a relationship between a pessimistic explanatory style and depression. An understanding of this literature is pertinent to Study 1 and therefore will be presented in Chapter 2. Familiarisation with distinct, yet related, constructs allows for a better understanding of the literature.

Related constructs

Several constructs, despite being different to expectational optimism and explanatory style, are closely related and hence appear important to consider. First, self-esteem should be considered alongside explanatory style due to the fact that, as discussed earlier, the reformulated theory implicates lowered self-esteem as a consequence of internal attributions for negative events. There has been a great deal of controversy regarding the definition of self-esteem (Matsuda, 2007; Mruk, 2006) and a detailed account of this controversy is beyond the scope of this discussion. Certainly it would be useful to consider how the reformulated theory has operationalised self-esteem, however it appears that the learned helplessness literature does not explicitly address this. Some of the relevant publications (e.g., Abramson, Metalsky, & Alloy, 1988; Abramson, Seligman et al., 1978; Ickes, 1988) have cited the work of, and used instruments developed by, authors in the self-esteem field (e.g., Morse & Gergen, 1970). In doing so, they have implied that self-esteem is concerned with the attitudes an individual has about their own worth or value, often determined by the comparisons they make between their own character, attributes, or abilities and those of relevant others. Perhaps the lack of specificity is not surprising, as these implied definitions are not particularly distinct from those of recent literature acknowledging the controversy; it is suggested that both worthiness and competence are important factors in the operationalisation of self-esteem (Mruk, 2006), that the social setting and evaluation of oneself in comparison to others (social comparison) is important, but exactly how the factors interact remains cloudy (Matsuda, 2007). Relevant publications have also suggested that an individual's comparisons between their performance and their own personal standards may be important (Schulz & Hanusa, 1988), although how these standards may develop is also unknown (Matsuda, 2007).

Second, self-efficacy (Bandura, 1977) is another construct that is related to optimism (Schueller & Seligman, 2008). If an individual has a high level of self-efficacy, they believe they have the personal agency or required competencies to attain their goals. While this refers to the individual and their sense of control over their environment, outcome expectancies such as optimism can include beliefs about other forces such as faith, luck, circumstances or other people (Schueller & Seligman, 2008). Expectational optimism does not make a distinction between expectancies relating to the environment

or the self, whereas explanatory style overlaps with the construct of self-efficacy because self-efficacy is likely to influence internal attributions for events (Schueller & Seligman, 2008).

Finally, hope is a construct related to optimism by way of a belief in the future being promising (Schueller & Seligman, 2008). It relates to the global and stable facets of attributions in explanatory style theory. Specifically, hope implies the belief that positive events will occur again, and across situations, while negative events will not (Schueller & Seligman, 2008).

Summary

The current chapter has described the history surrounding the development of the explanatory style construct. Explanatory style emerged out of the learned helplessness theory and its subsequent reformulation. The reformulated learned helplessness theory states that a maladaptive explanatory style can render an individual vulnerable to depression. Explanatory style is one way by which the well known concepts of optimism and pessimism are operationalised and measured. In this sense, an individual's explanatory style can be described along a continuum in terms of how optimistic or pessimistic it may be. Research in the area of explanatory style should consider several closely related constructs, such as self-esteem, self-efficacy, and hope, as it is clear that these constructs overlap with optimism and explanatory style. Further reference to some of these constructs appears later, in relation to cognitive mechanisms of change. The following chapter summarises the empirical research that links explanatory style to depression, while Chapter 3 gives consideration to important issues within this literature.

CHAPTER 2: Explanatory Style and Depression; Empirical Support

There has been considerable research into the relationship between explanatory style and a variety of health and happiness manifestations. Much of this literature has suggested that an optimistic explanatory style is associated with a variety of health benefits (e.g., Dykema, Bergbower, & Peterson, 1995; Peterson, 1988). Depression has been one of the most common focuses in explanatory style research, due to its relevance to the learned helplessness theory from which explanatory style evolved (Peterson & Steen, 2001). As discussed, learned helplessness theory posits that depression vulnerability results from the types of attributions individuals make about life events outside of their control (Persons & Rao, 1985).

Predictions of the original and reformulated theories have been examined in a number of studies using various population samples. The current chapter outlines the literature base and the empirical support that has been obtained. A summary of various studies will be presented, which provides the context for a general review of the literature presented in the next chapter. Many of the studies that have examined the reformulated theory's predictions have used an adult sample, which is of greater relevance to Study 1 than other age groups. As a result, the major focus of this chapter is research involving adult populations. However, the chapter also briefly outlines major findings and important issues amid child and adolescent research, and research with tertiary students. It is considered that a brief discussion of this nature allows a greater understanding of the explanatory style construct in general. In the discussion of literature in the current chapter, certain types of research have been given more emphasis than others. First, studies adopting longitudinal designs are focused on due to their ability to imply direction of causality. Second, research with clinical samples is emphasised due to its relevance to the sample of the current project and to the theory in general. Third, metaanalytic reviews are outlined, as they are able to summarise findings across numerous studies. Finally, research conducted in New Zealand has received attention due to its relevance to the present sample, and the limited research conducted within this country to date. The major limitations of the studies discussed are outlined briefly within the relevant section. A more extensive summary and critique of the research in general is reserved for Chapter 3.

Empirical support with child and adolescent populations

It is considered important to have some understanding of the literature across the lifespan, given the possibility that explanatory style may develop during childhood and remain a relatively stable cognitive style throughout life. Child and adolescent explanatory style research may offer useful insights into the aetiology of depression, as well as insights into potentially serious implications of a maladaptive style that could impact across the lifespan. For instance, explanatory style has been linked with various aspects of childrens' adjustment; not only depression, but also equally fundamental and potentially related areas such as achievement motivation and self-esteem (Bell-Dolan & Wessler, 1994). First onsets of depression have a tendency to occur during adolescence, and it is important to understand the risk factors of first episodes of depression and not merely of recurrences (Alloy et al., 2006). Accordingly, an understanding of the way in which explanatory style develops has implications with regard to preventative and treatment interventions across the lifespan.

The explanatory style literature base, regardless of the population sampled, includes research testing predictions arising out of the reformulated learned helplessness theory. The discussion to follow summarises the main findings from research using child and adolescent samples.

Predictions of the reformulated learned helplessness theory

Within the relevant literature, some studies have focused on the types of attributions that are associated with depression and/or severity of depressive symptoms. Support has been found for the contention that a pessimistic explanatory style for negative and positive events is associated with higher depression severity (e.g., Seligman et al., 1984). Other research has explored direction of causality in relation to explanatory style and depression. Studies have shown that a pessimistic explanatory style puts an individual at risk for depression by the way information about negative events is processed (Nolen-Hoeksema et al., 1992; Seligman et al., 1984). In this sense, a pessimistic explanatory style is argued to be one possible cause of depression (Nolen-Hoeksema, Girgus, & Seligman, 1986).

The diathesis-stress prediction of the reformulated theory asserts that those with a maladaptive explanatory style are vulnerable to depression in the face of aversive life events. Diathesis-stress models hypothesise that an inherited tendency, or vulnerability, interacts with stressful conditions to trigger a disorder (Barlow & Durand, 2009). Some research strongly supported the diathesis-stress prediction of the reformulated theory with children (Nolen-Hoeksema et al., 1986) as well as with adolescents (Robinson, Garber, & Hilsman, 1995), while other research only modestly supported the prediction (Nolen-Hoeksema, Girgus, & Seligman, 1992). Still other research (Lewinsohn et al., 1994) has suggested that levels of stressful events are not only elevated before the onset of depression, but are characteristic of individuals during and following depression as well. This finding indicated that depression-prone individuals may continuously live amongst more stressful circumstances, implying that stressful events are not always merely a precipitating factor (Lewinsohn et al., 1994). Other studies found that aversive life events were a predictor of future depression levels for younger children, however as they grew older a maladaptive explanatory style emerged as a better predictor of depression (Nolen-Hoeksema et al., 1992). The results were interpreted as suggesting that in early childhood explanatory style may still be developing (Nolen-Hoeksema et al., 1992). This is in line with other research showing weaker links between helplessness behaviours and failure attributions among younger children (Rholes, Blackwell, Jordan, & Walters, 1980), and endorsement of a more maladaptive explanatory style with older children (McCauley, Mitchell, Burke, & Moss, 1988).

It has been suggested that children under the age of 6 or 7 are not proficient in their use of causal notions, however by the age of 9 can coordinate causal information in a more sophisticated manner (Guttentag & Longfellow, 1977). Beck's cognitive theory, discussed in Chapter 4, asserts that maladaptive thoughts and beliefs develop primarily during childhood as a result of experiential learning (K. S. Dobson & Dozois, 2008). This could suggest that a maladaptive explanatory style develops in a similar manner. In this sense, aversive life events may directly precede depressive symptoms in earlier childhood. As time passes, if aversive events are continually experienced this could lead to the development of a maladaptive explanatory style, which in later childhood may interact with aversive life events to predict depressive symptoms.

The final prediction of the reformulated learned helplessness theory commonly explored in the child and adolescent literature involved the specificity of the theory to depression. Previous researchers (e.g., Bell-Dolan & Wessler, 1994; Houston, 1995) have suggested that a maladaptive explanatory style may be associated with other forms of psychopathology, such as anxiety, and thus may not be unique to depression. Some of the research testing this prediction is perhaps more relevant to the theory because of the use of clinical samples of children and adolescents, as opposed to nonclinical samples. One study involving children and adolescents of various diagnoses (McCauley et al., 1988), and a second study involving adolescents of various diagnoses (Curry & Craighead, 1990), provided support for the specificity of the theory in terms of its unique relevance to depressive psychopathology, at least in terms of explanatory style for positive events. The findings did not support the reformulated theory, nor converge with findings among nonclinical samples, which suggest explanatory style for negative events is associated with depression. This signifies an important issue regarding explanatory style for negative versus positive events, which is discussed in Chapter 3.

A study exploring the specificity of the reformulated theory to depression which used a New Zealand sample of children and adolescents in the community (Rodriguez & Pehi, 1998) is of relevance to the current project. The vast majority of explanatory style research has been conducted overseas. In fact, the first author of this New Zealand study conducted similar research almost a decade earlier (Rodriguez & Routh, 1989) in Miami, Florida. In both of these studies, depression scores were significantly associated with a pessimistic explanatory style and the findings supported the contention that explanatory style is unique to depression, as opposed to a common feature of affective psychopathology (Rodriguez & Pehi, 1998).

It is worth noting that different measurement instruments are required to test predictions among children and adolescents as opposed to adults. Often the *Children's Depression Inventory* (CDI; Kovacs & Beck, 1977), a version of the *Beck Depression Inventory* (BDI; A. T. Beck, 1967) that was developed for children, has been used in this research to measure depression severity. A useful contribution to the explanatory style literature is the development of the *Children's Attributional Style Questionnaire* (CASQ), which occurred within the first study (Seligman et al., 1984) to explore the reformulated

theory's predictions among children or adolescents. The CASQ measures explanatory style and is an adaptation of an earlier measure (KASTAN-R-CASQ; Kaslow, Tanenbaum, & Seligman, 1978) designed for this purpose.

The development of explanatory style

Further to the earlier discussion regarding explanatory style in children, presented alongside the diathesis-stress prediction findings, other studies have offered useful insights into the development of explanatory style. Seligman and colleagues (1984) found convergence between the explanatory styles and depressive symptoms of children and their mothers, but not between children and their fathers. It is argued that this may indicate a vicious cycle in which either depressive symptoms, explanatory style, or both are learned from the mother. Alternatively, the child could influence the mother in the same way (Seligman et al., 1984). It may be the case that being the primary caregiver is the important factor, as opposed to being the mother. It is more common now, than in the past, for fathers to serve as a primary caregiver, hence it would appear useful for future research to explore this possibility.

It has also been suggested that depression in childhood may promote the development of maladaptive explanatory styles that remain stable upon depression subsiding. This is consistent with other research (Gotlib, Lewinsohn, Seeley, Rohde, & Redner, 1993; Lewinsohn et al., 1994) showing significant differences between the explanatory styles of never-depressed adolescents and formerly depressed adolescents. Research with adults (Lewinsohn, Steinmetz, Larson, & Franklin, 1981), although not explicitly examining explanatory style, did not find evidence suggesting that an episode of depression causes permanent changes to similar cognitive styles, such as expectancies of positive and negative outcomes. It is considered possible that this is a phenomenon only applicable to children whose explanatory styles are still developing (Nolen-Hoeksema et al., 1992).

Empirical support with tertiary student populations

The main contributions and findings from research with children and adolescents have been presented. The current section outlines the main findings with tertiary student

populations. There has been a great deal of research exploring the learned helplessness theory with tertiary student samples. This may be related to the accessibility of this population within research settings; it is convenient as well as inexpensive to access tertiary students (Peterson, 1988). However, it is argued that despite being a very common occurrence, obtaining social science data from student populations yields certain methodological issues (Cummins, 2003). Demographically, students have a younger average age, higher education level, and emerge from more privileged backgrounds than most other individuals within the general population. Thus, data obtained from these samples is likely to be more homogeneous and less representative of general population data (Cummins, 2003). This is not to deny the utility of prior research with students in terms of the insights obtained in this area, but in the scope of such a large literature base, research with students has not been prioritised. Only a brief outline of the main findings that have emerged from these studies is presented.

Predictions of the original learned helplessness theory

A number of early studies with tertiary students focused on testing predictions of the original learned helplessness theory (e.g., Kilpatrick-Tabak & Roth, 1978; Rizley, 1978) because they were published prior to, or around the same time, as the reformulation. Many of these had the objective of exploring the perceived noncontingency prediction of the theory; in other words, the suggestion that individuals learn they have no control over outcomes (e.g., McNitt & Thornton, 1978; Sacco & Hokanson, 1978; Willis & Blaney, 1978). Other studies (e.g., Teasdale, 1978) explored the prediction that success experiences may alleviate learned helplessness deficits by modifying the perceived noncontingency. Mixed findings have resulted from these studies. Most unsupportive findings can be accounted for by methodological limitations, discussed in Chapter 3, in addition to inadequacies of the original learned helplessness theory that are resolved by the reformulation. These studies are useful, however, in understanding how the reformulated learned helplessness theory may have been shaped.

Predictions of the reformulated learned helplessness theory

Similar to research with children and adolescent samples, research with tertiary students has explored the diathesis-stress component of the reformulated theory. One study

using a prospective design (Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982) found that the internal and global dimensions of explanatory style for negative events predicted subsequent depressive mood following receipt of a low midterm exam grade. Students with explanatory styles for negative events that were particularly external and specific did not show this mood response following receipt of the same low grade. The stability dimension did not correlate with depressive mood, but overall the findings were consistent with the diathesis-stress prediction of the reformulated theory. Other studies with tertiary students (e.g., Dykema et al., 1995) have not found support for the prediction and point to the highly inconsistent research evidence with respect to this particular component of the theory. It is possible that explanatory style can impact on relevant outcomes regardless of whether major life events occur (Dykema et al., 1995). Certainly, this argument fits with the finding that explanatory styles of adolescents predicted depressive symptoms directly as well as in interaction with stressful events (Robinson et al., 1995). While explanatory style may indeed interact with stressors and thereby predispose an individual to difficulties, this may be only one process amid several possibilities (Dykema et al., 1995).

Empirical support with adult populations

The current section details empirical support for learned helplessness theory obtained from research with adult populations. The literature is grouped according to the particular version of learned helplessness theory, and the various predictions of that theory, that the studies have aimed to test.

Predictions of the original learned helplessness theory

Perceived noncontingency

As alluded to earlier, research exploring the original learned helplessness theory often explored perceived noncontingency due to the significance of this prediction to the earlier theory. One study (Abramson, Garber, Edwards, & Seligman, 1978) aimed to determine whether the original theory applies uniquely to clinical depression, or whether it may also relate to schizophrenia. Four comparison groups were used, each containing eight participants. Three of these groups were psychiatric inpatients, categorised as unipolar depressives, schizophrenics, and depressed schizophrenics. The

final group was a nonpsychiatric control group consisting of participants involved in experimental research as inpatients in the hospital. Participants were asked to complete two different tasks, one requiring skill and the other reliant on chance alone, and expectancy changes were assessed in relation to success and failure on these tasks. Changes in expectancies were measured by asking participants to estimate their likelihood of success prior to completing tasks. Significant differences in expectancy were found between the groups on the skill task but not the chance task. Following failure, expectancies for success decreased less for unipolar depressives than for the control group. This supported the original theory's prediction that depression involves the cognitive distortion that one's responses are ineffective (Abramson, Garber et al., 1978). Following success, differences across groups in terms of expectancy change were not significant, although followed the predicted direction; expectancy for success tended to increase less for unipolar depressives. Both schizophrenic groups showed an expectancy change pattern characteristic of the control group yet different to the unipolar depressive group, supporting the contention that the helplessness deficit is specific to depression (Abramson, Garber et al., 1978).

During the same year, a similar study exploring the perceived noncontingency prediction of the original theory (O'Leary, Donovan, Krueger, & Cysewski, 1978) found that depressed alcoholic inpatients did not show the perceived noncontingency deficit; they did not perceive response–outcome independence in skill tasks. This outcome could signify a complex interaction between alcoholism and depression, where identifying the primary disorder is difficult (O'Leary et al., 1978). A third study conducted in the same year (Smolen, 1978) also found no evidence of response–outcome independence deficits in a comparison of depressed and nondepressed inpatients. However, various methodological concerns were apparent in the study. For example, the assignment to groups did not take into account comorbid diagnoses such that 17 of the 32 depressed participants and 14 of the 32 nondepressed participants had schizophrenia or related disorders. The findings of these three studies do not refute the contention that perceived noncontingency is specific to unipolar depression, although only partial support (Abramson, Garber, et al., 1978) for this contention has been found.

Testing competing hypotheses

Another study (Price, Tryon, & Raps, 1978) examining the original learned helplessness theory with a clinical population aimed to test two competing hypotheses. Specifically, Lewinsohn asserts that depression is caused by low positive reinforcement rates (e.g., Lewinsohn, 1974; Lewinsohn & Libet, 1972). The individual is reinforced to not respond, hence emits no behaviour and becomes depressed (Friedman & Katz, 1974). Conversely, Seligman has argued that regardless of whether an individual responds actively or passively, providing they are able to control their environment, they should be unlikely to become depressed (Price et al., 1978). Price and colleagues (1978) studied inpatients with both psychiatric and medical conditions. They measured performance deficits on cognitive tasks conducted after exposure to inescapable and escapable noise. Participants with low depression levels who were exposed to inescapable noise demonstrated performance deficits analogous to clinically depressed participants who were not exposed to noise. Furthermore, participants with low depression levels who were exposed to noise they could escape did not show these deficits. The authors also compared participants who could escape via an active response with those who could escape via a passive response, and found no difference between these groups on subsequent performance. The results were interpreted as providing support for Seligman's theory, as opposed to Lewinsohn's. In other words, the findings suggest that whether a behavioural response to an aversive event is active or passive is not as important as controllability.

Predictions of the reformulated learned helplessness theory

Types of attributions associated with depression

Lewinsohn and his colleagues (Lewinsohn, Steinmetz, Larson, & Franklin, 1981) conducted research to determine whether the types of cognitions found to correlate with depression are antecedents or consequences of depression, or whether they simply accompany it. According to their "antecedent" hypothesis, the cognitions have a causal influence on depression, whereas their "consequence" hypothesis argued that these cognitions occur concomitantly with depression. Almost one thousand (998) adult volunteers from the community participated in the longitudinal study. There were six participant groups: Participants who were depressed at both initial and follow-up

assessment periods; those who were depressed at the initial assessment but not at the follow-up; those who had no history of depression but became depressed between the initial and follow-up assessment periods (average period of 8.3 months); participants with a history of depression who became depressed between the assessment periods; participants with a history of depression who did not become depressed during the study; and a control group who had never been depressed. The groups were then compared based on cognitive patterns identified. Part of the investigation involved measuring attributions for success and failure along the internal versus external and stable versus unstable dimensions. According to the reformulated theory, attributing failure to internal and stable causes and success to external unstable factors would render one vulnerable to depression and low self-esteem.

It was discovered that participants who became depressed at some point between the initial assessment and follow-up assessment did not differ significantly from the control group in terms of the cognitive patterns measured at intake; hence support was not found for the antecedent hypothesis. Participants who were depressed on initial assessment differed significantly in their cognitions (expectancies for positive and negative outcomes, self-esteem, and irrational beliefs) in the direction predicted, from those that were not depressed. These findings provided support for the consequence hypothesis. Furthermore, despite not predicting depression, the cognitions did predict improvement. Participants whose cognitions were more negative on initial assessment were less prone to improvement at follow-up, suggesting that the cognitions render it more difficult to overcome depression (Lewinsohn et al., 1981).

A single-case study conducted later (Peterson, Luborsky, & Seligman, 1983) also tested the reformulated theory's prediction regarding the types of attributions that precede depressive symptoms. This was achieved by taking word transcripts of session tapes before and after mood shifts, identified by the client, occurred during psychotherapy sessions. The data supported the theory in that the patient's attributions for negative events predicted his mood swings; internal, stable, and global causal statements preceded higher levels of depressed mood, and external, unstable, and specific attributions preceded lower levels of depressed mood (Peterson et al., 1983). While the

use of a single subject restricts the generalisability of these findings, overall the study provided some support for the reformulated theory's predictions regarding the types of attributions hypothesised to precede depressive symptoms.

In general, it is difficult to ignore the findings of extensive metaanalyses, as they bring together much of the relevant research. Over two decades ago, Sweeney, Anderson, and Bailey (1986) reviewed the literature and conducted metaanalyses involving 104 studies exploring the relationship between explanatory style and depression in adults (including tertiary students). Internal, stable, and global attributions for negative events, and the opposite pattern of attributions for positive events (external, unstable, and specific) correlated positively with higher depressive symptom levels. Sweeney and colleagues (1986) concluded that a relationship between explanatory style and depression clearly exists, therefore argued that studies focused on explaining findings are needed as opposed to further studies confirming the relationship. The ramifications of this suggestion for the objectives of Study 1 are addressed in Chapter 8.

Specificity to depression

The adult studies discussed previously are restricted by at least one, if not a combination, of the following three factors: Focusing on predictions of the original learned helplessness theory; testing predictions of the reformulation using attributional instruments or methods that have not been validated; or using participants who are not formally diagnosed with depression. In terms of more relevant studies, one study using a sample of male inpatients (Raps, Peterson, Reinhard, Abramson, & Seligman, 1982) measured explanatory style using the *Attributional Style Questionnaire* (ASQ; Peterson et al., 1982; Seligman et al., 1979) and tested the specificity of the reformulated theory to depression. The ASQ is a self-report instrument designed to measure explanatory style by examining attributions for the causes of hypothetical events.[2] Raps and colleagues (1982) compared three groups; one group was diagnosed with unipolar depression, a second consisted of nondepressed schizophrenics, and the third were nondepressed medical patients. A second study conducted with outpatients of mixed gender (Silverman & Peterson, 1993) measured explanatory style using an expanded

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[2] The ASQ has been used in Study 1 and is described in detail in Chapter 9.

version of the ASQ, and also tested the specificity of the reformulated theory. Four groups were compared; one group of unipolar depressives, a second of paranoid schizophrenics, a third group of nonparanoid schizophrenics, and a control group of tertiary students. The results of both studies provided support for the existence of a pessimistic explanatory style, and indicated that this style is specific to depression as opposed to psychopathology in general (Raps et al., 1982; Silverman & Peterson, 1993).

Depressed patients in both studies were more likely to make internal, stable, and global attributions for negative events when compared with the other groups; differences between groups were not as apparent in terms of attributions for positive events. Silverman and Peterson (1993) also found that schizophrenics had explanatory styles analogous to the control group of students. Raps and colleagues (1982) noted the fact that relying solely on a schizophrenic comparison group does not control for other forms of psychopathology, but does suggest that a pessimistic explanatory style is not a general feature of psychopathology. Silverman and Peterson (1993) held the view that using a comparison group that is distinct from depression, such as patients with schizophrenia, is better than using those with anxiety disorders due to the comorbidity common among anxiety and depressive disorders. While the use of only male participants in Raps and colleagues' (1982) study implies caution in generalising to the typical depressed client, Silverman and Peterson (1993) had an equal mix of genders and obtained analogous results.

Diathesis-stress component

A longitudinal study with psychiatric inpatients considered the impact of stressful life events (Persons & Rao, 1985), and therefore was able to test the diathesis-stress hypothesis of the reformulated theory. Measurements of cognitions (including attributions on the ASQ) as well as life events and depression severity were administered on admission to hospital, discharge, and seven months after discharge. The researchers found a direct association between depression and attributions, as well as an interaction between attributions and life events, as predicted. It also found that a higher level of depression severity was associated with a lower tendency to attribute positive events to internal causes.

An earlier study (Gong-Guy & Hammen, 1980) considered recent life events that were personally stressful for the participants, using a clinical sample of outpatient clients. They found that when the events classified as most upsetting by the participants were compared, depressed and nondepressed clients differed in their causal perceptions. Specifically, the depressed group made attributions that were more internal, stable, and global, and indicated that the events were more expected and intended (or caused due to personal qualities) than nondepressed. Differences were not obtained when all stressful events were compared, rather than the most upsetting event. Overall, the study provided some support for the hypothesis that cognitive mediation occurs between stressful events and depression (Gong-Guy & Hammen, 1980). In other words, cognitive factors mediated the relationship between the events and depression.

The diathesis-stress hypothesis has also been tested in a sample of older adults living in the community (Isaacowitz & Seligman, 2001). This was the first study to explore whether a pessimistic explanatory style exists and relates to depression within this population. A prospective longitudinal design was employed. Explanatory style, life events, and depressive mood were measured during the initial interview, and measures of life events and depressive mood were taken again one month, six months, and one year later. Interestingly, it was discovered that those with an optimistic explanatory style, as opposed to a pessimistic style, showed a higher risk for developing depressive symptoms subsequent to stressful life events. The authors suggested that the nature of stressful events is quite different among older adults, with more stable causes as well as stable consequences resulting from common occurrences such as friends passing away; perceiving such events as unstable would appear unrealistic. It is possible that risk factors for depression change over the course of the lifespan. Psychological factors may become different or less important and there may be more biological vulnerabilities later on in life. Being pessimistic might be inaccurate and unrealistic in younger adults who are not facing such stable negative life events such as death of loved ones, and who potentially have the abilities to overcome their difficulties. Conversely, for older adults being optimistic could be less realistic and it could become increasingly maladaptive to overestimate one's degree of competence (Isaacowitz & Seligman, 2001).

The degree to which depressed people are realistic about their circumstances, as opposed to the degree to which they exhibit depressive cognitive biases, is an idea that has appeared in the literature in numerous ways. Some argue that depressed people might actually exhibit the deficits they believe they have (Anderson, Horowitz, & French, 1983). Even in general society it is not uncommon to hear such phrases as "I'm not a pessimist, I'm a realist". Whether a statement of this nature reflects an individual's resistance to accept their pessimistic outlook, or whether they are simply more accurate in their perception of life, is a matter of debate and it is likely that individual differences exist. Of particular relevance to the explanatory style literature is the concept of *attributional evenhandedness*, a term that appears in a variety of studies (e.g., Hamilton & Abramson, 1983; Raps et al., 1982). Essentially, evenhandedness explores the differences between attributions for positive events and attributions for negative events, with a positive score indicating self-serving biases, and a negative score indicating self-derogating biases. An exploration of realism and attributional evenhandedness is beyond the scope of the current project, as it warrants further attention within the realm of a broad consideration of cognitive biases. This is elaborated upon further in Chapter 13 in the context of suggestions for future research.

Other explanations exist for the findings of Isaacowitz and Seligman (2001). First, optimists may be more shaken by such events as a friend's death, in comparison to pessimists who readily expect bad things to happen despite their efforts. It is noted that depressive symptoms were lowest for those with an optimistic style who did not encounter stressful events (Isaacowitz & Seligman, 2001). It would have been interesting to discover whether the explanatory styles of this population changed over time in relation to stressful events, however explanatory style was only measured at intake. Second, methodological limitations of the study, discussed in the following chapter, indicate that replication of their findings is warranted (Isaacowitz & Seligman, 2001).

Stability of attributions

The reformulated learned helplessness theory posits that a pessimistic explanatory style is a traitlike cognitive style. Beck's (1967) model of depression also argues the existence of a depressive cognitive style which is traitlike in nature. A longitudinal

study in an inpatient setting sought to test these hypotheses (E. W. Hamilton & Abramson, 1983). Their sample consisted of a unipolar depressive group, a nondepressed psychiatric control group, and a nondepressed control group of community volunteers. Cognitive patterns were measured in the depressed group shortly after admission into the hospital, and again shortly before discharge; control groups completed the measures at similar points in time. The ASQ was used to measure explanatory style change. On first administration, the cognitive styles of the depressed group differed significantly from the two control groups in the predicted direction. Hamilton and Abramson (1983) argued that if the cognitive styles were indeed traitlike, they should persist following remission of depression. This was not the case, but instead dramatic improvements occurred on the measures, suggesting they were features of depression as opposed to an enduring characteristic.

The findings of Persons and Rao (1985), discussed earlier, also failed to show stability in the attributional dimensions over time. Rather, the tendency to attribute negative events to internal, stable, and global causes decreased. As with Hamilton and Abramson (1983), it is impossible to determine what may have caused the changes in attributional patterns. Both of these studies (E. W. Hamilton & Abramson, 1983; Persons & Rao, 1985) utilised inpatient samples, and therefore the participants were presumably undergoing treatment. Indeed, Hamilton and Abramson (1983) stated that all psychiatric patients were receiving some form of treatment, such as psychotropic medication, group therapy, or individual psychotherapy. Likewise, Persons and Rao (1985) stated that one or two of their participants were receiving cognitive therapy, and that most patients were taking antidepressants. Whilst Hamilton and Abramson (1983) argue that the therapies utilised were not designed to alter the relevant cognitive styles, this does not rule out the possibility that treatment was responsible for the cognitive changes.

The current chapter has offered a summary of studies that explored the association between explanatory style and depression, with a focus on those studies deemed more relevant to the current project. The following chapter reviews the explanatory style literature and considerations arising out of this, and concludes with a general summary and critique of the research in this area.

CHAPTER 3: Explanatory Style Research; Useful Considerations

There are certain factors related to explanatory style research that are worthy of consideration. First, mixed findings have emerged in terms of the association between explanatory style and depression. This may be due, in part, to the fact that explanatory style can be measured utilising different indices; both attributions for negative (bad) events and attributions for positive (good) events can be measured. Consideration is given to the variation in findings relating to these different indices. Second, alternative explanations for relevant findings are considered. Third, the major limitations of the empirical research are outlined. Finally, a general summary and critique of the research is presented towards the end of the chapter.

Explanatory style for negative versus positive events

Initially the reformulated learned helplessness theory made predictions only about attributions for negative events (Abramson, Seligman et al., 1978), but soon after it was expanded upon to include attributions for positive events (Seligman et al., 1979), as outlined in Chapter 1. Numerous studies, many of which have been cross-sectional, have provided support for the prediction of this theory which states that a maladaptive explanatory style is associated with depression severity. Many of these studies have found support for this prediction in terms of explanatory style for both negative events and for positive events. Internal, stable, and global attributions for negative events, and external, unstable, and specific attributions for positive events, correlated positively with higher depressive symptom levels. These outcomes were obtained from studies involving children in the community, both overseas (e.g., Nolen-Hoeksema et al., 1992; Seligman et al., 1984) and in New Zealand (e.g., Rodriguez & Pehi, 1998), as well as metaanalyses involving child and adolescent (Gladstone & Kaslow, 1995) and adult (Sweeney et al., 1986) community samples. Given the likelihood that studies with significant findings are more likely to be published, Gladstone and Kaslow (1995) conducted analyses to determine the number of disconfirmatory studies needed to reverse their significant findings. They established that the number of nonsupportive studies required would be much larger than the number likely to have been conducted but not published. As implied, the findings of these studies have been straightforward

in terms of their support for the reformulated theory, as explanatory styles for both negative and positive events were associated with higher depression severity. However, not all research has produced straightforward outcomes in this regard.

Some studies with tertiary students in the community have found stronger support in terms of a pessimistic explanatory style for negative events, than for positive events, in its association with depression (e.g., Golin, Sweeney, & Shaeffer, 1981; Seligman et al., 1979). Other research with tertiary students found that a pessimistic explanatory style for positive events was uniquely linked with depressive (versus anxious) symptomatology, whereas a pessimistic style for negative events was associated with both depression and anxiety (Ahrens & Haaga, 1993). Studies using clinical populations seem to show even greater variability in their findings. This is worth noting, given the reformulated theory is intended to explain depression in its clinical form, as a psychological disorder. Some studies with child and adolescent clinical samples (e.g., Curry & Craighead, 1990; McCauley et al., 1988) found that explanatory style for positive events was associated with depression but not explanatory style for negative events. By contrast, some studies with adult clinical samples (e.g., Raps et al., 1982; Silverman & Peterson, 1993) found the opposite pattern; explanatory style for negative events was associated with depression while that for positive events was not. It is difficult to hypothesise exactly why these mixed findings may have emerged within the literature. Certainly it could relate to methodological variability within the research conducted, as discussed later in this chapter. Overall, however, these mixed findings amid the explanatory style literature suggest that future research should consider the potential differential relationships between composite scores for negative and positive events with depression, including research examining the specificity of learned helplessness to depression.

When evaluating the evidence in support of learned helplessness theory and its reformulation, further to a consideration of mixed findings, it is useful to consider various alternative explanations. These relate to cognitive factors, other than explanatory style, that may be important in depression. Alternative explanations, in terms of the cognitive factors believed to be linked to depression, are discussed in the following section.

Alternative explanations

Research with both tertiary students and adults has suggested that cognitions relating to consequences of stressful events may be more important than attributions about the causes of them, in terms of links with depression (Gong-Guy & Hammen, 1980; Hammen & Cochran, 1981; Hammen & deMayo, 1982). With regard to tertiary student data, those students categorised as depressed based on their BDI scores reported greater uncertainty and upset following stressful events than a group classified as nondepressed, but did not differ with regard to causal attributions (Hammen & Cochran, 1981). It is suggested that perceived ability to cope with, or deal effectively with, sources of stress may be important (Hammen & deMayo, 1982). In these studies causal attributions were measured using questionnaires or interviews which, arguably, suffered limitations with respect to reliability and validity. Furthermore, the events examined in these studies varied considerably across individuals, being chosen by the participants themselves. Thus across-participant comparisons could not be made (Raps et al., 1982), as this would require all participants to have been affected by the same aversive event.

Other alternative explanations exist, in terms of the cognitive factors thought to be important in depression. A study with tertiary students (Tennen & Herzberger, 1987) found that low self-esteem was predictive of a maladaptive explanatory style for positive events across all three attributional dimensions, and was predictive of the internality dimension of a maladaptive style for negative events. The authors suggested that the maintenance of self-esteem may occur via attributional biases, and that depression may result when there is a breakdown in the drive to continue this maintenance. The authors acknowledge the conceptual difficulties amid research examining both self-esteem and depression, due to the conceptual ties between these two constructs. They failed to mention, however, the fact that self-esteem is conceptually tied to explanatory style, according to the reformulated theory. Under the reformulated theory, if lack of control in the face of aversive events is attributed to internal factors, lowered self-esteem will result. Therefore, it would be expected that internal attributions for negative events would predict low self-esteem, rather than self-esteem predicting a maladaptive explanatory style for negative and positive events. Perhaps the findings of Tennen and Herzberger (1987) are suggestive of a reciprocal relationship between explanatory style and self-esteem. If an individual has a low

self-esteem, it would make sense that they would have a tendency to attribute negative events to something intrinsically wrong with themselves because this is consistent with the beliefs they already hold. Likewise, it would make sense that attributing negative events to internal characterological factors would impact on the overall view individuals may hold about themselves.

Along similar lines, other researchers (e.g., Janoff-Bulman, 1979) have argued that the learned helplessness theory is too simplistic, at least in terms of attributions to internal causes. It is suggested that internal attributions for negative events can be further divided into self-blame regarding one's behaviour (behavioural self-blame) versus self-blame regarding one's character (characterological self-blame). There has been some research exploring these distinctions (e.g., Carver, Ganellen, & Behar-Mitrani, 1985; Stoltz & Galassi, 1989) and it has been suggested that characterological self-blame may have a greater role in depression than behavioural self-blame. However, characterological self-blame appears to be a concomitant, as opposed to a cause, of depression (Peterson, Schwartz, & Seligman, 1981). Other research has found that depressed individuals, in comparison to nondepressed individuals, rate both ability and effort (facets of character and behaviour respectively) as more central determinants of negative events, but less important in determining positive events (Rizley, 1978). Furthermore, given the fact that guilt is a common symptom of depression, the potential role of behavioural self-blame should not be discounted, as guilt is most commonly understood to be a product of regretting one's actions.

Finally, research has suggested that self-efficacy may have a moderating role in the association between causal attributions and depression (Houston, 1995), and therefore may determine whether explanatory style leads to depression. As mentioned earlier, the concept of self-efficacy refers to the beliefs an individual holds about their ability to effectively respond to circumstances. In light of the fact that this is conceptually similar to helplessness, the findings of Houston (1995) may not be particularly surprising.

The current chapter has thus far discussed a potential source of mixed findings amid the explanatory style literature, as well as some cognitive variables that are closely related to explanatory style and hence worthy of consideration when interpreting findings.

Methodological limitations amid the explanatory style literature base are important to consider as well, as they may have their own bearing on mixed findings and the interpretation of outcomes.

Methodological limitations in explanatory style research

Within the explanatory style literature, there has been significant variance in the methodology employed across studies. This variance may have contributed, in part, to the mixed findings that have emerged in terms of support for the original and reformulated learned helplessness theories. Additionally, the fact that various samples have been employed, ranging from children to students to adults, may have also contributed to inconsistent results between studies. The theories were originally developed as an explanation for depression in adults (Nolen-Hoeksema et al., 1992) and are therefore potentially more relevant to this population. Nevertheless, a number of limitations within the explanatory style literature are relevant across all population samples examined. Methodological limitations are grouped into various categories in the discussion below.

Design issues in published research

Much of the research has obtained correlational data (e.g., Gong-Guy & Hammen, 1980; Hammen & deMayo, 1982; Raps et al., 1982) and therefore offers no insight into the causal role of cognitive variables. Longitudinal studies, however, have shown mixed results regarding direction of causality. Prospective longitudinal studies, as opposed to retrospective studies, have the advantage of being able to measure cognitive styles *prior* to the onset of depression. However, it would appear equally important to ensure the research design considers the possibility that the relationship between explanatory style and depression is bidirectional. In this sense, the prospective study would need to measure the explanatory styles of a particular cohort, follow the cohort to determine which participants with a pessimistic explanatory style go on to develop depression, then continue to follow them to determine whether explanatory style improves alongside reductions in depression severity. For practical reasons, this would be very difficult to achieve, due to the time-consuming and costly nature of such an endeavour.

Other limitations exist, depending on the particular research design employed. For example, the outcomes of both cross-sectional studies and longitudinal studies alike may be influenced by cohort effects. A longitudinal design may lead to a more homogenous group, and therefore the outcomes may be difficult to generalise to a different cohort. By contrast, between-group differences found within a cross-sectional study may be attributable, in part, to cohort effects, given the groups are unlikely to have grown up in the same historical era (Goodwin, 2008). Further to these limitations, it has been suggested that more research should be conducted in naturalistic settings as opposed to the typical hypothetical or laboratory-based situations examined (Hammen & deMayo, 1982), in order to ensure ecological validity.

Categorisation of depression

There has been variability in the way depression has been defined and measured within the learned helplessness literature. Much of the research with students and nonclinical populations has explored self-reported depressive symptoms, whereas much of the research with clinical populations has compared groups of clients based on diagnostic category (Persons & Rao, 1985). There are some exceptions to this, however. A significant limitation of Gong-Guy and Hammen's (1980) study, utilising a clinical sample, is that clinical diagnoses were not obtained and groups were identified according to level of depressive symptom severity, using a cut-off score of ten on the BDI. Similarly, it is not clear from Persons and Rao's (1985) publication what diagnoses the inpatients received. Depressive symptoms can be present across many forms of psychopathology; therefore it is unclear how many participants in Persons and Rao's (1985) study would have met diagnostic criteria for depression. This appears important given suggestions that the theory may only be relevant to unipolar depression.

Among those studies that have categorised individuals as depressed based on self-reported depressive symptoms, further inconsistency across studies is evident. For example, many studies have classified individuals as depressed if they scored nine or above on the BDI (e.g., McNitt and Thornton, 1978; Teasdale, 1978), and nondepressed if they scored eight or below (Teasdale, 1978), or five or below (McNitt & Thornton, 1978). One study (Willis & Blaney, 1978), counterintuitively, included nine in both categories (e.g., nine or above for depressed, and nine or below for nondepressed).

Dividing participants along these lines, as per the aforementioned studies, may not produce particularly distinct groups. Furthermore, irrespective of cut-off score, classifying participants as depressed according to their BDI scores, as opposed to utilising a clinical sample meeting diagnostic criteria, may not be particularly appropriate. The BDI is intended as a measure of depression severity for those individuals who have already been diagnosed with a Major Depressive Disorder (MDD). It may be that clinical depression, as opposed to mild or subclinical depression, represents a completely different phenomenon rather than simply representing differences in severity. In light of this possibility, attempting to generalise across these categories is hazardous (Raps et al., 1982). Ranges of scores may have been truncated in mild or subclinical populations, and more studies of the reformulation's predictions using samples of clinically depressed individuals are warranted (Raps et al., 1982).

Some studies did not use the BDI, but instead measured transient depressive affect (e.g., Houston, 1995; Metalsky et al., 1982), including the case study of Peterson and colleagues (1983) which focused on shifts in depressive mood during therapy sessions. The measurement of depressive mood may be even less closely related to the syndrome of depression than BDI scores. As such, the findings of these studies offer no insight regarding the hypothesised relationship between attributions and the variety of other depressive symptoms that could be present.

Measurement of causal attributions or explanatory style

Helplessness predictions concerning the association between attributions and depression have been explored in numerous different ways (Peterson et al., 1983). In particular, various different methodologies have been used to measure causal attributions or explanatory styles along the relevant dimensions (Anderson et al., 1983), including questionnaires, laboratory experiments, and analysis of verbal transcripts (Peterson et al., 1983). Some research has focused specifically on measuring attributions for success and failure (e.g., Lewinsohn et al., 1981), which cannot take account of numerous other events and the way in which individuals construe them. Other research has focused on measuring explanatory style, using questionnaires designed for this purpose. As briefly mentioned in Chapter 2, the Attributional Style Questionnaire (ASQ; Peterson et al.,

1982; Seligman et al., 1979) measures explanatory style within adult populations, while the Children's Attributional Style Questionnaire (CASQ; Seligman et al., 1984) is the equivalent instrument for child and adolescent populations. It is unclear whether research such as Lewinsohn and colleagues' (1981) study would have yielded different results had they measured explanatory style using the ASQ. However, even those studies that have used the ASQ to measure explanatory styles have focused on different composite scores.[3] Specifically, some researchers relied on the composite difference score of the ASQ (e.g., Hamilton & Abramson, 1983), most used the composite scores for negative and/or positive events, and others did not use composite scores but instead relied on the less reliable individual dimensions of the ASQ (e.g., Persons & Rao, 1985). Further to the discussion earlier in the current chapter, regarding explanatory style for negative versus positive events, some studies with adolescents have found significant correlations in the predicted directions between explanatory style and depression severity using the overall composite score of the CASQ (Garber, Weiss, & Shanley, 1993), while others have found significant results using all three composite scores (positive events, negative events, and overall) of the CASQ (Gladstone, Kaslow, Seeley, & Lewinsohn, 1997).

Isaacowitz and Seligman (2001) measured explanatory style using an adapted version of the ASQ that they revised to be more appropriate for older adults. This revised version had evidently no prior psychometric evaluation, and the reliability using Isaacowitz and Seligman's data was low. Moreover, the sample was small, self-selected, nonclinical, and not particularly representative of the general community population (Isaacowitz & Seligman, 2001). They also defined optimists and pessimists according to whether the participants' overall composite score was above or below the mean score on the index. As mentioned earlier, only those individuals falling at the extreme of the continuum can accurately be defined in distinct categories such as these (Peterson et al., 1995).

Whilst many of the studies outlined provide further support for the reformulated theory, they also exemplify the variability in the methodologies employed. It is likely that this variability in methodology has been largely responsible for the variability in the resultant findings as well.

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[3] These indices are described in detail in Chapter 9.

Measurement of life events

The majority of explanatory style research has not collected data on the presence or absence of significant life events (e.g., Peterson et al., 1983); an important limitation in consideration of the fact that the reformulated learned helplessness theory is purportedly a diathesis-stress model. It is noted, however, that hospitalisation itself can be regarded as a significantly stressful event (Persons & Rao, 1985), and as such many inpatient studies may have indirectly tapped into an interaction between these variables despite not actually measuring it. Of those studies that have explored the diathesis-stress component of the helplessness reformulation, many have done so in terms of the absence or presence of major life events or stressors. Some research (e.g., Dykema et al., 1995) has suggested that the psychological impact of stressors may be more important, and argue the possibility that not taking this into account could explain some of the inconsistency in the literature. This would appear to be particularly important given the fact that the cognitive perspective, to be elaborated in Chapter 4, states that the way events are interpreted by the individual influences how they will respond. Along these lines, some studies have induced helplessness on learning tasks (e.g., Willis & Blaney, 1978) which may be fundamentally different to the helplessness induced by a significant adverse life event. Moreover, there may be vast individual differences in terms of the importance of succeeding on the task in laboratory settings. If success on the task is not highly valued then failing is unlikely to produce the deficits delineated by the theory.

Potential confounding factors

Numerous potential confounding factors may exist given the nature of social science research, however only the most obvious ones are discussed in this section. Some confounding factors relate to the measurement instruments used. First, the reliance on self-report questionnaires leads to the possibility that social desirability could confound results (Raps et al., 1982). Second, there have been concerns that high correlations between self-reported depression and explanatory style may be partly accounted for by overlap in the content of the scales. However, some researchers (e.g., Garber et al., 1993) sought to address this by removing the cognitive items from the BDI and CDI and comparing the correlations of these adapted scales with the original scales, in terms of

their association with explanatory style. Removing the cognitive items had little influence on the correlations obtained; suggesting that the link commonly found between explanatory style and depression is not merely the result of the measurement instruments detecting a tautology across these constructs.

The method of participant recruitment can lead to certain biases. For example, the samples in Lewinsohn and colleagues' (1981) and Isaacowitz and Seligman's (2001) studies were volunteers, hence self-selection bias may have occurred. For instance, there may have been more depressed people in the sample. In fact, some demographic disparity was revealed between their samples and that of the general population. This, therefore, limits the generalisability of the findings (Lewinsohn et al., 1981). Another study restricted the generalisability of their findings by the use of a single subject (Peterson et al., 1983). Moreover, the client in this study displayed intense mood swings and this is not necessarily a common feature of depression. The use of inpatient samples (e.g., Hamilton & Abramson, 1983; Persons & Rao, 1985) leads to other confounding variables, pertaining to therapeutic intervention. Intervention may be more likely in inpatient settings, as opposed to outpatient settings, due to the potential influence and involvement of numerous clinical staff members on a daily basis.

Overall conclusions of explanatory style research

Across the current and previous chapter, the diverse picture emerging from the research, in terms of support for the learned helplessness theory and its reformulation, has been presented. Early studies with tertiary students (e.g., McNitt & Thornton, 1978; Sacco & Hokanson, 1978) tested the prediction of the original learned helplessness theory that states that a perception of response–outcome independence exists; in other words, individuals fail to recognise the association between their behaviour and outcomes. Mixed findings have resulted from research testing this prediction. Support for this prediction has been found with clinically depressed adults (Abramson, Garber et al., 1978). Other studies with clinical samples of adults have not supported this prediction (O'Leary et al., 1978; Smolen, 1978), although comorbid conditions in the latter two studies may have confounded the results. In other tests of the original theory, a study using a clinical sample of adults (Price et al., 1978) supported the contention that helplessness deficits can be produced via exposure to uncontrollable aversive events.

Since the reformulation, various hypotheses of the revised theory have been tested in a number of different ways. Studies with children have supported the contention that a maladaptive explanatory style is correlated with depression (Nolen-Hoeksema et al., 1986, 1992; Rodriguez & Pehi, 1998; Rodriguez & Routh, 1989; Seligman et al., 1984), and a metaanalysis using both child and adolescent research also confirmed that a maladaptive explanatory style is associated with depressive symptoms (Gladstone & Kaslow, 1995). Some research with clinical adults suggested that a maladaptive explanatory style does not predict depression, but rather is a concomitant of depression (Lewinsohn et al., 1981). However, studies with children (Nolen-Hoeksema et al., 1986, 1992; Seligman et al., 1984) and a case study with a clinically depressed adult (Peterson et al., 1983) found that a maladaptive explanatory style predicts later depressive symptoms.

Some evidence has been found supporting the stability of explanatory style among children (Nolen-Hoeksema et al., 1986) and tertiary students (Golin et al., 1981; Peterson et al., 1982), as well as in a retrospective study with older adults (Burns & Seligman, 1989). Other evidence among clinical adults does not support its stability (E. W. Hamilton & Abramson, 1983; Lewinsohn et al., 1981; Persons & Rao, 1985).

Some support for the diathesis-stress prediction has been found with children (Nolen-Hoeksema et al., 1986, 1992), tertiary students (Metalsky et al., 1982), and clinical adults (Gong-Guy & Hammen, 1980). Other research with adolescents (Lewinsohn et al., 1994) and tertiary students (Dykema et al., 1995) found evidence that does not support this prediction. Some research with adolescents (Robinson et al., 1995) and clinical adults (Persons & Rao, 1985) has found that a maladaptive explanatory style can influence depressive symptoms both directly, and in interaction with stressful life events. Still other research has found that among older adults, optimistic explanatory style in interaction with stressful events predicted depressive symptoms (Isaacowitz & Seligman, 2001).

The reformulation's prediction that appears to have the most consistent support is with regard to the specificity of learned helplessness to depression. In this light, support has been found in studies using children and adolescents (Curry & Craighead, 1990; McCauley et al., 1988; Rodriguez & Pehi, 1998; Rodriguez & Routh, 1989) and

clinically depressed adults (Abramson, Garber et al., 1978; Raps et al., 1982; Silverman & Peterson, 1993), strongly suggesting that it is not merely a feature of psychopathology in general.

It is clear that a variety of factors may be responsible for the onset of depressive symptoms, and there have even been suggestions of different subtypes of depression with variation in aetiology and presentation. The learned helplessness theory argues that a pessimistic explanatory style may be *one* of the potential risk factors for depression, but does not proclaim to be the only one. Other possibilities have been explored in the literature regarding the cause of depression, leading to alternative predictions and research findings, some of which appear unsupportive of the reformulated learned helplessness theory. However, from a review of the literature it is concluded that a pessimistic explanatory style does exist among depressed populations. It appears that this cognitive style develops during childhood, remains relatively stable across the lifespan, and renders an individual at risk for depression particularly, but not necessarily, in the face of aversive life events. This may not be the case with older adults, and further research with this population in particular is critical to an understanding of the learned helplessness phenomenon.

Overall, the relationship between explanatory style and depression may be more complex than proposed by the reformulated learned helplessness theory, not only with regard to the diathesis-stress proposition. The likelihood that other cognitive factors may have a significant role in the development of depression suggests that the cause of depressive symptomatology is more complex than originally anticipated. Variables such as depression and explanatory style boast great complexity in presentation and potential causes, generating a number of hurdles for those researching them. What appears clear, however, is that a relationship between these two variables exists despite a lack of understanding as to how they are associated and what other factors may be involved. Further research into the roles of these variables is therefore warranted. The current project suggests a framework that may better take into account divergent findings. The framework incorporates a model which proposes that, in addition to being a predisposing factor, a maladaptive explanatory style can be a perpetuating factor that maintains depression, and in turn depression itself can influence explanatory style.

There are clear benefits from the discovery of the association between explanatory style and depression. Perhaps the most significant advantage is in terms of the clinical implications of this link. The identification of a maladaptive explanatory style may serve to forewarn the possibility of depression vulnerability, and therefore have preventative utility. Researchers have suggested the possibility that explanatory style could be a mechanism of change in CBT for depression, as will be addressed later, suggesting that depressed individuals may benefit from treatment focused on improving their explanatory style. Indeed, CBT interventions aimed towards improving explanatory style have been shown to be promising at least in the acute treatment of depression but potentially for relapse prevention as well. Study 1 of the current research project will focus on continuing the advancement in the explanatory style research by seeking an increased understanding of relevant links.

The next chapter addresses CBT for depression. The reformulated learned helplessness theory is considered to be a cognitive theory of depression. A brief overview of cognitive theories and approaches is offered, to allow the reformulated learned helplessness theory to be appreciated within its broader context. Furthermore, the participants of the current research project received CBT for depression, and implications of the current research for this treatment approach are discussed later.

CHAPTER 4: Cognitive Behaviour Therapy for Depression

The common objective of cognitive approaches

At the core of all cognitive interventions is the foremost objective of influencing thinking to create change. The role of earlier life experiences or innate predisposition is not ignored, however the cognitive perspective suggests that the way events are interpreted by the individual influences how they will respond (e.g., Hollon & Beck, 1994). This is not a novel concept; semantic theorists such as Epictetus, the Roman Stoic philosopher, coined the adage "Men are disturbed, not by things, but by the principles and notions which they form concerning things" in the fourth century B.C. (Meichenbaum, 1995; Westbrook, Kennerley, & Kirk, 2007). Along similar lines, Benjamin Franklin has been credited with practising a form of cognitive therapy for the purposes of self-improvement (Frank, 1994). However, the greatest attention to cognitive approaches and their advancement in recent times evidently rests with the clinical psychology and psychiatry professions.

Numerous clinical psychologists have proposed the therapeutic utility of helping clients become aware of their cognitive biases, and of the reciprocally deterministic and bidirectional nature of behaviours (Meichenbaum, 1995). Reciprocal determinism is a theory developed by psychologist Albert Bandura (1986), and states that an individual's behaviour not only influences the social environment, but in turn the social environment influences an individual's behaviour. In addition to influencing subsequent mood and behaviour, thinking itself is shaped by existing moods and the outcomes of previous actions (Bandura, 1986). In essence, cognitive theory proposes that thinking, along with other factors, has a causal role in the onset and maintenance of various disorders and therefore can be influenced to provoke therapeutic change (Hollon & Beck, 1994).

Cognitive therapies versus cognitive behaviour therapies

Despite having a common basis, cognitive and cognitive behaviour therapies differ with regard to the procedures used and the processes that are theorised to bring about change. Therapies which are strictly cognitive are those where the therapeutic model suggests

only cognitive phenomenon, such as traumatic memories, are responsible for current disturbance and hence are the target for intervention. On the other hand, cognitive behaviour therapies adopt a meditational model which contends that behaviour change can be influenced via cognitive change. Cognitive mediation is a necessary treatment component if the cognitive behaviour term is applied (K. S. Dobson & Dozois, 2001). Cognitive and cognitive behaviour therapies also have different developmental histories. The various cognitive approaches were often developed by practitioners trained in psychodynamic theory (Hollon & Beck, 1994). The role of meaning is underscored in that beliefs are more important than what an individual thinks or communicates. Cognitive theorists typically developed strategies to evaluate beliefs in terms of rationality or validity. Cognitive behaviour approaches evolved out of behaviour therapy, as developed around the 1950s and 1960s by influential figures such as Joseph Wolpe (Wolpe, 1958), and had both psychoanalytic and behavioural theorists behind their development (K. S. Dobson & Dozois, 2001). Historically these approaches had a more concrete conceptualisation of thinking, commonly regarding it as private behaviours (self-statements) subject to the standard laws of conditioning governing overt behaviours. Rather than focusing primarily on the development of insight, cognitive behaviour theorists were more inclined to develop strategies to teach cognitive skills (Hollon & Beck, 1994).

In practice, both approaches rely on a combination of cognitive and behavioural factors, irrespective of the way and extent to which they do this. Furthermore, over time the distinctions between the cognitive and cognitive behaviour therapies have been blurred. The approaches have borrowed from each other and interest in a constructivist approach has developed, such that some cognitive behaviour theorists have developed perspectives that are even more cognitive than early cognitive theorists. Accordingly, both cognitive and cognitive behaviour therapies justifiably belong to the cognitive behaviour family (Hollon & Beck, 1994). Cognitive behaviour therapies have the largest body of research shown to meet efficacy criteria, and hence they are considered empirically supported treatments (A. Roth & Fonagy, 2005).

A number of specific cognitive behaviour approaches have been developed and have evolved over the years, and they have had a tendency to borrow from one another, as alluded to earlier. Aaron T. Beck, M.D., was the founder of one of the major

approaches, which he titled Cognitive Therapy (A. T. Beck, 1967, 1976). A publication by Beck, Rush, Shaw, and Emery (1979), *Cognitive Therapy of Depression*, served as the overall treatment manual used in the current research project. In light of the fact that CBT has its origins in Beck's seminal work, the following section is presented to describe his approach. However, given CBT has evolved over the years (Safran & Segal, 1990), rather than adopt Beck's title of Cognitive Therapy, the broader term (CBT) will be used to describe the therapy relevant to the present research. Beck's approach is outlined below alongside the relevant cognitive theory and the history of its development.

Beck's Cognitive Therapy

History of development

Beck was initially trained within a psychodynamic framework (K. S. Dobson & Dozois, 2001; Hollon & Beck, 1994). In the late 1950s he began to conduct experimental research on dream themes in an attempt to provide empirical support for a psychoanalytic theory (Rosner, 2004). He tested an hypothesis which stated that inverted hostility was at the root of depression, hence related themes (e.g., rejection, losing, being thwarted) were predicted to manifest in the dreams of depressed patients. The psychoanalytic proposition of this inverted hostility hypothesis was that depressed individuals had a desire or "wish" to suffer. The obtained data supported the hypothesis with regard to the existence of these themes, but could not demonstrate the wish to suffer. He concluded that an appropriate methodology for measuring or accessing wishes did not exist. Beck began to move away from a motivational model (drive theory) towards a cognitive model which allowed patients' experiences to be quantified and evaluated (Rosner, 2004).

Beck's model had numerous influences over the course of its development, including the ego psychologists, Alfred Adler, Karen Horney, George Kelly, the Stoics, and Albert Ellis (A. T. Beck, 2005; Kellogg & Young, 2008). In brief, ego psychology stemmed from Sigmund Freud's id-ego-superego model, while Alfred Adler and Karen Horney were psychoanalysts who questioned some of Freud's views and became known as Neo-Freudians. George Kelly believed in a therapeutic approach in which the

therapist facilitated clients to find their own constructs and personal meaning, instead of the therapist offering interpretation. The Stoics were philosophers who believed that unhealthy emotions were caused by errors in judgement. Finally, Albert Ellis was the founder of Rational-Emotive Behaviour Therapy (REBT) which, along with Beck's Cognitive Therapy, is one of the most influential cognitive therapies (Prochaska & Norcross, 2010). These various influences have inspired Beck's approach, a brief overview of which is presented, followed by a description of the guiding theory.

Overview of the approach

Beck became interested in his clients' beliefs, adopting an approach that he termed *collaborative empiricism* (A. T. Beck et al., 1979). Collaborative empiricism emphasises the importance of therapists and clients working together to examine the evidence for and against the clients' ideas and beliefs. The therapist uses *Socratic questioning* in a process known as *guided discovery*, in which the therapist asks a series of tactful questions to lead clients towards their own personal insights (Prochaska & Norcross, 2010). Beck's adoption of collaborative empiricism was perhaps not surprising given his psychoanalytic background, and keen interest in experimental science (Hollon & Beck, 1994). In CBT, beliefs are treated as hypotheses and clients are trained to experiment with their behaviour as a way of evaluating their beliefs.

CBT is one of a number of therapies that have developed specific subtheories relevant to different disorders, also known as disorder-specific conceptualisations. These formulations have directly led to modifications in procedures or interventions to treat the disorders. Cognitive theorists have paid more attention to depression than any other disorder (Hollon & Beck, 1994), which began with Beck's early work (A. T. Beck, 1963) exploring cognition in depression. Beck's numerous contributions in the field have inspired almost all of the cognitive theories of depression that exist (Scher, Segal, & Ingram, 2004), and Beck's Cognitive Therapy is considered the standard, or traditional, CBT approach. Cognitive models of depression provide a guiding framework for the successful application of therapy with depressed clients. The "Beckian" model has been the dominant CBT model, at least in the UK, for the past three decades (Westbrook et al., 2007).

Cognitive theory and practice

The cognitive theory of depression (A. T. Beck, 1967) was developed with the intention of connecting the cognitive aspects from previous theories with the physical, affective, and motivational phenomena that are characteristic of, and applicable to, various depression subtypes. People with depression, according to Beck's cognitive theory, perceive themselves, their world and experiences, and the future in an unrealistically negative way. This is known as Beck's *cognitive triad*, and these negative attitudes towards the self, the world/others, and the future have a role in the aetiology and maintenance of the disorder.

There is evidence to suggest that cognitive vulnerabilities exist which predispose some individuals to developing depression, particularly if biological vulnerabilities are also present (Barlow & Durand, 2009). Exactly why some individuals develop a cognitive vulnerability to depression is not fully understood.   Beck's theory implies that experiential learning, particularly in early childhood, is primarily responsible for the development of maladaptive thoughts and core beliefs (K. S. Dobson & Dozois, 2008). For instance, if negativity characterises early experiences, this may lead to the development of certain schemas which guide the individual's attention in the future towards negative as opposed to positive events (Scher et al., 2004).   Schemas are psychological structures that influence information-processing and behaviour (Kellogg & Young, 2008). Individuals have many schemas across every aspect of life. Some may only apply to discrete situations, whilst others may have greater breadth and apply to numerous circumstances in life.   Some may be more flexible than others, and conversely some may be more rigid. In general, individuals attempt to keep their schemas intact (Kellogg & Young, 2008). Depressed individuals develop information processing distortions leading to difficulty correcting their maladaptive beliefs (A. T. Beck, 1976; Hollon & Beck, 1994). They may believe they have failed to achieve important goals, they are inferior or worthless, that they have lost something of significant value, that outcomes will be negative, or that the future will be lacking in any kind of satisfaction or achievements. They have a tendency to exaggerate the responsibility they assume for negative events that occur, but conversely deny their responsibility for the causes of positive events (Rizley, 1978).   Their negative perceptions lead to other depressive symptomatology, such as low mood, self-blame,

anhedonia, and suicidal ideation. Motivation to engage in helpful activities is lost due to the expectation of negative outcomes. These physical, affective, and motivational phenomena further contribute to negative thinking and a vicious cycle is formed (A. T. Beck, 1976).

Typically the schemata predisposing individuals to depression are activated by stressful life events (Kovacs & Beck, 1978), as with other diathesis-stress models. The individuals remain vulnerable to depression following remission because of the dysfunctional attitudes that are underlying within their belief systems (Hollon & Beck, 1994). Depressed individuals are proposed to have particularly negative schemas about themselves, or self-schemas (Pietromonaco & Markus, 1985). An individual may have a premorbid depressive self-schema relating to failure, for instance. This schema may remain dormant until a failure experience activates the belief system leading to the beginning of information processing biases centering on this theme. Highly organised cognitive structures begin to selectively attend to information congruent with the schema, hence the difficulty correcting the distortions (K. S. Dobson & Dozois, 2008).

With respect to the application of this theory into practice, the cognitive approach to the treatment of depression involves challenging the aforementioned maladaptive beliefs and assisting the individual to feel less helpless. In other words, CBT aims to challenge and modify unhelpful schemas (Kellogg & Young, 2008). Depression can be broken down into its symptom components, namely cognitive, emotional, behavioural, motivational, or physiological. Any one of these symptom clusters can become the primary target of intervention, as each component influences the other components and therefore improvements in one area should spread to other symptom clusters. Therapeutic intervention can be collaboratively designed to target the particular needs of the individual in each case. In other words, an individualised cognitive conceptualisation, or formulation, is developed with each client and this helps to guide the therapeutic process. It is important, however, to maintain the fundamental objective of cognitive modification regardless of the symptoms targeted or techniques employed (A. T. Beck, 1976).

The techniques employed are not only those utilised within sessions. Homework assignments are therapeutic tasks that clients conduct between sessions, and homework is considered an integral element of CBT. The client and therapist plan during sessions what homework tasks would be useful and in line with the client's therapeutic goals. Many assignments involve collecting information relating to the client's experience in relevant situations, such as identifying their thoughts, emotions, or behaviours. Other assignments might involve reading relevant information, often related to the client's presenting problem(s). Clients may conduct experiments through which they try out new behaviours or test out their beliefs. They may schedule activities that are deemed to be helpful, such as exercise or socialising. The use of activity charts as a homework task in clinical practice is expanded on further in the methodology chapter of Study 1, as this has direct relevance to the current project. Overall, homework assignments are designed so that clients can practice, and hence generalise, in-session learning to the everyday context in which relevant problems exist (A. T. Beck, Rush, Shaw, & Emery, 1979; Kazantzis, Deane, Ronan, & L'Abate, 2005).

Other cognitive theories of depression, aside from Beck's cognitive theory, have been developed (K. S. Dobson & Dozois, 2008). These include the reformulated learned helplessness theory (Abramson, Seligman et al., 1978), already discussed in detail due to its particular relevance to the current research project. There is also a variant of learned helplessness theory known as hopelessness theory (Abramson, Metalsky, & Alloy, 1989). The hopelessness theory of depression (Abramson et al., 1989) is not elaborated upon further in the current project for a number of reasons. First, the theory states that a significant event only needs to be negative; it does not need to be uncontrollable, or perceived as uncontrollable. If self-efficacy is related to hopelessness, as researchers have suggested (e.g., Houston, 1995), then the event *is* perceived by that individual to be uncontrollable, at least for them. Second, the hopelessness theory does not emphasise the internal–external attributional dimension. Third, it pertains to a hypothesised subtype of depression. Fourth, it does not have much empirical support nor a well-evaluated measurement instrument (Henkel, Bussfeld, Möller, & Hegerl, 2002). Finally, in contrast to explanatory style, it was not being measured within *The Depression Study* from which the data for the current research project were obtained.

Summary

The current chapter has provided a general definition and brief evolutionary history of the cognitive and cognitive behaviour therapies. These two categories of therapeutic approach differ in terms of their developmental histories. However, the distinctions between these two categories in terms of both theory and practice have become blurred over time. As a result, often the broader term, Cognitive Behaviour Therapy (CBT), is used to encompass all specific approaches within these two categories. Overall, cognitive theories assume that cognitive modification is an important target of intervention. In other words, the modification of thoughts and beliefs is theorised to be a mechanism of change within CBT. There has been research into therapeutic mechanisms of change which provides some empirical support for this theoretical assumption. One of the key ingredients of CBT is behavioural activation, an understanding of which is a useful prerequisite to a discussion of mechanisms of change. The following chapter defines behavioural activation and outlines the history, theory, and utility of the approach.

CHAPTER 5: The History and Value of Behavioural Activation

"Action is the antidote to despair"
– Joan Baez

Behavioural interventions in CBT

Behavioural interventions can be categorised either as those aimed at increasing access to positive reinforcement and decreasing exposure to aversive conditions, or as those aimed at decreasing avoidant coping patterns (D. Dobson & Dobson, 2009). Specific strategies of the first-mentioned category include those which focus on skill acquisition, increasing knowledge, or increasing behaviours that enhance change. Examples include activity scheduling, relaxation training, and training in communication skills, assertiveness, or social skills (D. Dobson & Dobson, 2009; Lewinsohn, Sullivan, & Grosscup, 1980). Strategies of the latter category focus on decreasing avoidance and problematic behaviours that may be self-defeating. Exposure-based interventions are one example of treatment for avoidant behaviour (D. Dobson & Dobson, 2009).

It is possible that the engagement in, or effectiveness of, behavioural strategies is subject to interactions with an individual's explanatory style. This proposition is described in Chapter 8; however a prior understanding of theories of behavioural activation is pertinent. Behavioural activation is an approach that has fallen across both of the above-mentioned categories in the way it has been conceptualised. The history of its conception and the different theories influencing the approach are presented.

Definition, history, and theories of behavioural activation

Behavioural activation is a treatment approach that involves encouraging individuals to increase engagement in their life events (Martell, Addis, & Jacobson, 2001). It is a behaviour analytic approach where the focus is on the consequences of behaviours and the context in which they occur (Martell, 2008). There has long existed a controversial notion that depression can be treated effectively with behavioural techniques that have been considered to be relatively straightforward (Martell et al., 2001). For many

decades, behavioural psychologists such as Lewinsohn and Ferster (Ferster, 1973, 1981; Lewinsohn, 1974; Lewinsohn et al., 1980) have published theories of depression and developed relevant treatments. These early behavioural theories share the view that depression is a collection of responses arising out of a reduction in positive reinforcement rates and a rise in avoidance behaviours within the individual's repertoire (Martell et al., 2001). It has been argued that depression is a field deemed particularly appropriate for behavioural approaches to psychological research due to the variety of reduced behaviours characteristic of this disorder (Ferster, 1973). However, other common symptoms of depression, such as feelings of guilt, do not easily lend themselves to a behavioural approach. Conversely, a CBT approach takes into account all of the common symptoms of depression.

An argument stemming from what has been coined the "cognitive revolution" (Dember, 1974) was that behaviourism is untenable because thoughts have a greater influence on behaviour and mood than environmental events (Martell et al., 2001). A nonmediational approach was too simplistic to account for the complexity of human behaviour (K. S. Dobson & Dozois, 2001). It may be helpful to consider an example portraying the differing perspectives. From a purely behavioural standpoint, a complaint is a type of avoidance or escape activity because it has previously been successful in removing aversive stimuli (Ferster, 1973). An individual may complain about the poor service at a restaurant, for instance, because in the past this complaint has been reinforced by an improvement in service, an apology, or compensation. On the other hand, from a CBT standpoint, it would be conceivable that the individual complained due to their interpretation of this poor service. If the individual held the belief that "restaurant owners should value their customers" then poor service could lead them to feel angry and have the desire to complain regardless of the potential outcome.

By the early 1980s, and as a result of the cognitive revolution, CBT became the most popular form of treatment for depression (Martell et al., 2001). Despite the cognitive revolution, behavioural activation was not abandoned. The activity scheduling techniques of Lewinsohn and colleagues (Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972) were being utilised in early CBT for depression formulations (A. T. Beck, 1976), although the focus was on improving the content of beliefs (Martell, 2008).

Beck and colleagues' (1979) treatment manual (*Cognitive Therapy of Depression*), cited previously, included a chapter on behavioural techniques. Jacobson and colleagues (1996), discussed in detail later in this chapter, analysed the separate components within CBT for depression and as such their study included a behavioural activation treatment condition. The successful outcomes associated with this treatment condition led to behavioural activation being repackaged as a stand-alone treatment approach for depression (Jacobson, Martell, & Dimidjian, 2001; Martell et al., 2001). In other words, behavioural activation is currently considered both a component of CBT and a stand-alone therapy in its own right (Martell et al., 2001). Furthermore, the findings of Jacobson and colleagues (1996) also inspired the development of a *Brief Behavioral Activation Treatment for Depression* (Lejuez, Hopko, & Hopko, 2001; Lejuez, Hopko, LePage, Hopko, & McNeil, 2001). Researchers (Dimidjian, Martell, Addis, & Herman-Dunn, 2008) have recently declared that Beck and colleagues made a significant contribution to the behavioural activation field, stating that, along with Ferster and Lewinsohn, they have influenced the current conceptualisation (Martell et al., 2001) of behavioural activation as a stand-alone approach. However, theoretical distinctions mean the way in which CBT proponents conceptualise these techniques differs from that of behavioural proponents. Specifically, the primary goal of a behavioural therapist is behaviour modification, whereas the primary goal of a cognitive therapist is cognitive change.

Beck and colleagues (1979) state that through behavioural activation, cognitive change can occur when negative ideas are challenged. In fact, these authors clearly state that behavioural activation homework assignments are designed with this purpose in mind (Addis & Jacobson, 2000). It could be argued that behavioural activation works in a similar way to behavioural experiments. This idea is encapsulated well by the following quote:

> "It is possible that even if maladaptive thinking plays an important role in the etiology and maintenance of depression that behavioral activation is an especially efficient way of changing those beliefs (even without paying any explicit attention to them)" (Hollon, 2001, p. 272).

In other words, despite not explicitly attending to beliefs, engaging in activity may produce the desired effect of challenging maladaptive thinking (Hollon, 2001). The client may realise that their initial assumptions of being ineffective at or unsatisfied by everyday activities were incorrect, leading to changes in their beliefs about themselves, their world, and their future.

As stated earlier, the participants in the current project were receiving CBT for depression, with Beck and colleagues' (1979) publication serving as the overall treatment manual. Consequently, it would be useful to further outline the approach and associated theoretical assumptions, and review the empirical background of behavioural activation in the context of CBT for depression.

Behavioural activation as a component of CBT for depression

Many clients enter therapy with a goal to resume activities that they previously engaged in, or to experiment with different activities in the interest of enriching their lives (J. S. Beck, 1995). The importance of behavioural activation is especially pertinent for clients who are inactive (A. T. Beck et al., 1979; J. S. Beck, 1995), a common characteristic of depressed clients. In CBT for depression, the early stages of therapy often centre on the restoration of premorbid functioning, particularly for those who are severely depressed. CBT is based on the cognitive model of depression which argues that clients believe they are now incapable of carrying out the functions of their various roles in life, and they have lost hope that previously enjoyed activities will bring satisfaction. The reduced activity level fuels clients' beliefs in themselves as ineffectual and a vicious cycle emerges leading to immobility. The therapist aims to engage clients and encourage them to counteract their withdrawal and partake in constructive activities (A. T. Beck et al., 1979) in accordance with their individualised cognitive conceptualisation.

Consequently, one of the earliest interventions in working with depressed clients involves activity scheduling. The first step of activity scheduling entails determining how clients typically spend their time. It is from there that the therapist and client work together to understand how the client's mood fluctuates with activity. They can also gather ratings of mastery (or sense of accomplishment) and pleasure, evaluate progress

towards goals, and schedule appropriate activities that may be helpful for the client. By concentrating on restoring these former activities, clients may begin to see that their beliefs were incorrect, that they do have the ability to carry out previous functions that were once important. This challenges clients' pessimism and the discouragement that contributed to their restricted motivation and immobility, leading to a restoration of their satisfaction and self-esteem (A. T. Beck et al., 1979). Beck and colleagues (1979) assert that behavioural techniques can be thought of as experiments that are able to test the validity of negative ideas, such that when these ideas are contradicted, cognitive change may occur.

Cognitive theory and the associated process outlined in Beck and colleagues' (1979) publication has guided the practice of behavioural activation for thirty years. Despite the fact that the behavioural activation approach has been practiced therapeutically for at least three decades, it is only recently that there has been a growing literature demonstrating the value of this approach in the treatment of this client group (Dimidjian et al., 2006; Dimidjian et al., 2008; Gollan, Gortner, & Dobson, 2006).

Empirical support for behavioural activation

There has been a recent resurgence in the frequency of published studies examining behavioural activation treatments (Barrera, 2009). Numerous studies are relevant in consideration of the importance of behavioural activation in the treatment of depression, although some are more seminal than others. A brief summary and critique of relevant research is presented in order of increasing relevance to the current project. This is followed by a more extensive critique with an emphasis on studies particularly relevant to this research.

Comparisons of cognitive behaviour and behavioural therapies

There have been various studies comparing cognitive behaviour therapies of depression with behavioural ones (Rehm, Kaslow, & Rabin, 1987). The data from some of these studies have led the respective researchers to conclude that comparative findings can be obtained between cognitive behaviour and behavioural therapies. One such study (Zeiss, Lewinsohn, & Muñoz, 1979) will be discussed in Chapter 7 in relation to

mechanisms of change in CBT for depression. In brief, Zeiss and colleagues (1979) compared the effects of three different treatment modalities delivered to depressed outpatients; one modality focused on interpersonal skills, a second focused on cognitions, and the third modality focused on pleasant events. A second study (Rehm et al., 1987) compared cognitive versus behavioural targets in a therapy program with depressed women. The therapy was delivered in group format and based on a conceptualisation of depression as a cluster of self-management behaviour deficits, aptly labelled a self-control program. The behavioural target therapy focused on increasing particular overt behaviours, whilst evaluative self-statements were the focus of the cognitive target therapy. A combined therapy included both of these elements. Event schedules were used to measure both overt behaviours and cognitions, using 40 pleasant and unpleasant activities and 40 positive and negative cognitions respectively. A third study (Scogin, Jamison, & Gochneaur, 1989) compared the efficacy of behavioural bibliotherapy with cognitive bibliotherapy in the treatment of older adults showing depressive signs of mild to moderate severity. In each experimental condition the participants were asked to read a self-help book of that treatment modality (either behavioural or cognitive), with progress monitored via phone calls. A delayed treatment control condition was compared with the two experimental conditions.

With regard to the findings of these studies, Zeiss and colleagues (1979) found that all three treatment modalities led to significant declines in depression severity. Similarly, Rehm and colleagues (1987) found that all conditions showed significant and equivalent improvements in depression. Furthermore, outcome measures relating to the target variables showed equivalent improvements across conditions (Rehm et al., 1987). Finally, the findings of Scogin and colleagues (1989) supported the efficacy of both forms of bibliotherapy in that they were superior to the delayed-treatment control condition, and gains were maintained after six months. There were no differential effects between the two experimental conditions. These researchers also found evidence of cognitive changes alongside depression changes but no effects relating to pleasant activity engagement (Scogin et al., 1989).

The latter three studies provide support for the utility of behavioural interventions such as activation. In fact, they suggest that techniques such as increasing pleasurable activities can be just as effective in alleviating depression as approaches designed to

specifically modify cognitions. However, as will be discussed further in Chapter 7, they do not provide much insight into the mechanisms involved in the efficacy of behavioural activation. Cognitive theory states that activation challenges beliefs, and even researchers from other perspectives have suggested that cognitive change could be an underlying mechanism of behavioural methods (Dimidjian et al., 2006). The data of Scogin and colleagues (1989) supported the idea that cognitive change accounts for the efficacy of behavioural approaches, but offers no indication of how this might occur. It is possible that exposure to positive reinforcement contingencies is helpful in alleviating depression, thereby supporting a behavioural perspective. It is equally conceivable that exposure to these contingencies are more likely to be beneficial if they serve to challenge negative predictions, thereby producing cognitive change. For instance, perhaps the mere act of reading a book, regardless of the specific content, was enjoyable or provided a sense of mastery or hope for participants in Scogin and colleagues' (1989) study. A cognitive behaviour perspective, in contrast to a strictly behavioural perspective, appears to better acknowledge the complexity that may be surrounding these variables and their interaction, due to the focus on cognitive mediation.

Empirical support for behavioural treatments of depression was found in a metaanalysis conducted recently (Ekers, Richards, & Gilbody, 2008). The authors concluded that behavioural therapies obtain outcomes equal to cognitive behaviour therapies. However, their research explored behavioural treatments in general, as opposed to targeting a specific approach such as behavioural activation (Martell et al., 2001) or the behavioural activation component of CBT (A. T. Beck et al., 1979). The findings are therefore confounded by the fact that it is difficult to determine the extent to which the behavioural therapies reviewed were strictly behavioural in nature. In other words, varying degrees of cognitive mediation may have been occurring during the therapy process. Another recent metaanalysis specifically examined behavioural activation treatments, and similarly found no differences between behavioural activation and CBT, in terms of their effectiveness in the treatment of depression (Mazzucchelli, Kane, & Rees, 2009).

While the abovementioned studies clearly support the utility of behavioural treatments of depression, including behavioural activation, some research suggests that the methodology employed in many randomised controlled trials is not stringent enough to

provide reliable evidence, in terms of explorations of empirically supported approaches (Öst, 2008). When lower quality studies are included in metaanalyses designed to examine psychotherapy effects, the effect sizes can be overestimated. This was found to be the case in another recent study exploring psychotherapy effects for adult depression (Cuijpers, van Straten, Bohlmeijer, Hollon, & Andersson, 2010).

Other studies, described next, have also conducted comparisons between cognitive behaviour and behavioural approaches. They differ from studies previously outlined in that they had the specific objective of testing Beck's cognitive theory of change. As a consequence, they have greater relevance to the current project. These studies are also relevant in terms of the history of behavioural activation for depression. A summary followed by a critique of these studies is presented.

Summary and critique of the component analyses

Two studies (Dimidjian et al., 2006; Jacobson et al., 1996) have analysed the components of CBT for depression to determine their relative efficacy. Dimidjian and colleagues' (2006) study was a replication of Jacobson and colleagues (1996). For both of these studies, follow-up data collected over two years were used to explore the relapse prevention potential of the treatment components, and the findings have been published (K. S. Dobson et al., 2008; Gortner, Gollan, Dobson, & Jacobson, 1998).

Jacobson and colleagues (1996) included three treatment conditions in their study; the first treatment condition consisted solely of behavioural activation, the second included a combination of behavioural activation and modification of automatic thoughts, and the third treatment condition consisted of full CBT (behavioural activation, modification of automatic thoughts, and core schema work). The authors found that patients treated exclusively with behavioural activation received just as much benefit as those who were treated with full CBT. Across conditions and across measures the outcomes were reported to be relatively analogous.

The second study (Dimidjian et al., 2006) was developed to replicate and extend Jacobson and colleagues' (1996) component analysis research. Part of the extension included the utilisation of the stand-alone treatment of behavioural activation for

depression (Jacobson et al., 2001; Martell et al., 2001) which, as previously discussed, was inspired by Jacobson and colleagues' (1996) study, plus the corresponding follow-up study (Gortner et al., 1998). The replication study compared this "expanded" model of behavioural activation with CBT as well as with antidepressant medication. Among those patients with higher levels of depression, behavioural activation and antidepressant medication achieved comparable results. Further to this, both of these treatment conditions were demonstrated to be more effective than the CBT condition (Dimidjian et al., 2006).

Jacobson and colleagues (1996) had argued that their findings have implications for depression's theory and its treatment, a contention that became the topic of debate. In terms of implications for depression's theory, an often-cited conclusion from these studies is that they pose some challenge to cognitive theory which stipulates that treatment approaches *directly* targeting cognitions are necessary for treatment response. According to the treatment manual (A. T. Beck et al., 1979), for behavioural techniques to be applied successfully, attention should still be paid to the client's thoughts and feelings relating to behavioural change. Consequently, it has been implied that the findings of these studies do not support this stipulation, but instead suggest that behavioural techniques alone may be sufficient (Dimidjian et al., 2006).

However, the extent to which therapists attended to cognitive phenomena is unknown. The four therapists in Jacobson and colleagues' (1996) study were cognitive therapists with between 8 and 12 years experience practicing CBT, and while procedures were used to monitor protocol adherence, it is difficult to conceive of these therapists offering no attention to cognitive phenomena within the behavioural activation condition. In fact, the condition included techniques such as cognitive rehearsal which involves the client imagining carrying out activities in order to identify potential obstacles. It is not surprising that these techniques are included, given the fact that the condition was based on Beck and colleagues' (1979) behavioural activation component, through which cognitions are targeted regardless of whether that be directly or indirectly. In this light, an attempt to dismantle CBT components is rendered redundant. In fact, cognitive theory (A. T. Beck et al., 1979) states that thoughts, feelings, and behaviours are stringently linked, implying that it is impossible to measure the relative impact of one

element on another. Similar points have been raised in a recent commentary (Rehm, 2009) which reviews the component analyses, focusing primarily on the Jacobson and colleagues (1996) study.

Regardless of being able to separate components in terms of targets of intervention, the authors of these component analyses remain unable to comment on what factors were responsible for therapeutic gains. It is possible that cognitive changes were responsible for the treatment gains regardless of the method employed. The data from the replicated study (Dimidjian et al., 2006) were unable to address whether behavioural activation indirectly targeted cognitions, but the authors did point out the possibility that cognitive change was an underlying mechanism. The findings of the earlier study (Jacobson et al., 1996) actually support the notion that activation produces cognitive change, as clients within all conditions showed improvements in their explanatory style and decreases in negative thoughts.

In the Dimidjian and colleagues (2006) study, it is noted that the differential effects were only found amongst those with higher levels of depression severity. Whilst on the one hand this confirms the importance of considering initial severity in treatment outcome analyses, it also has further implications regarding the critique of these component analyses. It is precisely these clients with high depression severity levels for whom behavioural activation is indicated, according to Beck and colleagues (1979). Overall, there does not appear to be any evidence amongst these component analyses that is able to discredit Beck's cognitive theory. In fact, it can be argued that they provide further support for his approach.

Follow-up data of the component analyses: Relapse prevention

Two additional component analyses (K. S. Dobson et al., 2008; Gortner et al., 1998) were conducted using follow-up data of the earlier studies collected over two years, as mentioned previously. These were to further test the cognitive theory of change due to its supposition that modifying underlying depressive schema should be of greatest value in the prevention of relapse (Gortner et al., 1998). Indeed a review of research (Hollon, Shelton, & Loosen, 1991) found CBT to be superior to pharmacotherapy in terms of relapse prevention. However, the authors of the earlier follow-up study (Gortner et al.,

1998) concluded from their results that the complete CBT package did not produce better relapse or recurrence potential than the other two components. They pointed out that those in the behavioural activation group received behavioural activation treatment for longer than all other participants. As such, they can only conclude that the addition of cognitive techniques following behavioural activation provides no further benefit than continuing with more behavioural activation over the same period of time (Gortner et al., 1998). The more recent follow-up study (K. S. Dobson et al., 2008) found significant differences for CBT in comparison with medication withdrawal, in favour of CBT for preventing relapse. In terms of behavioural activation, the study found nonsignificant trends suggesting that, compared with medication withdrawal, the psychosocial approach held more promise for enduring effects (K. S. Dobson et al., 2008). They estimated that within nine months, the cost of continued pharmacological treatment would surpass the cost of an acute phase of psychotherapy. Given it is common for pharmacological treatment for depression to continue indefinitely, the cost savings of psychotherapy as an alternative could be substantial (K. S. Dobson et al., 2008).

It is possible that comparisons between different psychotherapy modalities could also reveal cost advantages for some over others. The suggestion that behavioural activation alone may be sufficient in the treatment of depression is at the crux of the treatment implications the authors of these component analyses have alluded to. On the assumption that behavioural activation alone is just as effective as a complete CBT package, it could be argued that the treatment of choice for depression should be the former approach on account of parsimony. Behavioural activation alone may be considered a more parsimonious approach than full CBT, and as such therapists would require less training and psychotherapy could become less costly (Jacobson et al., 1996). This possibility appears to have inspired the further interest in behavioural activation that has occurred since that time; although some proponents of behavioural activation imply that, in effect, it may not be more parsimonious than CBT approaches to the treatment of depression (Barrera, 2009). As with CBT, compelling research into mechanisms of change in behavioural activation is now required to explore the validity of these various assumptions.

Summary

There is reason to believe that behavioural activation is helpful in the treatment of depression, hence it appears pertinent that clinical attention is paid to the activity of depressed clients. The findings of the four component analyses outlined provide support for the value of behavioural activation, despite the lack of evidence as to why it is efficacious and how it creates change. Irrespective of the component analyses, Beck's cognitive theory and its associated CBT approach retains its standing. In fact, there is evidence to suggest that behavioural activation was responsible for cognitive change, thereby providing support for cognitive theory and suggesting the futility of separating CBT components along these divisions. Furthermore, additional evidence confirming the relapse prevention potential of CBT has been obtained (K. S. Dobson et al., 2008). Overall, engagement in activities is an important element in the treatment of depressed clients.

While it would appear clear that behavioural activation is useful in the treatment of depression, there is a lack of clarity around which types of activities should be targeted. The following chapter reviews the behavioural activation literature that is relevant in this regard.

CHAPTER 6: Behavioural Activation in the Context of Activity Type

Two key issues appear to have been overlooked in the behavioural activation literature to date. First, many of the studies within the behavioural activation field, particularly early studies, have focused on pleasant activity engagement, however it remains unclear whether other types of activity would be revealed to be significant as well. For example, mastery-related activities are scheduled within CBT for depression, as mentioned previously, yet unlike pleasant activities it appears there has been no research exploring their utility. Second, it is unclear whether activity level itself is the most noteworthy variable, or whether the qualitative characteristics of activities are at the root of their worth. In other words, it would be helpful to understand whether engaging in increased activity is useful in its own right, regardless of the activity, or whether certain types of activity, or the consequences of certain types of activity, are responsible for the effectiveness of behavioural activation. Notwithstanding the lack of clarity surrounding these issues, there have been some relevant findings in these areas.

Engagement in pleasant activities

Research has found that depressed individuals experience fewer instances of positive reinforcement (e.g., Lewinsohn & Amenson, 1978; Lewinsohn, Youngren, & Grosscup, 1979) and it is assumed that positive reinforcement can be largely accounted for by pleasant events (Lewinsohn & Graf, 1973). Studies have supported an association between depressed mood and lower pleasant activity engagement (Grosscup & Lewinsohn, 1980; Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972) and therefore behavioural theorists have deemed increasing pleasurable activity as important in the treatment of depression. Indeed some research has found that increasing pleasant activities is associated with reductions in depressed mood (Harmon, Nelson, & Hayes, 1980). However, other research (K. S. Dobson & Joffe, 1986; Hammen & Glass, 1975) did not support the association between depressed mood and pleasant activity engagement and argued that the relationship between depression and activity is more complex. Whilst a behavioural perspective focuses exclusively on environmental consequences, a cognitive behaviour perspective also considers the way an individual perceives and evaluates those consequences (Hammen & Glass, 1975; Mahoney, 1974).

From this standpoint, dysfunctional evaluations account for depression as opposed to reduced levels of positive reinforcement (Hammen & Glass, 1975), and behavioural change on its own may not be sufficient to reduce depression levels (K. S. Dobson & Joffe, 1986).

A recent study (Gollan et al., 2006) explored patient characteristics to determine their relative contribution to depressive relapse following CBT. The data came from the Jacobson and colleagues (1996) component analysis, and the follow-up study (Gortner et al., 1998), previously discussed. Behavioural activation was examined, in addition to personality patterns and negative cognitive style. Behavioural activation was measured using the *Pleasant Events Schedule* (PES; MacPhillamy & Lewinsohn, 1982) which evaluates not only the frequency of participation in a variety of activities, but also the degree of pleasure and enjoyment experienced via the activities. When analysed separately, the authors (Gollan et al., 2006) found that lower pleasure ratings were predictive of higher relapse risk. There were a number of limitations in Gollan and colleagues' (2006) study that restricted the authors' ability to make firm conclusions. For example, they had no control group and as such spontaneous recovery may have influenced relapse rates. There is also a possibility that some participants sought further treatment which could have influenced their relapse rates (Gollan et al., 2006).

Further limitations of Gollan and colleagues' (2006) study pertain to the broader depiction of major shortcomings in the field overall, specifically in terms of the first key issue stated at the beginning of the current chapter. To recapitulate, the behavioural activation literature has been unable to reveal whether, rather than pleasant activities, other types of activity are important. This issue is elaborated upon in the following sections. In doing so, further reference is made to Gollan and colleagues' (2006) study. It should be noted that the intention of this continued reference to Gollan and colleagues (2006) is not to highlight this as a seminal study, but merely to exemplify and offer context regarding inadequacies of the literature in general.

Engagement in mastery-inducing activities

Whilst behavioural theorists have suggested that positive reinforcement can be largely accounted for by pleasant events (Lewinsohn & Graf, 1973), cognitive theory

(A. T. Beck et al., 1979) suggests that both mastery and pleasure are important factors to consider with behavioural activation. In fact, mastery activities are sometimes considered more important because in addition to creating a mood elevation, mastery can improve self-efficacy (D. Dobson & Dobson, 2009). It is more likely that clients will attribute success to themselves and achieve a heightened sense of control following mastery activities in comparison to pleasurable activities. Furthermore, starting to complete necessary tasks can lead to a reduction in the feeling that many clients have of being overwhelmed by their situation (D. Dobson & Dobson, 2009).

Gollan and colleagues (2006) used the PES to measure behavioural activation; hence whilst they may have found evidence suggesting that satisfaction associated with activities is important, their findings relate exclusively to engagement in potentially pleasurable activities and the corresponding satisfaction from that engagement. In other words, the instrument is only actually measuring one element of the activation approach and does not measure the sense of accomplishment or mastery that may be associated with various activities. Current approaches to activity scheduling in CBT incorporate the frequency of activities as well as mastery, pleasure, and mood ratings. Whilst some clients would derive satisfaction from engaging in pleasurable activities, other clients may be more satisfied if they achieve a sense of accomplishment. This may be contingent on clients' beliefs regarding certain activities, in addition to other individual differences. This raises another fundamental consideration amid research in this area.

Client beliefs and individual differences

Research relying on instruments such as the PES is restricted by the fact that these instruments are unable to take into account client beliefs relating to particular activities, and likewise cannot take into account individual differences with regard to the types of activities that may lead to a sense of mastery or pleasure. For example, it is not uncommon for depressed clients to believe that unless they have accomplished tasks, they do not deserve to enjoy themselves (A. T. Beck et al., 1979). For an individual with this belief it may not be as clinically useful to schedule pleasurable tasks prior to mastery-related tasks unless this belief has been addressed in the first instance. In this case the client may be compliant and engage in "pleasurable activities" yet not actually derive any pleasure from them. Instead they could feel an elevated sense of guilt as a

result of not spending that time doing something they consider useful. Thus it appears very likely that achieving a sense of mastery or pleasure is contingent on beliefs or interpretation of that engagement or task.

Further to this, the type of activity that produces some form of satisfaction may be completely different from one individual to the next, depending on their beliefs, goals, and desires. Cognitive theory assumes that for behavioural activation to be successful, beliefs about tasks and the engagement in them need to be considered. A similar point pertaining to individual differences has been raised by the developers of the expanded behavioural activation approach (Martell et al., 2001); their assumption is that there is individual variability in what may need to be activated. Some clients may benefit from increasing pleasant events, others may require assertiveness training, and still others may need to reduce their time spent ruminating. They state that a careful functional analysis of an individual's behaviour in the context of their life allows for a targeted activation approach. This allows for an idiographic means of treatment rather than attempting to apply broad categories of activities that may or may not be pleasant or reinforcing (Martell, 2008).

Engagement in social interaction

It has been stressed thus far that qualitative factors in general, in terms of activity types in behavioural activation for depression, should be explored in more depth. In fact, pleasurable activities themselves can be broken down further to explore their specific content. Some researchers examined the content of pleasurable activities that were associated with depression and found that most of them entailed social contact (Lewinsohn & Graf, 1973). This suggests the importance, both theoretically and practically, of exploring the nature of activities because of the implications for aetiology and treatment (Lewinsohn & Graf, 1973). Positive interpersonal interactions are believed to be important for mood (Lewinsohn & Graf, 1973). Consequently, altering the range, level, and quality of interactions is often considered an important treatment goal (Lewinsohn & Libet, 1972).

It has been found that depressed individuals, in comparison to nondepressed individuals, are less skilful socially (Libet & Lewinsohn, 1973). They are less likely to offer positive feedback to, or receive positive responses from, other people (Lewinsohn et al., 1979). In this context, social skill refers to an individual's ability to obtain positive reinforcement during interpersonal exchanges, via their own behaviour. It also refers to their ability to avoid emitting behaviours that others, in behavioural terms, may punish or extinguish (Libet & Lewinsohn, 1973). Lacking these social skills may lead to failure in attaining available social reinforcement (Lewinsohn et al., 1979).

Similarly, research with university students found that leisure time with a partner (either romantic or platonic friend) was more satisfying if the participants perceived that their partner expressed positivity, and if good social skills were exhibited during the interaction (Flora & Segrin, 1998). Depressed individuals appear to find both of these elements of social interaction challenging, hence reduced satisfaction from social activities would likely lead to reduced engagement in such activities. In fact, negative social reactions appear to have a greater effect on depressed individuals, in comparison to nondepressed (Lewinsohn et al., 1979) hence they may be even more likely to withdraw from activities that require a degree of social interaction.

Overall, the lowered social skill of depressed individuals, and the less adaptive reinforcement contingencies that result, is suggestive of a reduced frequency of social interactions. A depressed individual may come to expect that social interactions will be unfulfilling, and therefore feel less motivated to engage in them. Indeed, research (Lewinsohn et al., 1979) has found depressed individuals to be less socially active than nondepressed individuals, and more likely to feel uncomfortable during social interactions. Studies exploring the influence of induced mood on activity type choices have also confirmed the significance of social activities, among other categories of activity type.

Induced mood and activity type choices

Two studies have been conducted with tertiary students in which the researchers induced different mood states, then subsequently measured preferences regarding engagement in different activities. Both studies had three mood induction conditions

(an elation group, depressed group, and a neutral condition) and moods were induced via reading positive and negative statements. The first study (Strickland, Hale, & Anderson, 1975) found that those in the elation condition showed a preference for social or active types of activities, whereas those in the depressed group preferred activities of a solitary or inactive nature. The second study (Cunningham, 1988) confirmed these findings in that those in the elation group were more interested in activities of a social and strenuous nature, when compared with those in the neutral group. Similarly, those in the depressed condition were less interested than those in the neutral group in social or strenuous activities, although they did not show a greater interest in nonsocial activities. Nevertheless, depressed mood was linked with the endorsement of passive and nonsocial activities such as taking a nap, sitting and thinking, and being alone.

While it is possible that demand characteristics may have influenced the participants' ratings in these studies, Cunningham (1988) took precautions against this potential bias. The fact that different moods were induced via reading positive and negative statements, and these mood states influenced subsequent activity choices, implies that cognitive mediation occurred during these two studies. Furthermore, despite the fact that tertiary students were the participants in these studies, the responses of participants in the depressed mood conditions may be considered similar to the psychomotor retardation and social withdrawal often observed in clinical depression (Strickland et al., 1975). Overall, the studies outlined throughout the current section have indicated that the nature of activities is an important factor to consider in the behavioural activation treatment of depression. The following section pertains to the second issue stated in the introduction to the current chapter; specifically, whether activity levels, or the qualitative characteristics of activities, are most important in behavioural activation.

Quantity versus quality in the efficacy of behavioural activation

There are scarcely any studies within the field of behavioural activation that are relevant to the issue of whether amount of activity, or qualitative elements of activity, are better determinants of change in CBT. The findings of Gollan and colleagues (2006), already discussed, have some relevance to this issue hence will once more form the basis of this discussion. Specifically, the authors found that data from the frequency subscale of the PES were not significantly predictive of relapse, nor were measures of total behavioural

activation (both pleasure and overall activity). Conversely, overall obtained pleasure, as measured via the PES pleasure subscale, was a significant predictor suggesting that activity level itself is not associated with relapse following CBT for depression, but rather that the important factor is the nature of the activity in terms of the satisfaction it brings to an individual client. The authors point out that these findings are in line with the behavioural activation model of Martell and colleagues (2001) previously described. Specifically, Martell and colleagues (2001) developed a contextual model of depression which states that it is the qualitative factors such as the satisfaction of events that are important in the maintenance of treatment gains.

Alternative interpretations of the findings, largely similar to the arguments previously raised, may exist. In Gollan and colleagues' (2006) study, it is possible that the reason activity level was not associated with relapse was because the particular activities were not important for many participants. Some participants may not have been engaging in a high frequency of pleasurable activities, but may have been engaging in a high frequency of other activities that were not being measured. It may be that the frequency of participation in other activities is important even if the frequency of pleasurable activities is not. Numerous other individual difference factors could also explain a lack of association between activity level and depression. Although it is common for depressed clients to reduce their level of activity, it is possible that some clients maintain what could appear to be a relatively busy lifestyle. For instance, if they are an individual who feels it is important to keep busy or if they have a particularly strong work ethic (Martell, 2008), their premorbid activity level may have been considerably high. In this case, the reduction in their activity level may be related to their depression, while their overall activity level may be unrelated, at least when grouped alongside other clients. Clearly the degree of depression severity may be an additional factor within this context. By and large, a simple explanation of the association between activity and depression may be unrealistic given the complexity of individual difference variables.

Assuming it is true that the frequency of activity does not relate to depressive relapse, it may be argued that moreover it is unlikely to relate to the onset or maintenance of depression. It is possible that reduced pleasure or enjoyment from activities plays a significant part in depression onset and maintenance in the same way it appears to relate

to relapse. These inferences cannot be argued with any certainty since the findings of Gollan and colleagues (2006) relate exclusively to depressive relapse and as such cannot be generalised to depression onset or maintenance. Risk factors for first episodes of depression may be different than those for subsequent episodes, although some research (Alloy et al., 2006) has suggested this is not the case, at least with regard to cognitive vulnerabilities of major depression.

Summary

Pleasant activity engagement is one way that behavioural activation has been measured, as will be evident from some of the studies described in the previous and current chapter. Research (Gollan et al., 2006) has indicated that qualitative factors, such as enjoyment, may be more important than quantity or frequency of activity engagement in predicting relapse of depression. If it were appropriate to generalise based on this finding, it may suggest that how often a depressed individual engages in an activity is not as important as the consequences of that engagement, whether that be a sense of mastery, pleasure, or any other consequence. The sheer lack of relevant research, coupled with the limitations of studies discussed, signify that researchers to date are unable to establish whether quantity of activity or qualitative factors of activity have more bearing in terms of depression. The possibility that quality may be the more important factor fits with some theories outlined (e.g., Martell et al., 2001). Certainly, increasing pleasure appears to be an important facet of behavioural activation and as such is useful to measure. However, measuring behavioural activation based solely on pleasurable activities appears to overlook other aspects of this construct that may be particularly valuable, hence does not appear to sufficiently encompass behavioural activation. The way in which activity and behaviour may be linked with cognitive change remains unclear. It would be particularly useful to understand the underlying mechanisms responsible for the success of behavioural activation, to support future direction and allow depressed clients to be helped in the most effective way. Numerous questions remain and there is clearly a need for future research in this critical area. A key theoretical principle of CBT for depression is that cognitive processes have a mediating role in the successful treatment of depression. The following chapter focuses on the evidence surrounding the role of cognition as a mechanism of change in CBT for depression.

CHAPTER 7: Cognitive Mechanisms of Change

There is a substantial body of literature showing the efficacy of CBT in the treatment of depression, therefore it is important to determine what processes are involved with its success (DeRubeis & Feeley, 1990; Whisman, 1993). Various factors are believed to be important in promoting therapeutic change, some of which are specific to particular treatment approaches, and others are known as nonspecific or common factors that are present across approaches (Wampold, 2001). Research has not only explored the process and outcome in CBT, but also numerous factors relating to clients and therapists, including the relationship or therapeutic alliance between clients and therapists. Unfortunately, despite the magnitude of therapy process research, a consistent picture has not yet emerged as to the vital elements of effective therapy (Addis & Jacobson, 2000; Bennett-Levy, 2003; DeRubeis et al., 1990; DeRubeis & Feeley, 1990; Whisman, 1993).

The current chapter is focused on potential cognitive mechanisms of change, including explanatory style, given its relevance to the current project. As described, the cognitive theory of change (A. T. Beck et al., 1979) argues that CBT should work by decreasing the negative thought processes characteristic of depression, and thereby alleviating the other symptoms. A number of studies have explored the relationship between cognitive change and depressive symptom change and have provided insights into the mechanisms involved. The previous two chapters have outlined evidence to suggest that behavioural activation can produce cognitive change. The current chapter outlines a selection of studies that have examined traditional CBT and the cognitive variables associated with depressive symptom reduction. The aim of the current chapter is to offer a brief contextual overview of cognitive mechanisms of change, to allow the role of explanatory style to be appreciated within this context.

Empirical support for cognitive mechanisms of change

Some research into mechanisms of change in CBT for depression has explored the specificity of treatment effects by comparing CBT with alternative forms of treatment. One example is a treatment outcome study conducted by DeRubeis and colleagues

(1990), in which CBT was compared with pharmacotherapy. Depression severity was measured in addition to four different types of depression-relevant cognition, to determine whether cognitive change was linked with subsequent change in depressive symptoms. The cognitive variables included depressotypic automatic thoughts, depressotypic underlying assumptions, general pessimism, and explanatory style. Of relevance is their measurement of explanatory style, having been measured using the same instrument used in Study 1, namely the Attributional Style Questionnaire (ASQ; Peterson et al., 1982; Seligman et al., 1979). For the CBT group, but not the pharmacotherapy group, the authors (DeRubeis et al., 1990) found that cognitive changes on measures of underlying assumptions, general pessimism, and explanatory style, between pretreatment and midtreatment, predicted depressive symptom changes between midtreatment and posttreatment. The authors argue that these cognitive constructs have a mediational function in terms of CBT, but that this function is not causally sufficient because the cognitive changes were unrelated to symptom improvement in the pharmacotherapy group. This suggests that different mechanisms of change may be responsible for improvement following treatment with medication (DeRubeis et al., 1990).

Other mechanisms of change research aimed to compare the cognitive components of CBT with the behavioural components. One study (Jarrett & Nelson, 1987) examined three components of CBT for depression, administering the treatment in a group format. The components explored were logical analysis, hypothesis testing, and self-monitoring, modelled on Beck and colleagues' treatment manual, *Cognitive Therapy of Depression* (A. T. Beck et al., 1979), as cited earlier. All of these components are designed to achieve cognitive restructuring however they do so in different ways (Jarrett & Nelson, 1987). Logical analysis involves using methods of logic and reasoning to challenge dysfunctional cognitions. Participants are taught to evaluate their thoughts by determining which are based on facts, and finding alternative thoughts to those that are dysfunctional. Hypothesis testing involves challenging these cognitions via behavioural experiments. Participants are taught how to put forward an hypothesis to test their thoughts empirically. They predict the outcome of the experiment, conduct the experiment, and later compare the outcome with their original prediction. Self-monitoring involves learning to identify and monitor dysfunctional cognitions and their association with emotion. Self-monitoring is taught first because it is a skill

required prior to evaluating cognitions (Jarrett & Nelson, 1987). The Diary of Dysfunctional Thoughts (A. T. Beck et al., 1979) is a tool commonly used for this purpose. The authors (Jarrett & Nelson, 1987) concluded that their findings support the efficacy of the logical analysis and hypothesis testing components of CBT, suggesting they are active ingredients in CBT for depression. However, a number of limitations prevented the establishment of firm conclusions. For example, volunteers were solicited as participants, the therapy was conducted over a short period of time (six weeks), the principal investigator also conducted diagnosis and therapy, and only one response mode (questionnaire data) was utilised (Jarrett & Nelson, 1987).

A second study (Bennett-Levy, 2003) explored two techniques used in CBT, namely behavioural experiments and automatic thought records. Behavioural experiments are a form of hypothesis testing, as described above. Automatic thought records are used to monitor and evaluate negative automatic thoughts to achieve cognitive restructuring, in other words conducting logical analysis. It has been hypothesised that these two techniques have their main effect on distinct cognitive subsystems (Teasdale & Barnard, 1993) through which information is processed at different levels. Automatic thought records access beliefs of a more intellectual nature, whereas behavioural experiments impact on a system that has extensive emotional links (Bennett-Levy, 2003; Teasdale, 1997). The study aimed to test Teasdale's theory to determine whether support would be found for this model. It was hoped that comparisons of these techniques would offer information regarding mechanisms of change (Bennett-Levy, 2003). Participants included two groups of postgraduate clinical psychology students ($n = 7$, $n = 12$) and a group of CBT practitioners ($n = 8$) attending courses in CBT. The participants practised the techniques on themselves and made ratings about resultant changes in beliefs and behaviour. Participants perceived behavioural experiments to be more effective than automatic thought records in bringing about these changes, due to the real life experience in testing out the beliefs. The study supported the notion that the two therapeutic techniques involve different internal processing modes (Teasdale, 1997). A number of limitations have prevented firm conclusions from being made. Most notably, there was no direct evidence that changes in beliefs and behaviour actually occurred due to the reliance on self-report data (Bennett-Levy, 2003). By and large, the study is only able to provide insight into the perceived efficacy of these techniques among trainees in

the field. Furthermore, it is quite plausible that trainees in CBT may be biased in their perception regarding the utility of these techniques. Therefore, the study provided little evidence pointing to the actual mechanisms of change in CBT for depression.

Each psychotherapy approach is designed to target the specific variables unique to that particular treatment modality, given the distinct theory guiding each approach implies that doing so will alleviate the symptoms. The previous two studies have attempted to explore specific CBT techniques to compare their effectiveness. However, some mechanisms of change literature argues that the efficacy of therapeutic approaches may not be related to these specific targets, but instead may relate to nonspecific variables that are characteristic of all therapies (Wampold, 2001). Some of these nonspecific variables shown to be important include a clear treatment rationale and framework that is understood and accepted by the client, the stimulation of emotional arousal during engagement with problems, and the reality testing of problematic beliefs (Kellogg & Young, 2008).

One study exploring specific versus nonspecific variables (Zeiss et al., 1979) compared three treatment modalities to determine whether improvements related specifically to the target behaviours of the interventions. Participants were depressed outpatients randomly assigned to therapy directed at cognitions, interpersonal skills, or pleasant activity. According to the results, improvements occurred across most variables for all participants regardless of treatment modality, with no modality impacting specifically on the most relevant targets of the intervention format. Zeiss and colleagues (1979) suggested that their results could be interpreted as support for a self-efficacy model (Bandura, 1977). The construct of self-efficacy has been briefly described in Chapter 1; however, in terms of mechanisms of change, Bandura's (1977) model argues that an alteration in personal efficacy is responsible for the effectiveness of therapy regardless of intervention targets. In this sense, Zeiss and colleagues (1979) implied that the success of each modality in their study may therefore be the result of improvements in self-efficacy by engaging in performance-based interventions.

However, despite proposing self-efficacy as a mechanism of change, Zeiss and colleagues (1979) also point out the possibility that the results could be interpreted from an alternative framework. For example, each intervention had the potential to increase

rates of positive reinforcement, hopefulness, or optimism about the future. It could be argued that whilst individuals may believe strongly in their ability, if they expect an unresponsive environment and therefore choose not to pursue their goals, they may be likely to remain depressed. In this sense, self-efficacy may not be able to account entirely for the study's results. Given the overlap between self-efficacy and hope with explanatory style, as outlined in Chapter 1, perhaps the more global construct of explanatory style may better account for the study's results. Regardless of the explanation, cognitive changes, such as decreases in negative and irrational thoughts, and increases in positive outlook, were obtained via each modality in the study, despite only being specifically targeted in one of the treatment groups. This is supportive of cognitive theory, in that the target of intervention is not particularly important as long as cognitive changes are identified (A. T. Beck, 1976).

Numerous other studies have found an association between change in depressive symptoms and change in cognitive variables. One such study (Garamoni, Reynolds, Thase, Frank, & Fasiczka, 1992) examined the internal dialogue of 32 outpatient clients receiving CBT for depression. Specifically, the authors were interested in the balance between positive and negative cognitions. They discovered that those clients who responded to CBT, as evidenced by the amelioration of their depressive symptoms, also showed an improved balance between negativity and positivity. This was not the case for nonresponders. Increasing positivity was found to be more important than reducing negativity, but overall the study suggested that achieving an optimal balance is a therapeutic mechanism of change in CBT for depression. However, covariation between depressive symptom change and change in cognitive variables does not provide sufficient evidence that cognitive change is an active ingredient in CBT for depression. Instead, cognitive change may be an epiphenomena and therefore consequence of depressive symptom change (Whisman, 1993).

The previously mentioned findings of DeRubeis and colleagues (1990) do not support this idea; if explanatory style change was merely a consequence of depressive symptom change, the magnitude of covariation between these two variables would not have been different for pharmacotherapy versus CBT (Whisman, 1993). In other words, the association between change in explanatory style and change in depression would have been the same, regardless of whether the client received pharmacotherapy or CBT.

Jacobson and colleagues (1996) examined the temporal relationship between changes in explanatory style and changes in depression severity, and found that improvement in explanatory style was linked with later decreases in depression severity for clients receiving behavioural activation. However, early changes in depression severity were not linked with later changes in explanatory style. Other findings relating specifically to explanatory style change via CBT are discussed further in the following section. Evidence supporting explanatory style as a mechanism of change within CBT for depression warrants attention insofar as it has direct implications for Study 1.

Explanatory style change via CBT

The reformulated learned helplessness theory contends that explanatory style is a cognitive style that remains relatively stable over time. Research (e.g., Nolen-Hoeksema et al., 1986, 1992; Seligman et al., 1984) has found support for this contention. Nevertheless, evidence suggests that the habitual ways in which individuals explain the cause of aversive events is receptive to change. For instance, attribution retraining has been used in several studies with children, leading to lasting decreases in their helpless behaviours related to cognitive tasks (e.g., Andrews & Debus, 1978; Chapin & Dyck, 1976; Dweck, 1975; Fowler & Peterson, 1981) and significant reductions in depressive symptoms (e.g., Gillham, Reivich, Jaycox, & Seligman, 1995; Jaycox, Reivich, Gillham, & Seligman, 1994). These studies also have links to a separate body of literature showing an association between explanatory style and achievement motivation, but this is not explored here because it is of little relevance to the primary focus of depression. Further to the attribution retraining studies, discussed above, there are therapeutic programs which are particularly relevant to a discussion of explanatory style change. Prevention programs have been designed using CBT techniques aimed towards increasing optimism and lowering or preventing depression (Schueller & Seligman, 2008). These programs have been based on exercises contained within *Learned Optimism* (Seligman, 1991), a self-help book focused specifically on improving one's explanatory style.

The *Penn Resilience Program* (PRP) and APEX program were developed for delivery in a group format for middle school children and university undergraduates respectively (Schueller & Seligman, 2008). Research (Gillham, Brunwasser, & Freres, 2008;

Gillham et al., 1995; Jaycox et al., 1994; Seligman, Schulman, DeRubeis, & Hollon, 1999; Seligman, Schulman, & Tryon, 2007) has shown these programs to be effective in improving explanatory style and reducing depressive symptoms. Given the research design of these studies (e.g., Seligman et al., 1999; Seligman et al., 2007) involving random assignment into groups, causality can be inferred such that teaching optimism is responsible for the reduction in depression (Schueller & Seligman, 2008).

Of particular relevance to Study 1 is research exploring explanatory style change in adult populations suffering from depression, and treated with Beckian CBT. In this light, it has been demonstrated that pessimistic explanatory styles can improve (become more optimistic) via CBT, reducing the severity of depressive symptoms at the same time. One study (Seligman et al., 1988) found a relationship between explanatory style and depression severity with both unipolar and bipolar depression. The unipolar sample received CBT, with cross-sectional analyses between explanatory style and depression severity occurring at intake, termination, and one year after termination. Significant correlations were found at each point with changes in explanatory style occurring in lockstep with changes in depression severity. The researchers concluded that the more optimistic participants' explanatory style became, the less depressed they were. However, the publication acknowledged the cross-sectional nature of the analyses and considered the various interpretations of these data (Seligman et al., 1988). Logically, it could be argued that the less depressed the participants became, the more optimistic their explanatory style became. Nevertheless, it was argued that a pessimistic explanatory style is a risk factor for depression, and was suggested that explanatory style change could be a therapeutic mechanism in CBT for depression.

Notwithstanding the fact that further robust support is warranted, the process by which explanatory style change leads to change in depression severity remains unclear. It is believed that optimism impacts on coping strategies, control beliefs (e.g., self-esteem and mastery), goal pursuit, and the prevention of catastrophic thoughts (e.g., Schueller & Seligman, 2008). In these ways, it may have beneficial consequences for well-being. In terms of behavioural differences, optimists are more likely than pessimists to use adaptive coping strategies or to pursue their goals. Adaptive coping strategies are linked with healthier emotional adjustment (Schueller & Seligman, 2008), and goal pursuit and achievement leads to happiness and a feeling of accomplishment

(Lyubomirsky, Sheldon, & Schkade, 2005; Sheldon & Elliot, 1999). Optimism is also able to inspire action because of the belief that the action will be effective (Schueller & Seligman, 2008). Indeed, cognitive theory (A. T. Beck, 1976) has suggested that the lack of activity characteristic of depression is related to motivational changes. It is argued that these motivational changes stem from the expectation of negative outcomes (or pessimism) that is likewise characteristic of depression. In other words, expecting to be unfulfilled or unsuccessful in an activity leads to reduced motivation to partake in that activity. Behavioural activation involves specifically targeting this inactivity. In doing so, it is expected that the prior expectations will be challenged and become more positive as a result.

An important consideration arising out of the literature on mechanisms of change in CBT is that the examination of behavioural changes has frequently been overlooked (Whisman, 1993). Behavioural activation is an area that has received limited attention in the literature, which is somewhat surprising given CBT includes both cognitive and behavioural components. The following section gives consideration to other important factors related to mechanisms of change research.

Mechanisms of change: Important considerations

The current chapter is focused on cognitive mechanisms of change, as opposed to various other factors that have been explored in the literature, such as the therapeutic alliance, and numerous therapist and client characteristics. In attempting to separate the literature along these divisions, it would appear easy to overlook alternative explanations for findings. For example, one study (Addis & Jacobson, 2000) explored the relationship between homework compliance and the degree to which the treatment rationale is accepted by the client. The goal of the study was to determine whether these variables are related, or whether each offers an independent contribution to change in CBT for depression. The data came from the Jacobson and colleagues (1996) study, although it is noted that the objectives were distinct from the earlier study, therefore the Addis and Jacobson (2000) study does not constitute a replication. The results of Addis and Jacobson (2000) indicated that each variable made separate contributions to change and together only accounted for 20% of treatment outcome variance, indicating the likelihood of multiple therapeutic change mechanisms (Addis & Jacobson, 2000). It is

possible that both homework compliance and treatment rationale acceptance are connected by a third variable, such as optimism. A client who is more optimistic may be more open to the treatment, which may also increase the likelihood of engagement in homework assignments (Addis & Jacobson, 2000). Optimism is, evidently, linked with goal pursuit (Schueller & Seligman, 2008). Thus, despite the fact that Addis and Jacobson (2000) focus on mechanisms of change relating to client characteristics and behaviour, rather than cognitive changes, the above suggestion regarding optimism is relevant. In other words, while the current chapter is focused specifically on cognitive mechanisms of change, even research that has not examined cognitive factors may be worthy of consideration. This suggestion regarding optimism also has relevance to the current project. In essence, one of the objectives of Study 1 is to explore the association between explanatory style, conceptually linked with optimism, and aspects of behaviour. This is similar to the above suggestion because of the implied link between optimism and homework compliance, homework compliance being one aspect of behaviour that could be important.

Clearly defining cognitive mechanisms of change appears to be a particularly arduous task given the remarkable complexity of depressive phenomena (Shelton et al., 1991). Furthermore, it is considered likely that these mechanisms are integrally intertwined with depressive symptoms (DeRubeis et al., 1990). In other words, the same psychological constructs involved in causing or maintaining depressive symptoms are the very mechanisms that need to be targeted for change to occur. For example, if a client holds the belief that he or she is a failure and this is an important factor maintaining the client's depressive symptoms, then it would make sense for treatment to focus on challenging this belief for positive change to occur. If, indeed, the variables are intertwined, this further complicates attempts to determine mechanisms of change because of difficulties distinguishing between cause and effect. However, it also suggests that the treatment target can be any of the variables that are intertwined, since change in one variable will influence the others.

Along similar lines, Whisman (1993) suggested that future research should consider interactive multidimensional models, as opposed to linear unidimensional models, in ongoing pursuit of the mechanisms of change. This is because it is unlikely that only one mechanism is responsible for creating change, but rather a few mechanisms interact

together to bring about positive outcomes. If there is remarkable complexity amid depressive phenomena, as stated above, then it is conceivable that there would also be remarkable complexity in the mechanisms involved in its alleviation.

Summary

There has been limited research of sufficient quality to create a compelling argument regarding the mechanisms of change within CBT for depression. This is likely to be related to the complexity involved in research of this nature, as discussed in the previous section. Nevertheless, research has provided some endorsement of cognitive theory's assertion that cognitive changes are important for a reduction in depression severity, despite the fact that limitations within most studies preclude firm conclusions. A review of mechanisms of change literature (Whisman, 1993) reported that support for cognitive change as a mediator in CBT was stronger for explanatory style than for any other cognitive phenomena. The findings of Seligman and colleagues (1988) and DeRubeis and colleagues (1990) in particular provide support for the suggestion that changing explanatory style is likely to be a therapeutic mechanism in CBT for depression (Schueller & Seligman, 2008; Seligman et al., 1988). These studies are especially relevant to the current project due to their sampling of depressed adult outpatients. However, further support is warranted, particularly in light of the fact that the process by which explanatory style change leads to change in depression severity remains unclear. A major limitation of the literature on mechanisms of change in CBT is the fact that behavioural changes have rarely been examined. This is surprising, particularly given the vast array of approaches used in cognitive behaviour therapies that are designed to target behaviour change. Study 1 aims to bridge this gap by considering the role of activities alongside links between explanatory style and depression. More specifically, a proposed model is described, which suggests an interdependent association between explanatory style, depression, and activity.

THE PRESENT STUDIES

CHAPTER 8: Study 1 Aims and Rationale

Overall aim and rationale

The overall objective of the present study is to explore interrelationships between explanatory style, depression severity, activity level, and activity type. Explanatory style research is important, because the manner by which individuals perceive causality is likely to impact on their perception about their roles in life and capacity to shape their environment, and hence their associated motivation and attempts to do this (Bell-Dolan & Wessler, 1994).

There has been a significant degree of research interest in the relationship between explanatory style and various outcomes. This has included both mental health, such as depression, and physical health (e.g., Dykema et al., 1995; Peterson, 1988). However, it has been argued that one of the major shortfalls of the literature to date has been the limited attention devoted to the actual mechanisms that link explanatory style with outcomes of interest (Peterson & Steen, 2001). It has been suggested that behaviour may be the most typical and solid means by which various adaptational outcomes link with explanatory style (Peterson & Steen, 2001). Researchers of the reformulated learned helplessness theory (e.g., Seligman et al., 1984) have suggested that determining the means by which explanatory style leads to depression would be a useful contribution to the literature. If behaviour is indeed a significant and plausible mechanism in this association, then this is a possibility that is worthy of exploration.

There does not appear to be any prior research to date that has specifically explored the relationship between explanatory style, depression, and activity level. However, there have been relevant findings in this area. Jacobson and colleagues (1996), as discussed earlier, attempted to separate and compare the effectiveness of the components of CBT for depression and obtained a number of interesting results. One of the findings that

had not been predicted at the outset of their research is of considerable interest to the present study. According to the data, explanatory style changes were more likely to predict decreased depression for clients in the behavioural activation treatment condition than for clients receiving full CBT. This finding was unexpected in terms of the cognitive theory of change imparted by A. T. Beck and colleagues (1979). This is based on the line of reasoning that was alluded to earlier, in that interventions directly targeting cognitions are necessary for treatment response. Nevertheless, it is of interest to the present study because it suggests that behavioural activation is an important mechanism in the relationship between explanatory style and depression severity. It appears as though clients who responded well to behavioural activation also changed their predictions in terms of their response to hypothetical future events (Jacobson et al., 1996). More specifically, and in line with the context of the present study, their explanatory style became more optimistic via behavioural activation. The present study proposes a framework that offers a potential explanation for this finding.

Proposed framework

The present study aims to bridge the gap between the two bodies of literature that have been summarised; namely, the explanatory style literature and the behavioural activation literature. First, it is clear that explanatory style and depression severity are associated, although exactly *how* they are related is not known. Second, there is evidence to suggest the utility of behavioural activation in the treatment of depression. However, exactly *why* it is useful is not known.

It is proposed in the present study that these three variables, explanatory style, depression, and activity, are related according to a reciprocal formulation. This is similar to a reciprocal interaction theory (Farber, 1963; Postman & Sassenrath, 1961) which proposes that awareness of reinforcement contingencies can be both a condition and a consequence of behaviour change (Bandura, 1969). In light of this proposed interaction between variables, reciprocal theories such as this appear to better explain divergent findings (Bandura, 1969). In fact, other researchers within the explanatory style or related fields have interpreted their results as suggesting that more complex reciprocal models may better explain links between cognitive styles and depressed mood (e.g., Golin et al., 1981; Gong-Guy & Hammen, 1980; E. W. Hamilton &

Abramson, 1983; Nolen-Hoeksema et al., 1992), or between explanatory style and physical illness (e.g., Peterson, 1988), than unidirectional causal ones. Figure 1 is a graphical representation of the present study's proposed model.
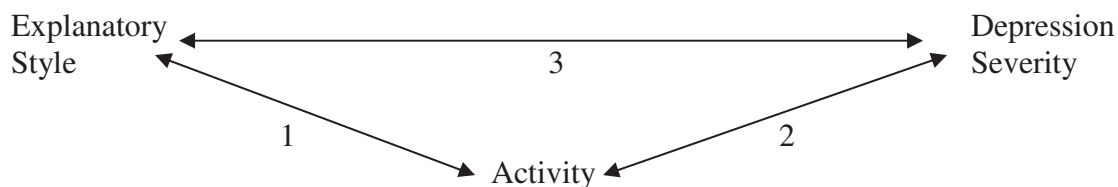
Explanatory   3   Depression
Style   Severity

                        1   2
                                              Activity

Figure 1. The proposed model; the reciprocal relationship between explanatory style, activity, and depression severity.

From examining the model globally, it can be seen that bidirectional arrows between all variables acknowledge the interrelated nature proposed by the model, in that change in any one variable can produce changes in others. As outlined above, the proposed model arose from a gap in the two bodies of literature described. Despite this gap in the literature, there exists other theory and research which is consistent with the model and hence implies its plausibility. In Figure 1, each bidirectional arrow, reflecting a path between two variables in the model, has been labelled for ease of reference. These pathways, or proposed associations, will be referred to in conjunction with a discussion of the aims and hypotheses of the present study. Prior to this, a discussion of the compatibility among theories addressed in Study 1 is presented. This provides further support for the proposed model, and for the compatibility between this model and well-known cognitive theories.

Compatibility of theories

It is noteworthy that the main theories examined in the current research project are particularly compatible with one another. The reformulated learned helplessness model is very compatible with Beck's cognitive model of depression (Persons & Rao, 1985). The internal–external dimension of the reformulated model is very similar to Beck's

(1967) cognitive theory which argues that depressed individuals have a tendency to attribute the causes of bad events to themselves, yet not assume responsibility for good events. Likewise, both the internal–external dimension of explanatory style and Beck's (1967) description of self-blame are similar to the intentionality construct examined in Gong-Guy and Hammen's (1980) study, discussed in Chapter 2. These constructs all share the idea that attributing blame to oneself for negative occurrences is linked with depression. Negative thoughts about the self are one facet of Beck's cognitive triad in his explanation of characteristic depressive thoughts; however the triad also includes negative thoughts, or expectancies, about the future. This is analogous to the stable–unstable dimension of explanatory style; attributing negative events to stable factors implies an expectancy that negative events will continue, thus a negative view of the future is apparent. The global–specific dimension of explanatory style could be likened to the third facet of Beck's cognitive triad, which states that depressed individuals have negative thoughts about others and the world in general.

Beck's theory also proposes that cognitions, behaviour, emotions, and physiology are interconnected, a concept that has come to be known as the *Five Part Model*, portrayed in Figure 2 (Greenberger & Padesky, 1995). The Five Part Model is a therapeutic tool used in CBT to help clients develop insight into these interrelationships. Ultimately, through the use of the Five Part Model, clients may learn which behaviours or thoughts have positive or negative influences on their emotions and bodily sensations. The proposed model, with its interrelated nature, is very compatible with Beck's cognitive theory and the Five Part Model. In this case, the relevant variables are subsumed under the former three categories. Explanatory style is a facet of cognition, activity is a form of behaviour, and depressed mood is subsumed under emotion. It is noted, however, that the measurement of depression severity is not purely a measure of mood. Other symptoms of depression are included in the measurement of depression severity, including the physiological symptoms acknowledged in the final category of Beck's theory.
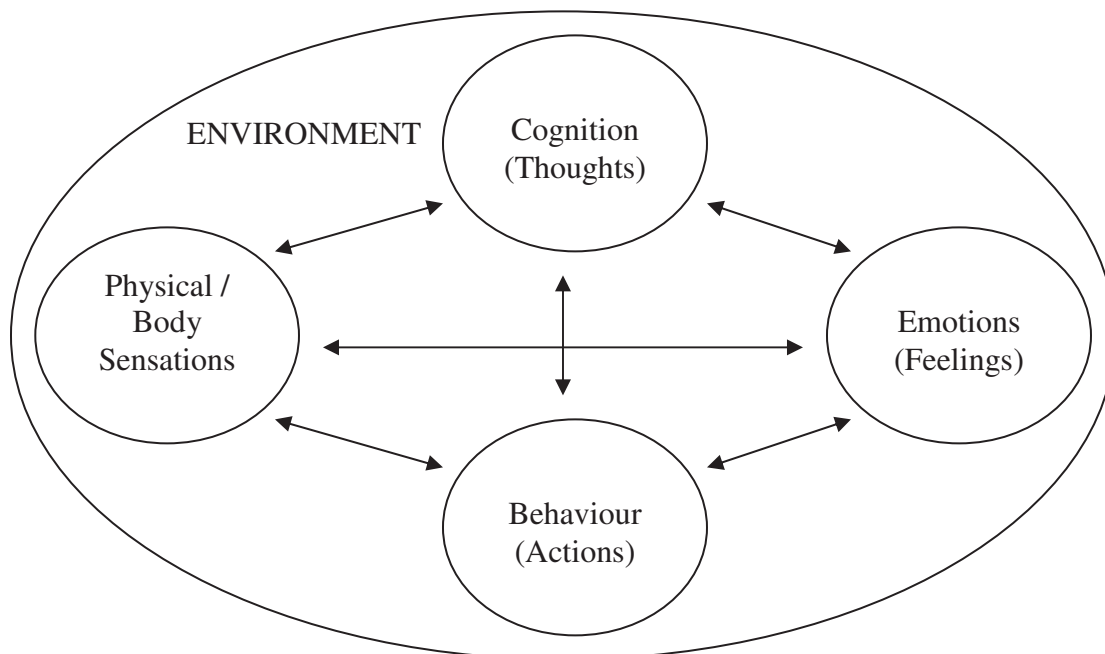
Figure 2. Example of Beck's *Five Part Model*, displaying the interrelationships between cognitions, behaviour, emotions, and physiology (Greenberger & Padesky, 1995).

The proposed model is also very compatible with the reformulated learned helplessness model, not surprisingly given it is essentially an extension of the model; the proposed model extends the reformulation by explicitly taking into account the role of activity, and by including bidirectional links between variables. Lowered response initiation, or passivity, is considered to be one of the helplessness deficits within learned helplessness theory (Nolen-Hoeksema et al., 1986), hence the inclusion of the role of activity is compatible with this.

The fact that the proposed model is compatible with popular and established cognitive behaviour theories of depression signifies that it is a useful adjunct to this critical body of literature. Although a great deal of research has been conducted to date in the area of depression, the serious implications of this mental illness denote the significance of continued advancement in this field. The aims of Study 1 were designed with this objective in mind.

Specific aims and rationale

An examination of the specific relationships within the model, signified by each bidirectional arrow, has been described. In doing so, supportive theory and research is discussed as a potential explanation for the association.

Path 1 in the model

The bidirectional arrow between explanatory style and activity fits with early theorists (e.g., Tolman, 1949) who, during a time when behavioural theory was predominant, argued that expectancies and motivation mediate the effects that reinforcement have on subsequent behaviour. In this case, it is argued that the effect of events in the environment on the subsequent activity of an individual is influenced by their explanatory style (which presumably determines their expectancies). Thus, it would be expected that explanatory style would influence activity.

An individual with a pessimistic explanatory style has a tendency to explain the cause of hypothetical events in a maladaptive way. It is presumed by learned helplessness theory that these individuals will maintain this pessimistic tendency in their explanations for future events. It could be argued that if individuals are predicting negative occurrences in their life, they will be less likely to put themselves in a position to face these events. In other words, a pessimistic individual may be less likely to engage in activity when compared with an optimistic individual because they perceive that their actions will lead to a negative outcome, resulting in less motivation to pursue that activity. This could promote the social withdrawal and reduced activity that is characteristic of depression, as will be discussed later. Further to this, information feedback may in turn modify expectations (Lewinsohn et al., 1979). In other words, recognising the consequences of behaviour (such as the resultant inactivity) can lead to changes in expectations. The social withdrawal and reduced activity could influence explanatory style, resulting in a maladaptive feedback loop. It is therefore argued that a reciprocal relationship also exists between these two variables. This leads to the first aim of the present study.

Aim 1

 To explore if there is an association between explanatory style and activity level.

The first aim of the present study is to explore whether an association exists between explanatory style and activity level. It was hypothesised that those with a more optimistic explanatory style at intake would have greater levels of activity than those with a more pessimistic explanatory style. Assuming this association exists, this finding would provide further support for the proposed model. Furthermore, it also has clinical implications in terms of behavioural activation. If it is possible for a clinician to predict via explanatory style which individuals will be less active at the beginning of treatment, they may be able to tailor their behavioural activation interventions to their client with a view towards promoting the best possible outcome.

Path 2 in the model

The bidirectional arrow between activity and depression severity is based on a proposal from the model which argues that reduced activity may lead to depression, and vice versa. Researchers (e.g., Hammen & Glass, 1975; Harmon et al., 1980) have pointed out that not only can activity influence mood, but the opposite may also be true. Mood and its associated cognitions can influence activity including the evaluation of that activity (Hammen & Glass, 1975). Despite the fact that depression itself is not merely a mood, it has long been acknowledged that depression leads to a reduction in activity which becomes perpetuating. It was argued above that lowered motivation to engage in activity, due to expectations of negative outcomes, could promote the social withdrawal and reduced activity commonly recognised in depression. The argument about reduced activity becoming perpetuating is in line with suggestions that involvement in activity leads to further activity, whereas inactivity generates further inactivity (Martell, Addis, & Dimidjian, 2004). Inactivity is common in depression and behavioural activation is an effective approach in its treatment. The fact that depression can be alleviated via treatment focused on increasing activity offers further support for the bidirectional arrows in this model. Overall, the proposed model of the present study is consistent with the above arguments. This leads to the focus of Aim 2, as outlined below.

Aim 2

   To explore if there is an association between depression severity and activity level.

The second aim of the present study is to explore whether an association exists between depression severity and activity level. It is hypothesised that clients with greater activity levels will score lower on depression severity than those with lesser activity levels. A previously outlined study (Gollan et al., 2006) suggests that activity level is not associated with depression severity. Nevertheless, further to the previously addressed limitations of that study (Gollan et al., 2006), its relevance to the present research is limited. The present study is concerned with the activity level of clients when they first present for therapy, as opposed to relapse following CBT for depression. It may be that activity level itself is related to depression severity at the beginning of therapy, but that different mechanisms are involved with relapse.

Path 3 in the model

The correlational link between explanatory style and depression severity is supported by the empirical body of literature described in Chapter 2. It is plausible that a maladaptive explanatory style directly influences depression severity, and equally plausible that a feedback loop exists such that depressed mood can influence attributions (Peterson et al., 1983). Given there has been a considerable amount of research supporting a link between explanatory style and depression severity, some researchers (Sweeney et al., 1986) have argued that further studies confirming this association would not be a particularly useful contribution to the literature. However, the relevance of previous literature to the present sample is limited. First, there have been no prior studies exploring this connection with an adult population in New Zealand, hence it would appear timely for this to occur. Second, a significant proportion of all relevant studies conducted worldwide have not used clinical data. These two points, regarding the population samples of research to date, are elaborated upon below. The discussion has implications for the present study and serves as the rationale for the third aim, to explore whether there is an association between explanatory style and depression severity in a clinical sample of adults in New Zealand.

The New Zealand context

Some research conducted in New Zealand is somewhat relevant to the objectives of the present study. One study (Nicholls, 1978) compared the causal attributions of Maori and Pakeha children in relation to academic performance. A second study (Chapman & Lawes, 1984) examined causal attributions in relation to expected and actual outcomes on an examination for School Certificate English. However, these studies did not specifically examine explanatory style or its connection with depressive symptoms, nor did they collect data to do so. A third study (Rodriguez & Pehi, 1998) directly explored the association between explanatory style and depressive symptoms, and as such it has been described in Chapter 2. However, the study explored this connection with a sample of school children in New Zealand, therefore it is considered unlikely that these findings can be generalised to a sample of New Zealand adults. Moreover, research (Nolen-Hoeksema et al., 1992) has suggested characteristic differences between adult and child explanatory style. A fourth study (Clarke & Singh, 2005) explored the relationship between pessimistic explanatory style, stressful life events, and the psychological distress of hospital doctors. Results suggested that pessimistic explanatory style mediates the relationship between stressful life events and psychological distress. Whilst the measure of psychological distress used in the study included depressive symptoms, it is unclear the extent to which these items accounted for the observed relationship.

In conclusion, the studies that have been conducted in New Zealand to date have only limited relevance to the present study. They have either used data from school children or hospital doctors, and only one of the studies has specifically explored the relationship between explanatory style and depression. Additionally, they have not used a clinical population, confirming further their limited relevance to the present study. Details regarding the importance of a clinical sample in research of this nature are presented below.

Rationale for using a clinical population

The use of a clinical population is important for a number of reasons. First, the nature of the learned helplessness model is directly relevant to depression. Second, the present

study has an additional focus on behavioural activation which is frequently used in the treatment of depression. Third, and perhaps most importantly, depression is one of the most common forms of mental illness in today's society, with serious impacts occurring at the level of the individual, family, and greater community. Because of the significance of depression in society, it is asserted that any advancement into the understanding of its mechanisms is fruitful. As previously alluded to, the arguments presented above serve as the key rationale for Aim 3 of the present study.

Aim 3

To explore if there is an association between explanatory style and depression severity with a sample of clinically depressed adults in New Zealand.

The third aim of the present study is to explore whether an association between explanatory style and depression severity exists in a population of New Zealand adults diagnosed with Major Depressive Disorder. It is hypothesised that those with a more optimistic explanatory style will have lower levels of depression severity than those with a more pessimistic explanatory style. This is a unique and relevant sample, and as such, any findings will offer a significant contribution to this literature base.

Paths 1 and 2 in the model

All of the above-mentioned aims and hypotheses have been described with reference to the proposed associations portrayed by the pathways of Figure 1. In summary, the first and second aims involve exploring whether activity level is associated with explanatory style or depression severity, or both. The third aim of the present study is determining whether explanatory style and depression severity are associated. The discussion of the proposed model, as it relates to Paths 1 and 2, has so far focused on activity from the perspective of frequency of behaviours, or quantity of activity (activity level). However, in addition to activity level, the present study was designed to explore *types* of activities, in the event that qualitative facets of activity are more important than quantity of activity. The discussion in Chapter 6, regarding behavioural activation in the context of activity type, provides a foundation for the rationale of an additional aim, as outlined below.

Aim 4

> *To explore if activity type is associated with explanatory style and/or depression severity.*

The fourth aim of the present study is to explore the connection between various aspects of activity type with explanatory style and with depression severity. Previously mentioned researchers (e.g., Martell et al., 2001) have implied that the nature of activity might be more important than activity level itself in terms of depression. If this were the case, certain types of activity would be expected to correlate with depression severity. However, there is a lack of research exploring these connections. If this contention were true, the proposed model would also imply that explanatory style may influence the type of activities engaged in, and vice versa. In other words, the pessimistic cognitions of depressed individuals may determine the type of activity they choose to partake in, which may further influence their explanatory style and/or depression severity. In summary, Aim 4 involves exploring whether explanatory style is associated with the types of activities that depressed individuals engage in, and/or whether the types of activities are associated with depression severity. To address Aim 4, type of activity has been broken down into different dimensions. The operationalisation, rationale, and hypotheses pertaining to these dimensions are described.

Active versus passive

The first dimension includes active versus passive activity. This dimension of activity type was discussed in Chapter 6 in terms of depressed mood induction and activity type preferences, with reference to two studies involving tertiary students (Cunningham, 1988; Strickland et al., 1975). The researcher was unable to locate any relevant studies conducted to date exploring these activity types among clinically depressed individuals. For the purposes of the present study, any activity requiring movement is considered active (such as walking or washing dishes) whereas passive activity is defined as those activities that do not require movement (such as reading or watching television). It is widely acknowledged that depressed individuals have a tendency to be less active and more passive in terms of their activity choices. In fact, passivity has been stated to be one of the most noteworthy features that characterises both learned helplessness and depression (Kilpatrick-Tabak & Roth, 1978). Participation in physical exercise is not

only beneficial for physiological wellbeing, it is also beneficial for mental wellbeing, and may be particularly important in depression (Daley, 2008). In line with the above discussion, it is hypothesised in Study 1 that higher rates of active forms of activity will be associated with lower levels of depression severity, and higher rates of passive activity will be associated with higher levels of depression severity. Similarly, the proposed model assumes that explanatory style plays a role in these associations. It is hypothesised that those with more optimistic explanatory styles will be more likely to engage in active forms of activity, whereas those with more pessimistic styles will be more likely to engage in passive activities.

Social versus nonsocial

The second dimension includes social versus nonsocial activity, defined as those activities that include the presence of others versus those that do not. Research discussed in Chapter 6 (e.g., Libet & Lewinsohn, 1973) has suggested that depressed individuals may have difficulty obtaining positive reinforcement in social situations, possibly due to lowered social skills, resulting in reduced motivation to engage in social interaction. Consequently, increasing the quantity and quality of interactions is deemed to be an important target for intervention (Lewinsohn & Libet, 1972). It is therefore hypothesised that those who engage in a greater frequency of social interactions will score lower on depression severity, and those who engage in a greater frequency of nonsocial activities will score higher on depression severity.

Other research (Anderson et al., 1983) has suggested that depressed people, akin to lonely people, are more likely to attribute interpersonal failures to internal and stable factors, such as deficits in their own abilities or traits. Conversely, those who are not lonely or depressed are more likely to ascribe to behavioural factors that can be altered, such as effort or strategy, when explaining interpersonal failures. If an individual attributes interpersonal failure to their own stable defects, it would seem likely that they would be easily discouraged and display deficits in their performance and motivation (Anderson et al., 1983). Cunningham (1988), discussed earlier, measured potential mediators of the link between mood induction and activity type preferences. Of relevance to the present study was the finding that expecting a positive outcome consistently mediated the association regarding interest in social and nonsocial

activities. Although not specifically measuring explanatory style, these two studies have indicated that similar constructs may be involved in links between depression and social interaction. Therefore, it is hypothesised that those with more optimistic explanatory styles will engage in a greater frequency of social activities, whereas those with more pessimistic styles will be more likely to engage in nonsocial activities.

Mastery and pleasure

The third dimension is concerned with frequency of mastery and pleasure ratings associated with activities. It is well known that depression is characterised by a reduction in activity (Lewinsohn & Libet, 1972), and consequently it can be assumed that this includes a reduction in activities promoting mastery and pleasure. The proposed model assumes that negative expectations or evaluations of these types of activities serve to reduce their frequency. If depressed individuals do not believe their acts will bring beneficial or positive consequences, then there is little reinforcement value in engaging in them (Hammen & Glass, 1975). Mastery experiences can be likened to success experiences and may serve to alter the perceived noncontingency discussed earlier. In other words, individuals learn that they do in fact have control over outcomes and therefore are not helpless, hence their belief about actions being ineffective is challenged.

It is therefore hypothesised that those with more optimistic explanatory styles will engage in a greater frequency of mastery and pleasure activities in comparison to those with more pessimistic styles. Likewise, it is hypothesised that those who engage in a greater frequency of mastery and pleasure activities will score lower on depression severity than those who engage in a lesser frequency of mastery and pleasure activities.

It is also hypothesised that subjective levels of mastery and pleasure associated with activities, as determined by the actual mastery and pleasure ratings (as opposed to the frequency with which ratings/indications of mastery and pleasure are made) will be associated with explanatory style and depression severity in the same direction. In fact, research discussed in Chapter 6 (e.g., Martell et al., 2001) implies that the satisfaction of events might be more important than other characteristics of the events, at least in terms of the maintenance of treatment gains for depression. Previous research in New

Zealand has shown that expectational (or dispositional) optimism is associated with levels of life satisfaction in a sample of 200 adult members of the general population (Findlay, 2005). As mentioned earlier, there are conceptual links between expectational optimism and explanatory style. Furthermore, there is likely to be conceptual overlap between a global measure of life satisfaction and ratings of satisfaction derived from activities. The current project has the potential to explore whether satisfaction from activity engagement for clinically depressed clients is more important than how often different types of activities are engaged in, in terms of links with explanatory style and/or depression severity.

Summary

The present study is concerned with exploring a proposed model, and in doing so will examine the interrelationships between explanatory style, depression severity, and activity. Located within this objective is an additional line of enquiry, regarding whether activity level or activity type is more relevant in these relationships. The lack of empirical evidence supporting the above-mentioned activity type notions and corresponding hypotheses is somewhat surprising, particularly in relation to mastery related activities. The findings of previously discussed studies (e.g., Lewinsohn & Graf, 1973) provide support for these hypotheses in terms of pleasurable activities, but overall there is a considerable gap in this area of the literature. The methodology employed to achieve the various aims of the present study is described.

CHAPTER 9: Study 1 Method

Overview of data collection

The data for this project were obtained as part of a larger treatment outcome study known as *The Depression Study*, for which Dr. Nikolaos Kazantzis was principal investigator, and Associate Professor Paul Merrick and Professor Janet Leathem were co-investigators.[4] The overarching aim of the treatment outcome study was to evaluate a manualised protocol designed as a practice guideline for the use of homework assignments in CBT for depression. As outlined earlier, homework assignments are the various between-session tasks clients complete in line with their treatment goals. To achieve the goals of *The Depression Study*, therapists were recruited and trained to provide CBT to suitable individuals.

All aspects of *The Depression Study* (including therapist training, participant assessment, therapy/data collection, and clinical supervision) were conducted at the Centre for Psychology, School of Psychology, Massey University, Albany Village, Auckland, New Zealand. *The Depression Study* was designed in accordance with the ethical guidelines of the New Zealand Psychological Society and approved by the Northern X Regional Ethics Committee.[5]

Therapist training and monitoring

The therapy was conducted by advanced postgraduate clinical psychology students enrolled in the *Doctor of Clinical Psychology* degree at Massey University. Seven therapists in total provided therapy to *The Depression Study* clients. This began with a group of three therapists, one of whom was the researcher of the current project.

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[4] Overseas collaborators included Professors Keith Dobson, Frank Dattilio, Jan Scott, and Frederick Newman, and Dr. Rona Moss-Morris.

[5] Project reference: NTX/06/07/085; The Relationship Between Therapist Competence in Using Homework Assignments, Patient Homework Adherence, and Treatment Outcome in Cognitive Behaviour Therapy for Depression. The human ethics of the current project is included under this approval.

Four additional therapists were recruited when the initial group were due to begin their internship year, in line with requirements for their degree. Prior to and during their involvement in *The Depression Study*, these students obtained supervised clinical experience during the "placements" required for their course. They had already completed their postgraduate papers in clinical psychology, including a CBT-based paper titled *Psychotherapy I: Theory, Research, and Practice*. Nevertheless, they received additional thorough training in the delivery of CBT for depression prior to accepting clients. This included attendance at: A 2-day intensive training workshop, *Cognitive Therapy of Depression: Techniques for Working with Negative Thinking*, presented by Professor Keith S. Dobson from the University of Calgary; two 5-day intensive postgraduate training courses (*Theory and Practice of Cognitive Behaviour Therapy* and *Cognitive Behaviour Therapy for Depression*) at Massey University; and numerous applied training workshops focusing on *The Depression Study* homework protocol (Kazantzis, Deane et al., 2005), delivered by the principal investigator, Dr. Nikolaos Kazantzis.

Prior to providing therapy, the therapists were required to attain 100% adherence on the adherence component of a protocol scale, *The Homework Adherence and Competence Scale* (HAACS; Kazantzis, Wedge, & Dobson, 2005). They were also required to submit a role-play session demonstrating competent delivery of CBT, as evaluated by ratings on the *Cognitive Therapy Scale* (CTS; Young & Beck, 1980) made by an independent clinical supervisor, Robyn Vertongen, an experienced clinical psychologist. Throughout the treatment phase, therapists received weekly clinical supervision from the aforementioned clinical supervisor. This supervision included monitoring of competence and of adherence to standard CBT practice using the CTS, based on video recordings. Monitoring of competence and adherence to the manualised homework protocol, using the HAACS, was conducted by the research coordinators. With regard to other monitoring procedures, therapists were required to attend weekly coordination meetings with the principal investigator and research coordinators, so that any issues could be discussed. They were also required to continually monitor the safety of clients, as outlined in the Treatment section below, and report to a senior clinician with any questions or concerns.

Participants

Recruitment and screening

Participants were self-referred, recruited primarily via notices and advertisements in local newspapers, or information provided to local general practitioners (GPs) and District Health Boards to offer their patients. On initial telephone contact with potential participants, the individual was screened by a research assistant (advanced clinical psychology student) specifically trained to determine their suitability to *The Depression Study* and to assess their level of risk. Participants were required to be aged between 18 and 65 years, and to have been diagnosed with Major Depressive Disorder (MDD) for the first time, for which they were seeking assistance. The diagnostic criteria were obtained from the *DSM-IV-TR*, the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition–Text Revision* (2000).

There were a number of exclusion criteria for participation in *The Depression Study*. Most of these were chosen by the principal investigator because of their potential to impact on outcomes of interest in the parent study, and others for ethical and safety reasons. Individuals were excluded if they were not proficient in English (reading, writing, and conversing); if they were taking CNS acting drugs (with the exception of the oral contraceptive or an occasional hypnotic); if they met diagnostic criteria for substance abuse, psychosis, or borderline personality disorder; if they were receiving any other form of psychotherapy at the time; or if they were assessed as unable to be safely managed during outpatient psychotherapy. There were 251 initial applicants, 186 of whom did not proceed past the initial telephone screening stage. Unsuitable individuals were appropriately referred, with risk assessments conducted as necessary.

The remaining 65 individuals undertook pretreatment assessment conducted by an advanced psychology research student. The pretreatment assessment included a structured clinical interview, the *Composite International Diagnostic Interview* (CIDI; WHO, 1997), designed at the request of a task force which included the World Health Organisation (Robins et al., 1988). It allows the administration to be carried out by lay interviewers, and for the presence or absence of *DSM-IV* Axis I disorders to be determined and scored by a computer (Robins et al., 1988). The pretreatment

assessment also included measurement of depression severity via the Beck Depression Inventory–Second Edition (A. T. Beck, Steer, & Brown, 1996) and assessment of explanatory style via the Attributional Style Questionnaire (Peterson et al., 1982). Of the 65 individuals, 36 did not proceed past the initial assessment stage. There was no waiting list, therefore the 29 suitable individuals began their 20 session protocol of CBT approximately one week after their initial assessment. Unsuitable individuals were offered an assessment report, alternative treatment contacts, and referred to their GP. During their initial session with their assigned therapist, a semi-structured interview was conducted. During the interview the therapist confirmed the diagnostic criteria, and assessed the client regarding their suitability for CBT and their level of functioning. Following the session the therapist completed the *Suitability for Short-Term Cognitive Therapy Rating Scales* (Safran, Segal, Shaw, & Vallis, 1990) and the *Social and Occupational Functioning Assessment Scale* (Goldman, Skodol, & Lave, 1992).

The Suitability for Short-Term Cognitive Therapy Rating Scales includes 10 items with possible scores on each item ranging from 0 to 5, and half point ratings permissable. Higher scores on the scales indicate a better prognosis, as the items assess criteria used to decide which individuals are more likely to benefit from a CBT approach. The mean item score across the 29 clients of *The Depression Study* was 3.64 with a standard deviation of .31. These statistics are comparable to those of previous research (Myhr, Talbot, Annable, & Pinard, 2007), in which the mean pretreatment score was 3.69 with a standard deviation of .54. The Social and Occupational Functioning Assessment Scale has a single score ranging from 1 to 100, with higher scores representing better functioning. Scores across the 29 clients ranged from 50 to 80 with a mean score of 63.93 and a standard deviation of 7.33. Outpatient population samples are usually rated between 31 and 70 (Spitzer, Gibbon, & Endicott, 2000).

Description of sample

At the conclusion of *The Depression Study* data collection phase, 29 participants had been recruited and received treatment. The sample was comprised of more females (66%) than males (34%), and the majority of the sample identified themselves as European/Caucasian (86%). Table 1 offers a detailed summary of the demographic characteristics of the sample.

Table 1

Demographic Characteristics of 'The Depression Study' Participants

Characteristic	Category	*N*	*%*
Gender	Male	10	34
	Female	19	66
Age at Intake*	20–29 years	3	10
	30–39 years	7	24
	40–49 years	10	34
	50–59 years	5	17
	60–65 years	4	14
Ethnicity	European/Caucasian	25	86
	Other	4	14
Employment*	Full-time	16	55
	Part-time	1	3
	Housewife/mother	7	24
	Student	3	10
	Unemployed/retired	2	7
Marital Status*	Single	3	10
	De Facto	4	14
	Married	12	41
	Divorced/separated	9	31
	Widowed	1	3
Children*	None	9	31
	1	2	7
	2	14	48
	3	2	7
	4	1	3
	5	1	3
Past therapy#	None	19	66
	< 1 month	2	7
	1–3 months	6	21
	4–6 months	1	3
	7–9 months	1	3
Past medication*#	None	25	86
	< 1 month	0	0
	1–3 months	3	10
	4–6 months	1	3

*   Summed percentages do not equate to 100 due to rounding
\#   Cannot be for MDD, as required to have been first episode

The demographic characteristics of the sample were unremarkable, based on prevalence rates of depression in New Zealand. For instance, age at intake varied across the adult lifespan, however the most common age group at intake was 40–49 years (34%), and the least common was 20–29 years (10%). While the age groups utilised were not directly comparable to those used to describe prevalence rates of MDD in New Zealand (see Oakley Browne et al., 2006), observation of these prevalence rates suggests an unremarkable distribution of ages across *The Depression Study* participants. Similarly, the greater percentage of females than males in *The Depression Study* is consistent with the epidemiology of depression.

Of the 10 clients who received previous therapy, the majority of them had relationship counselling ($n = 6$), two of whom related this to a marriage breakdown or separation. Three clients reported prior counselling but did not provide details of the reason for the counselling. One client had previous experience of CBT for a period of two months, in relation to an anxiety disorder. Of the 29 clients, 15 clients were detected by the CIDI as having comorbid anxiety-related disorders. The majority of clients had not taken medication in the past for a mental health condition ($n = 25$). Three clients reported having medication in the past to treat anxiety, and one other reported having medication in the past but did not specify what this was for.

Treatment

Participants received a 20 session protocol of CBT for depression over a period of 16 weeks, with the first eight sessions offered twice-weekly, and the remaining 12 sessions weekly, in line with prior research (e.g., Thase, Simons, & Reynolds III, 1996). The treatment represented standard CBT (A. T. Beck et al., 1979) and was individualised based on each participant's needs and goals. Follow-up sessions occurred at two and six months posttreatment. Safety monitoring procedures were followed throughout the assessment and treatment phase. This included: Accessibility of a senior clinical psychology practitioner at all times; regular monitoring of clients' mood ratings, risk to self and others, and self-rated depression, conducted by therapists; and procedures in place for appropriate referrals in the case of emergencies or significant deterioration in a client's depressive disorder.

Data collection

Data for the present study were obtained from two of the self-report measures that *The Depression Study* participants completed during their pretreatment assessment, namely the Attributional Style Questionnaire (Peterson et al., 1982) and the Beck Depression Inventory–Second Edition (A. T. Beck, Steer, & Brown, 1996). In addition, data were obtained from activity charts, a clinical tool used in CBT. These charts and their use will be described in detail following a description of the abovementioned self-report measures.

Measurement instruments

Explanatory style

The Attributional Style Questionnaire (ASQ; Peterson et al., 1982; Seligman et al., 1979) was used to measure explanatory style. Explanatory style was conceptualised according to the attributional reformulation of the learned helplessness model of depression (Abramson, Seligman et al., 1978), as outlined in Chapter 1. To recapitulate, an optimistic explanatory style is considered to be one in which the individual makes attributions to external, unstable, and specific causes for negative events, and internal, stable, and global causes for positive events. A pessimistic explanatory style is considered to be the exact opposite; the individual makes attributions to internal, stable, and global causes for negative events, and external, unstable, and specific causes for positive events. In other words, an optimistic or pessimistic style can be applied to either type of event.

The ASQ is a 48-item self-report measure that asks participants to write down the major cause of 12 different hypothetical situations, both positive and negative in nature (six of each), as if the situation had happened to them. For each situation, the participant then makes ratings on their identified cause along the dimensions of internal–external, stable–unstable, and global–specific. The internal–external dimension relates to the extent to which the participant attributes the cause to themselves, ranging from 1 (*totally due to other people or circumstances*) to 7 (*totally due to me*). The stable–unstable dimension relates to how long the participant perceives that the cause

will be present, ranging from 1 (*will never again be present*) to 7 (*will always be present*). The global–specific dimension is concerned with the number of situations in the participant's life that they believe the cause affects, ranging from 1 (*influences just this particular situation*) to 7 (*influences all situations in my life*).

Two ASQ composite scores serve as the most appropriate indices in the present study, namely CoPos and CoNeg. CoPos is a composite score for attributions incorporating the three dimensions of internality, stability, and globality for positive events. CoNeg is a composite score of these three dimensions for negative events. In terms of the scoring direction of these two indices, higher scores represent increasing internality, stability, and globality (Peterson et al., 1982). Calculating CoPos involves adding the ratings for each of the six positive hypothetical situations, across each of the three dimensions, and then dividing the total score by the number of positive situations (six) to obtain the average. CoNeg is calculated in the same way, using the six negative hypothetical situations instead. The scores for each of these indices can therefore range from 3 through to 21. As implied above, the reformulated theory asserts that a more optimistic explanatory style would be represented by lower CoNeg scores and higher CoPos scores.

Originally the reformulated learned helplessness theory asserted that explanatory style for negative events (as measured via CoNeg) was most relevant to depression, however some have found explanatory style for positive events to be a better predictor of subsequent wellbeing than explanatory style for negative events (Silverman & Peterson, 1993). Other authors (Curry and Craighead, 1990) considered the possibility that explanatory style for positive events may be more relevant to clinical adolescent populations, in comparison to samples of different age groups or milder depressive symptoms. In terms of developmental stages, anhedonia is more characteristic of adolescent depression, at least in comparison to childhood depression (Ryan et al., 1987). It is possible that this inability to experience pleasure is related to perceiving positive events as having external, unstable, and specific causes (Curry & Craighead, 1990). Until it is clear whether or not one of these two indices surpasses the other in relevance to particular populations, exploration of both indices appears warranted.

Analyses in the present study are also conducted with an overall composite score, or difference score (namely CPCN) which is derived by subtracting CoNeg from CoPos (Hjelle, Belongia, & Nesser, 1996). Previous research found the CoPos and CoNeg scores to be almost orthogonal ($r = .02$) and consequently argue against combining them (Hjelle et al., 1996; Peterson et al., 1982). In the present sample, the Pearson's product-moment correlation coefficient between CoPos and CoNeg was nonsignificant ($r = -.34$, $p = .075$). CPCN has been included in the present study's analyses to determine the extent to which the present data converges with the findings of earlier studies. This was considered important given the distinctive sample from which the data for the present study were obtained. These three ASQ indices are henceforth referred to as *Positive Events*, *Negative Events*, and *Overall Composite*, in line with prior usage (Hjelle et al., 1996).

In terms of psychometric properties of the ASQ, coefficient alphas ranging from .44 to .69 have been reported for the internal reliabilities of the separate attributional dimensions in a sample of university students (Peterson et al., 1982). It has been argued that the reliabilities of individual ASQ dimensions are too low, hence the composite scores are preferred (Raps et al., 1982). Composite scores have achieved Cronbach's alpha coefficients ranging from .70 to .77 for *Positive Events* and .70 to .72 for *Negative Events* using samples of university students, suggesting reasonable internal consistency (Golin et al., 1981; Hjelle et al., 1996; Peterson et al., 1982; Raps et al., 1982). In the present study, Cronbach's alpha for the *Positive Events* composite was .56, hence this is lower than previous findings. Cronbach's alpha for the *Negative Events* composite was .76, comparable to that of previous research. Intercorrelations of the subscales comprising the *Positive Events* and *Negative Events* composite scores using the present study's sample have been displayed in Table 2, along with those of previous research to allow easy comparison.

The reliability analysis in the present study revealed that removing the *Global Positive* subscale would improve the internal consistency of the *Positive Events* scale. The lower internal consistency of this scale should be considered in interpretation of the present study's results. The Pearson's product-moment correlation between *Positive Events* and *Overall Composite* was .73 ($p = .000$) in the present study, similar to previous research

(.72, Hjelle et al., 1996). The correlation between *Negative Events* and *Overall Composite* was -.83 (*p* = .000) in the present study, as compared with -.26 in previous research (Hjelle et al., 1996).

Table 2

Intercorrelations (r) between ASQ Subscales in the Present Study and Those of Hjelle et al. (1996) and Peterson et al. (1982)

ASQ subscales	Present study	Hjelle et al.	Peterson et al.
Positive Events			
Internality–Stability	.64	.58	.62
Internality–Globality	.16	.35	.38
Stability–Globality	.05	.54	.59
Negative Events			
Internality–Stability	.45	.26	.18
Internality–Globality	.41	.25	.28
Stability–Globality	.66	.42	.45

In the present clinically depressed sample, the mean scores for *Positive Events*, *Negative Events*, and *Overall Composite* were 13.58, 15.10, and -1.20 respectively. Hjelle and colleagues (1996) reported means for these composite indices of 12.52, 3.48, and 16.00, respectively. The values are comparable in terms of attributions for positive events, however much higher in the present sample with regard to attributions for negative events and much lower for the overall composite score. These differences are suggestive of more pessimistic explanatory styles in the present sample. It has been reported that (when the means are compared) explanations for good events tend to be more internal, stable, and global than those for bad events (Hjelle et al., 1996; Peterson et al., 1982). With the present sample, the opposite trend occurred. This is perhaps not surprising given that, as previously mentioned, the samples in prior research were nondepressed university students (Hjelle et al., 1996; Peterson et al., 1982) whereas the present sample consists of clinically depressed individuals.

High test-retest correlations have been reported (ranging from .57 to .70, over five weeks) suggesting stability and hence supporting the contention that the questionnaire measures a cognitive style (Peterson et al., 1982). Validity of the instrument has been demonstrated in terms of its ability to predict depressed mood following a negative life event (Metalsky et al., 1982; Metalsky, Halberstadt, & Abramson, 1987) or a stressful event such as childbirth (Cutrona, 1983). Construct validity has also been demonstrated by the instrument's ability to predict helplessness behaviours (Alloy, Peterson, Abramson, & Seligman, 1984). These studies (Alloy et al., 1984; Metalsky et al., 1982; Metalsky et al., 1987; Peterson et al., 1982), with the exception of one (Cutrona, 1983), have all used samples of university students, and are therefore of limited applicability to the present study. Research into the psychometric properties of the ASQ using clinical samples is warranted.

Depression severity

Depression severity was measured using the Beck Depression Inventory–Second Edition (BDI-II; A. T. Beck, Steer, & Brown, 1996). The BDI-II is one of the most commonly used instruments for the measurement of depression severity (Segal, Coolidge, Cahill, & O'Riley, 2008), widely used both in research and clinical settings (Kellogg & Young, 2008). It is designed for use with individuals aged 13 and above who have already been diagnosed with depression (A. T. Beck, Steer, & Brown, 1996). It is a 21-item self-report measure. The items are multiple choice statements relating to the various physical (e.g., changes in appetite, sleep, energy), emotional (e.g., irritability, guilt, sadness), cognitive (e.g., pessimism, self-dislike, suicidal thoughts), and functioning (e.g., loss of interest in people or activities) aspects of a depressive syndrome. For each item, the client chooses the statement that best represents his or her state over the past two weeks. Each item is rated on a scale ranging from 0 (a statement representing the absence of that symptom) to 3 (a statement representing a severe example of that symptom). Item scores are summed to obtain an overall score, therefore overall scores range from 0 to 63 with higher scores representing greater severity of depression. The following interpretive ranges have been provided: 0–13, minimal depression; 14–19, mild depression; 20–28, moderate depression; and 29–63, severe depression (A. T. Beck, Steer, & Brown, 1996).

There are fewer studies that have explored the psychometric properties of the BDI-II as opposed to the BDI, however research has indicated that the psychometric characteristics of these two instruments are highly congruent (Dozois, Dobson, & Ahnberg, 1998) and various studies have reported adequate psychometric properties for the BDI-II. High internal consistency has been reported with alpha coefficients of .86 for nonclinical older adults (Segal et al., 2008), .91 and .92 with outpatient samples representing various psychiatric diagnoses (A. T. Beck, Steer, Ball, & Ranieri, 1996; A. T. Beck, Steer, & Brown, 1996), .92 with adolescent inpatients (Krefetz, Steer, Gulab, & Beck, 2002) and nonclinical adolescents (Osman, Barrios, Gutierrez, Williams, & Bailey, 2008), .90 with clinically-identified Mexican American adolescents (Wilson VanVoorhis & Blumentritt, 2007) and clinically depressed outpatients (Steer, Ball, Ranieri, & Beck, 1999), and a range from .89 to .93 with university students (A. T. Beck, Steer, & Brown, 1996; Osman et al., 1997; Segal et al., 2008; Steer & Clark, 1997; Wiebe & Penley, 2005) including those of diverse ethnicity (Carmody, 2005). Good test-retest reliability has been shown with nonclinical university students (Wiebe & Penley, 2005), university students receiving counselling (Sprinkle et al., 2002), and psychiatric outpatients (A. T. Beck, Steer, & Brown, 1996).

Evidence has been obtained for the BDI-II's discriminant validity and convergent validity using samples of university students (Osman et al., 1997; Segal et al., 2008; Steer & Clark, 1997), clinically-identified Mexican American adolescents (Wilson VanVoorhis & Blumentritt, 2007), nonclinical older adults (Segal et al., 2008), and psychiatric outpatients (A. T. Beck, Steer, & Brown, 1996). Support for the convergent validity of the instrument has also been obtained with adolescent inpatients (Krefetz et al., 2002), and good split-half reliability and criterion validity has been shown with university students receiving counselling (Sprinkle et al., 2002).

The BDI-II has better content validity than the BDI, as the instrument was revised to more closely reflect major depression symptoms according to *DSM-IV* (American Psychiatric Association, 1994) diagnostic criteria (Brantley, Dutton, & Wood, 2004; Steer et al., 1999). Furthermore, the factor structure of the BDI-II suggests that it is a stronger measure than the original instrument (Dozois et al., 1998). The present study utilises BDI-II intake assessment scores, henceforth referred to as *Depression Severity*.

The use of activity charts in clinical practice

The activity chart is a useful tool that has been used clinically for decades. Lewinsohn and his colleagues first devised the charts to assist with behavioural activation (Martell, 2008). A typical activity chart is labelled with days of the week across the top of the columns, and hours of each day to the left of each row (see Figure 3). It is standard practice for activity charts to be one of the first homework tasks assigned in CBT for depression. They are usually assigned during the second or third session, as this allows the therapist to gauge the client's activity level from the outset and to make observations about the way the client is spending their time. The therapist introduces the chart, provides the rationale and instructions for completion, begins completing it in session with the client, and explores potential obstacles (A. T. Beck et al., 1979; J. S. Beck, 1995).

Every day the client completes each cell with the primary activity they engaged in during that one hour timeslot, or in other words, the activity which took up the majority of that hour. Ratings of relevant associated moods (0–100) or of associated mastery and/or pleasure (M or P; 0–10) can be indicated in the cell. During the following session the therapist and client review the chart together, examining it for patterns and conclusions that may be drawn (J. S. Beck, 1995). Typical activity charts, often labelled as Weekly Activity Schedules, can be found in popular CBT for depression therapy manuals (A. T. Beck et al., 1979; J. S. Beck, 1995; Greenberger & Padesky, 1995, pp. 168-169; see Appendix A).

Time	MON	TUE	WED	THU	FRI	SAT	SUN
6–7am							
7–8am							
8–9am		Walking 40 (M=5)					
9–10am							

Figure 3. Example segment of a typical activity chart, with one cell completed with an activity, mood rating, and mastery rating, for illustrative purposes.

Activity charts help the therapist to understand the client's activity level and assist with scheduling pleasant events. In fact, they can be used to understand various aspects relating to how a client spends their time, including associations between mood and activity, affect restriction, monitoring of avoidance behaviours, and actions in pursuit of life goals (Martell, 2008). Overall they enable the gathering of valuable information pertaining to helpful and unhelpful patterns of behaviour. Obtaining this insight allows the client and therapist to focus on bolstering helpful behaviours and challenging and reducing unhelpful ones.

As well as providing information to the therapist that may assist with treatment planning, simply engaging in self-monitoring behaviour can be considered therapeutic (Harmon et al., 1980). Self-monitoring has been shown to be useful in the treatment of depression, particularly when activity is monitored, in comparison to mood (Harmon et al., 1980). It can lead to self-reported increases in pleasant activity engagement and decreases in depressed mood. It is noted, however, that this could indicate changes in perception about activities as opposed to actual changes in activity level (Harmon et al., 1980). Nevertheless, some empirical support for activity scheduling has been found in a study involving three case studies of depressed outpatients (Lejuez, Hopko, LePage et al., 2001). Furthermore, the perceived usefulness of the approach has been demonstrated with 16 depressed inpatients and 14 associated nursing staff members (Iqbal & Bassett, 2008). Notably, eight of the inpatients had no prior involvement in recreational or therapeutic activity within the setting prior to engaging in activity scheduling, and all participants deemed it to be useful (Iqbal & Bassett, 2008). Overall, there is some support suggesting the utility of activity charts in clinical practice.

The use of activity charts in the present study

The present study was reliant on the use of activity charts to understand the clients' activity levels and the types of activities they engaged in. Information regarding activity level and type of activity was collected using two different activity charts. Participants recruited during the earlier stages of the therapy/data collection phase were assigned a typical activity chart as described above. Amid the therapy/data collection phase an adapted activity chart was developed, therefore participants recruited subsequent to the adaptation were assigned the newer version (see Appendix B). The

rationale and outcome of adapting the activity chart is reserved for Chapter 11, pertaining to Study 2. With both of these charts, the information was collected in the context of standard CBT practice. Specifically, each participant completed one activity chart assigned as a between-session homework task within the first few sessions,[6] and data were obtained from these charts. For both versions of the activity chart, participants were instructed to write in each cell the main activity they engaged in during that one hour timeslot, and record a mood rating (0–100) representing the intensity of their identified mood during engagement in the activity. Therapists were instructed to encourage participants to complete the chart on a daily basis at a convenient time of the day, and to record mastery and pleasure ratings. It is noted that the original activity chart did not have these instructions printed on the form (see Appendix A), the implications of which are discussed later in relation to Study 2.

All participants were encouraged to try their best to complete one full week (seven consecutive days) of activity monitoring, and all of the available data from that week were utilised in the present study. As a result of the twice-weekly session format in the first four weeks of *The Depression Study* therapy protocol, the activity monitoring task was reviewed and reassigned during the second session of the week, approximately half-way through its completion.

The objective of the present study was to collect baseline data regarding explanatory style, depression severity, and activity-related variables. Baseline data were preferred in the interest of avoiding numerous potential confounds that could occur as a direct result of treatment or the passage of time. Furthermore, the proposed model of the present study lent itself to a cross-sectional design on account of its reciprocal nature. The pretreatment assessment ASQ and BDI-II scores allowed for a true baseline measurement of the first two of these variables. Conversely, the *process* of collecting activity-related information required that the clients had already begun receiving therapy. Nevertheless, the procedure employed allowed the closest approximation of baseline activity data. In fact, researchers have described activity charts as being useful

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[6] Of the activity charts used in the study, the majority of clients (17) were assigned the activity chart in their first week of therapy (session two). Four clients began the task in their second week (session three) and two clients in their third week (sessions five and six). It is noted that those assigned the task beyond session two did not produce outlier scores for activity-related variables.

for exactly this purpose, "obtaining a baseline activity level within the first few sessions" (Lejuez, Hopko, LePage et al., 2001, p. 169). Regardless of whether clients are attending sessions or not, self-monitoring is a therapeutic activity and therefore it may be impossible to obtain a pure measure of baseline activity in any case.

Relevant activity-related information was extracted from the activity charts to create the activity-level and activity-type variables for the present study. A description of these variables follows. Appendix C contains a reference table with a summary description of each of the activity-related variables.

The measurement of activity level

Activity level was operationalised and consequently measured in three different ways. There is a scarcity of available literature on the operationalisation of activity level and accordingly research cannot guide the most appropriate measurement method. For this reason, a comprehensive approach was considered to be most appropriate. Three possible alternatives to the measurement of activity level were conceived and utilised, each with its own advantages and disadvantages, as discussed below.

With respect to the use of activity charts, anything that a client does with the exception of sleeping is typically considered to be activity. As such, in the descriptions to follow, cells completed with "sleep" are not included in calculations unless otherwise specified.

Time in activity (Duration)

The first consideration regarding the measurement of activity level was that it would be determined by counting the number of cells of the activity chart filled in with an activity (not including sleep), as a percentage of the total number of cells that the client completed (sum of cells completed with an activity and with "sleep"[7]). This alternative was assigned the label *Duration*.

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[7] For the purposes of the present study, *Sleep* refers to the total number of cells of an activity chart in which "sleep" was recorded (as per Appendix C).

Because this particular objective is concerned with quantity of activity, as opposed to the type of activity engaged in, and given anything a client does other than sleeping is considered to be activity, essentially what is being measured by this means is time spent awake. It was considered that this would pose a significant issue given the nature of depression symptomatology. Although sleep changes are common in depression, these changes can present themselves as either insomnia or hypersomnia, depending on the individual. Regardless of the direction of the score, it is possible that this index could be overlapping with a common depression symptom. Nevertheless, it was considered useful to explore *Duration* in the present study, whilst being mindful of the potential overlap with depression severity upon interpretation of results.

To summarise the first operational definition, *Duration* is concerned with the total amount of time spent engaged in activity irrespective of type of activity or frequency of occurrence. This includes any recorded activity throughout the week with the exception of sleeping, with hours summed to obtain a raw score. The raw score is converted to a percentage of the total number of completed cells on the chart (whether completed with an activity or with sleep).

Range of activities (Variety)

The inspiration to measure activity level arose from the fact that reduced activity is considered common in depression, when compared with premorbid activity levels. This could be interpreted to mean that depressed individuals are either carrying out a smaller range of activities than they used to, are spending less time doing the same activities, or are engaging in the same activities but less frequently. Research (Lewinsohn & Graf, 1973) has found that individuals with depression engage in a smaller range of different pleasant activities (*restricted range*), but also repeat the activities less often (*fewer replications*). These two indices, *restricted range* and *fewer replications*, correlated highly, such that it was concluded that depressed individuals with a larger repertoire of activities also had a tendency to engage in them more often (Lewinsohn & Graf, 1973).

It is possible that the three different interpretations described in this section are all accurate explanations of reduced activity in depression. However, some may be more meaningful than others. It is considered likely that defining activity with respect to a

smaller range, or decreased repertoire, of activities would be more meaningful. It is not uncommon for clients to state that before becoming depressed they regularly went for walks, for instance, but no longer do this. Although, conceptualising activity level in this way is not without its own problems. For example, a client who is at work all day (one activity) may be much busier than another client who has been watching television all day (also one activity). Nevertheless, overall it is likely that measuring activity level by counting the number of different activities (variety) that a client engages in over the course of a week, as opposed to a simple measure of sleep versus awake time (*Duration*), has more validity. Accordingly, the second activity level index, *Variety*, is concerned with repertoire of activity. This is considered to be the number of different types of activities recorded on the chart, irrespective of their duration or frequency of occurrence throughout the week. Sleep is not included, and the raw score of different types of activities is converted to a percentage of the total number of cells that include an activity recording.

Frequency of activity changes (Frequency)

The third index of activity level explored in the present study was assigned the label *Frequency*. In terms of the operational definition, this index is concerned with the number of separate occasions that each activity occurred, summed across activity types to obtain the raw score. Consequently, *Frequency* is independent of the duration of time spent on any one occasion that a given activity was carried out. Effectively it is concerned with how often depressed clients change the activity they are engaged in, independent of whether they are repeating activities during that time. Again, sleep is not included, and the raw score is converted to a percentage of the total number of cells with an activity recorded.

Being more optimistic could lead an individual to change activities more frequently, or being more pessimistic could lead them to change them less frequently. Optimistic individuals may be better at time management, and effectively organising their day to maximise the number of activities they are able to accomplish. They might complete activities faster, hence change them more regularly. Having a positive outlook may assist them with these factors. Alternatively, clients with a more pessimistic outlook may be devoting greater thought and effort to their activities. Expecting negative

outcomes may motivate them to be more methodical, which in turn becomes more time-consuming and hence activities are not changed as frequently. Similarly, MDD is renowned for causing numerous physical symptoms such as lack of energy, lack of concentration, fatigue, and tiredness. These symptoms could cause an individual with higher levels of depression severity to change activities less frequently than those with lower levels.

Example of activity level indices

The measurement of activity level in these three different ways allows for an exploration of which may be more meaningful, particularly as it relates to the overall activity level of depressed clients. This is important to determine because it has implications for treatment. A clearer understanding of the best means by which activity level can be bolstered may guide behavioural activation interventions. It might also be the case that each method contributes something, in that using more than one method may be useful. Figure 4 is a hypothetical example included for illustrative purposes, as a reference for discussions to follow.

Time	MON	TUE	WED	THU	FRI	SAT	SUN
6–7am							
7–8am	Had coffee (P)		Had coffee (P)		Went for walk (M)		
8–9am				At work (M)			Went for walk (M)
9–10am		Went for walk (M)		At work (M)			
10–11am				At work (M)			Watched TV (P)
11–12pm				At work (M)		Watched TV (P)	Watched TV (P)
12–1pm				At work (M)		Watched TV (P)	Watched TV (P)

Figure 4. Example of a hypothetical activity chart, partially completed with example activities, for illustrative purposes.

In Figure 4, the client has recorded activities and indicated which activities were associated with a sense of mastery and/or pleasure, but has not rated the intensity of that mastery or pleasure. In this example, the raw scores for *Duration*, *Variety*, and *Frequency* would be 15, 4, and 8 respectively.

The measurement of activity type

Perhaps even more consequential than an understanding of activity level, is an understanding of activity type. The nature of activities holds potential significance in terms of the aetiology of depression and hence treatment implications (Lewisohn & Graf, 1973). The objective of the present study in terms of activity type was to explore this potential significance along a number of dimensions; active versus passive, social versus nonsocial, mastery, and pleasure. To obtain the raw scores, measurement consisted of basic frequency counts according to operational definitions described below. These descriptions relate to obtaining the raw scores of each index/variable, however, as with the activity level indices, raw scores were converted to percentages which were more appropriate for conducting the analyses (see Appendix C). Eight activity type variables were conceived.

Active and passive

The first two variables were *Active* and *Passive*. *Active* involved a frequency count of cells containing an activity requiring physical movement (e.g., went for walk). Conversely, *Passive* was a frequency count of activity that did not require physical movement (e.g., watched TV). In Figure 4, the *Active* raw score would be 3, and the *Passive* score would be 12. It is noted that this hypothetical client is employed in an occupation consisting of predominantly passive activity, such as office-based work. If the client were a sportsperson or labourer for example, "at work" should be considered active.

Social and nonsocial

The next two variables were *Social* and *Nonsocial*. *Social* activities were considered to be those carried out in the company of others, as opposed to *Nonsocial* which were

carried out alone. Figure 4 cannot serve as a hypothetical example for these variables, as the chart does not contain the relevant information to allow frequency counts along this dimension. This is discussed further in Chapter 11, pertaining to the rationale for Study 2. The adapted activity chart (see Appendix B) contains boxes for clients to tick when social interaction occurs alongside the activity. Frequency counts of these ticks were used to calculate the *Social* raw score for each client, whereas frequency counts of activity boxes without ticks were used to calculate the *Nonsocial* raw scores.

Mastery and pleasure frequency

The fifth variable was *Mastery Frequency*. This was operationalised as any activity self-identified by the client as contributing to a sense of mastery or accomplishment, summed to obtain a total score for the week. In Figure 4, the *Mastery Frequency* raw score would be 8. The sixth variable was *Pleasure Frequency*. This was considered to be any activity self-identified by the client as contributing to a sense of pleasure or enjoyment, summed to obtain a total score for the week. In Figure 4, the *Pleasure Frequency* raw score would be 7.

Mastery and pleasure magnitude

Whilst it is useful to have an indication of which activities lead to a sense of mastery or pleasure for any given client, some activities may bring about a greater sense of mastery or pleasure than others. Accordingly, it may be even more valuable to understand the degree to which each activity can produce this experience. Clinically, it is more common for a therapist to encourage ratings of mastery and pleasure, as opposed to simple indications that mastery or pleasure was experienced, as illustrated in Figure 4. The seventh activity type variable measured has been labelled *Mastery Magnitude*. This is the summation of all recorded mastery ratings (0–10) made across all activities. Likewise, *Pleasure Magnitude* is the summation of all recorded pleasure ratings (0–10) and serves as the eighth and final activity type variable.

Summary of methodology

The current research project utilised data obtained as part of *The Depression Study*, a treatment outcome study conducted at Massey University. Specifically, the present study made use of three sources of data. Two of these sources were self-report instruments, with baseline data obtained from the pretreatment (intake) assessment administration. The ASQ (Peterson et al., 1982; Seligman et al., 1979) served as a measure of explanatory style, and the BDI-II (A. T. Beck, Steer, & Brown, 1996) served as a measure of depression severity. The third source of data was activity charts, with numerous indices/variables devised from the available information contained within. An overview of the analyses conducted with these variables is provided in the following chapter, in addition to a description of the results together with a brief discussion, as applicable. Detailed discussion of the findings is reserved for Chapter 12.

CHAPTER 10: Study 1 Results

Overview of data treatment

Intake assessment scores of the ASQ (Peterson et al., 1982; Seligman et al., 1979) and BDI-II (A. T. Beck, Steer, & Brown, 1996) questionnaires were entered into SPSS ("SPSS for Windows (Version 17.0) [Computer program]," 2009), a statistical analysis computer program. There were no missing data for these variables hence data were entered for all 29 clients.   The numerous activity-related indices/variables were calculated manually from the activity charts. From the 29 clients, there were 26 charts available for use, as three clients did not complete their activity charts. Of the 26 charts available, one could not be used as the client had significantly adapted the chart format, another was completed in an unusual manner (indicating the client may not have understood the instructions of the task), hence the utility of the data was questionable, and the third unused chart had been completed between sessions 18–20 and therefore too late in therapy to approximate baseline data. This left a final maximum sample size of 23 for activity-related variables.

Raw scores for each activity-related index were converted to percentages (as per the variable descriptions in Appendix C) which were entered into SPSS, with missing data left blank and treated with pairwise deletion throughout all analyses. When pairwise deletion is selected, SPSS includes all cases for which data are available on both variables in a given correlation. While listwise deletion, in which the same sample is used in every analysis, is generally preferable, this would have been detrimental given the small numbers for some variables in the study (e.g., *Social*). Specifically, had listwise deletion been selected, the resultant sample size would have been 7 for all correlations.

The bidirectional links between variables in the model imply that a cross-sectional design is appropriate. Longitudinal data were not available for activity-related variables in any case. At the time that Study 1 was conceived, a much larger enrolment of clients in *The Depression Study* was expected (70), and it was envisaged that multiple regression would be carried out with the available data. Unfortunately, recruitment

difficulties occurred, mostly due to the strict criteria for entry into *The Depression Study*. It was revealed during later stages of the research that few clients fitting the parent study's criteria would subsequently be available prior to its completion. The completion date could not be extended, as the principal investigator of *The Depression Study* had accepted an overseas appointment. It was decided that correlational analyses would be used, with emphasis placed on exploring relationships in a descriptive manner. This allows a preliminary exploration of the previously outlined hypotheses, permitting tentative conclusions to be made about the relationships.

The fact that the present research was not dependant on longitudinal data, nor was it examining factors relating to the process or outcome of treatment, suggests that it was unnecessary to rely on data from clients in a treatment outcome study. However, as mentioned, the small sample size was not anticipated, and there were clear benefits associated with utilising data from *The Depression Study*. The clients had been carefully screened and diagnosed to ensure they were experiencing a first episode of MDD, that this was the primary reason they were seeking assistance, and to make sure they were not receiving pharmacotherapy or any other treatment for their condition. This helped to minimise other factors that may have influenced the results. Furthermore, the clients were completing their activity charts in accordance with their therapy, and as such they were not investing time into a task for which they received no future gain or follow-up. Being in a treatment outcome study meant that participants had continued therapy following on from their engagement in the activity monitoring task.

Preliminary analyses: Detection of outliers

Preliminary analyses were undertaken using SPSS to examine each of the indices for outliers. Boxplots were used in SPSS, and these identified some cases that warranted further examination. SPSS considers outliers to be those values that are between 1.5 and 3 times the interquartile range, and extreme values to be more than 3 times the interquartile range. In terms of the depression severity and explanatory style indices, one outlier was identified for the *Overall Composite* explanatory style index. Compared to other data, there was an unusually large difference between the CoPos and CoNeg (*Positive Events* and *Negative Events*, respectively) scores used to calculate the *Overall*

Composite score for this client. However, there did not appear to be any untoward explanation as to why this score was so different from those of other clients. It is possible that with a larger sample the *Overall Composite* datum for this client would not have been an unusual score. As such, there was no valid reason to remove this score from further analyses.

All activity level and activity type indices/variables were derived from the activity charts, as described in Chapter 9. With regard to activity level, no outliers were identified for *Duration*, however the *Variety* and *Frequency* data included one outlier each. With regard to the *Variety* index, the outlier score was an extreme value. It was disproportionately high because a much smaller number of cells (16) were completed on the chart in comparison to all other completed charts. Both the original and adapted chart had 140 cells available in total. The median number of cells completed across the 23 charts was 114, with a lower quartile of 92, and an interquartile range of 31. Hence it was considered appropriate to remove the data for this outlier from subsequent analyses with this index, as it was highly likely to represent a biased score.

In terms of the *Frequency* outlier, the activity chart for this client was examined and revealed a frequency score lower than that for other clients. This may have related to the fact that the client had recorded some long periods of the same activity and was not always specific about the activity being conducted. For example, many consecutive hours had "with kids" recorded, even though it is possible that the activities carried out with the children would have changed frequently. Further to this, only four days (two weekdays and two weekend days) were completed out of a possible seven days for this client. The distribution of scores was examined further using scatterplots within SPSS, by plotting the relationships between *Frequency* and each of the explanatory style indices and the depression severity index.[8] In terms of the outlier score for *Frequency*, the value did not appear disproportionate given the scatter on the graphs. It was therefore decided that this outlier value would not be removed from subsequent analyses, as there was no clear justification to do so.

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[8] Scatterplots pertaining to significant correlations are presented later, with reference to the analyses and results.

Seven clients had missing scores for *Duration* as they had not recorded sleep, and as such any percentages calculated for these clients would have been inflated. As outlined in Appendix C, *Duration* is calculated by dividing the total number of activity cells (excluding sleep) by the total cells (including sleep), and represented as a percentage. The resultant samples sizes for the activity level indices were 16 for *Duration*, 22 for *Variety*, and 23 for *Frequency*.

Each of the eight activity type variables were explored in the same way as all other indices, described above. It is important to note, however, that the *Active* and *Passive* activity type variables are polar opposites of the same percentage calculation, such that when the scores of these two variables are added together for each client they equate to 100%. This is also the case for the *Social* and *Nonsocial* variables. For this reason, only the first member of each pair was selected for use in the analyses to follow. *Active* was influenced by the same extreme outlier described above in relation to *Variety*. Removal of the outlier left a resultant sample size of 22 for subsequent analyses with this variable. For the *Social* variable, scores could not be calculated for 14 of the 23 usable activity charts as there was insufficient information regarding whether other people were present during activity engagement. This is discussed in further detail in Chapter 11, in accordance with Study 2. No outliers were identified for *Social*.

Of the 23 usable activity charts, ten clients had made no *ratings* for either mastery or pleasure (e.g., a rating may be written as "M=7", to indicate a mastery level of 7/10). However, three of these ten clients had given *indications* that mastery or pleasure was associated with activities on their charts (e.g., by writing "M" and/or "P" within cells, as depicted in Figure 4). Those clients who made indications/ratings for mastery, also made indications/ratings for pleasure, and vice versa. No outliers were identified for any of the four relevant variables (*Mastery Frequency*, *Pleasure Frequency*, *Mastery Magnitude*, and *Pleasure Magnitude*). The resultant sample sizes were 16 for the two frequency variables, and 13 for the two magnitude variables.

Data analysis approach

As mentioned, correlational analyses are used in the present study. However, they are used, along with scatterplots, to *explore* the data descriptively. They are not intended as

a way of *testing* the hypotheses of the present study, for a number of reasons. First, the small total sample size (N=29), and even smaller numbers of cases involved in many of the correlations (particularly those involving the *Social* variable) cast doubt on the appropriateness of hypothesis-testing analyses. Small sample sizes lead to difficulty interpreting correlations, and in trusting the validity of the obtained p values, due to low statistical power. In this sense, it is likely that the analyses in this study could fail to detect relationships that actually exist. In other words, the Type II error rate could be high, particularly if nonparametric statistics are used.

Conversely, the fact that a large number of correlations need to be conducted can impact on the appropriate p values. Multiple correlations could increase the Type I error rate, suggesting that the alpha level should be decreased. While such an adjustment could be applied, the low power previously discussed suggests, instead, that the alpha level should be increased. Further to this, the use of pairwise deletion would render such a correction as inappropriate, because the samples differ for each correlation.

Rather than abandon statistical analyses altogether, a parallel analysis approach has been undertaken. Both Spearman's and Pearson's correlation coefficients are reported. When examining obtained correlation coefficients in this small sample, the emphasis is on exploring the associations descriptively. As alluded to, this exploration has been supplemented by visual inspection of the data using scatterplots.

Although ordinarily it is unusual to report both parametric and nonparametric analyses within the same study, there a few reasons why this path has been taken. First, assumptions about the sample are difficult to assess, mostly because small sample sizes render tests of normality inappropriate. Further to this, the parametric approach requires interval-level data. Many would argue that the data are not strictly interval, as they were derived from ratings on Likert scales in which there is not necessarily an equidistant gap between possible responses. That is, it is difficult to know whether the difference between a BDI-II score of 20 and 30 is the same as the difference between 30 and 40, in terms of how severely depressed an individual may be. Similar arguments can be raised in terms of how optimistic or pessimistic an individual's explanatory style is. While it is common practice to treat Likert scales as constituting interval-level rather than ordinal-level measurement, this practice remains controversial (Hofacker, 1984;

Jamieson, 2004). There are practical reasons that partly explain why researchers, including psychologists, prefer to consider this type of data as interval-level; it allows the use of more sophisticated methods of statistical analyses (Goodwin, 2008). Some suggest that plenty of ordinal methods exist that are appropriate for analysing Likert-scale data, but they are not as convenient or readily available as those for interval-level data (Göb, McCollin, & Ramalhoto, 2007). Others suggest techniques that can be used to rescale ordinal-level data to interval-level data (Harwell & Gatti, 2001). Overall, however, if researchers can justifiably argue that their data should be considered interval-level, attention still needs to be paid to the normality of the distribution and to the sample size (Jamieson, 2004). The small sample size of the present study suggests that nonparametric approaches should be used, however Spearman's correlations have less statistical power to detect associations than Pearson's correlations, and the power in the study is already low. Because Pearson's and Spearman's correlations are calculated under different sets of assumptions, providing both alternatives offers a likely range for the statistic, rather than a single estimate. While the proposed model of the present research cannot be adequately tested, as initially anticipated, this approach may provide a degree of provisional support for the model.

Results

To recapitulate, the overall goal of Study 1 was to explore interrelationships between explanatory style, depression severity, activity level, and activity type. The results are presented according to specific aims encompassed within this overall goal, and more explicitly in regard to the various hypotheses that are being explored. Due to the exploratory nature of the research, two-tailed tests of significance were used throughout. An alpha level of .05 was chosen as the level of significance. Descriptive statistics of the research variables are presented in Appendix D.

Aim 1
To explore if there is an association between explanatory style and activity level

Hypothesis
Those with a more optimistic explanatory style will have greater activity levels than those with a more pessimistic explanatory style

As previously outlined, the present study has measured activity level in three different ways and hence has produced three different indices, *Duration*, *Variety*, and *Frequency*. Whilst the main purpose of Aim 1 is to explore the associations between explanatory style and activity level, it also has the secondary goal of exploring which activity level index/indices may be more instructive. The hypothesis applies to all three of the activity level indices. However, if only one or two of these indices emerge as correlates of explanatory style, this may offer insight into which activity level index/indices may be more instructive in this context. Table 3 displays the Pearson's and Spearman's coefficients and significance values of the correlations between the activity level and explanatory style indices. The correlations between *Duration* and *Positive Events* and *Duration* and *Overall Composite* indicated strong (Cohen, 1988) positive associations between these indices. Cohen's (1988) conventions regarding the strength of a correlation have been adopted in this research. No other significant correlations were obtained between the activity level and explanatory style indices. The scatterplots with regression lines below display the significant associations presented in bold in Table 3.

Table 3

Pearson's Product-Moment and Spearman's Rho Correlation Coefficients and Significance Values, between Activity Level Indices and Explanatory Style Indices

Indices		Pearson's		Spearman's	
Activity Level ↔ Explanatory Style	*n*	*r*	*p*	*r*$_s$	*p*
Duration	16				
Negative Events		-.34	.194	-.32	.232
Positive Events		**.67**	**.005**	**.64**	**.008**
Overall Composite		**.56**	**.025**	**.50**	**.050**
Variety	22				
Negative Events		-.14	.526	-.14	.524
Positive Events		.11	.641	.18	.430
Overall Composite		.15	.509	.20	.383
Frequency	23				
Negative Events		-.17	.431	-.30	.159
Positive Events		-.16	.465	-.01	.968
Overall Composite		.03	.877	.18	.414
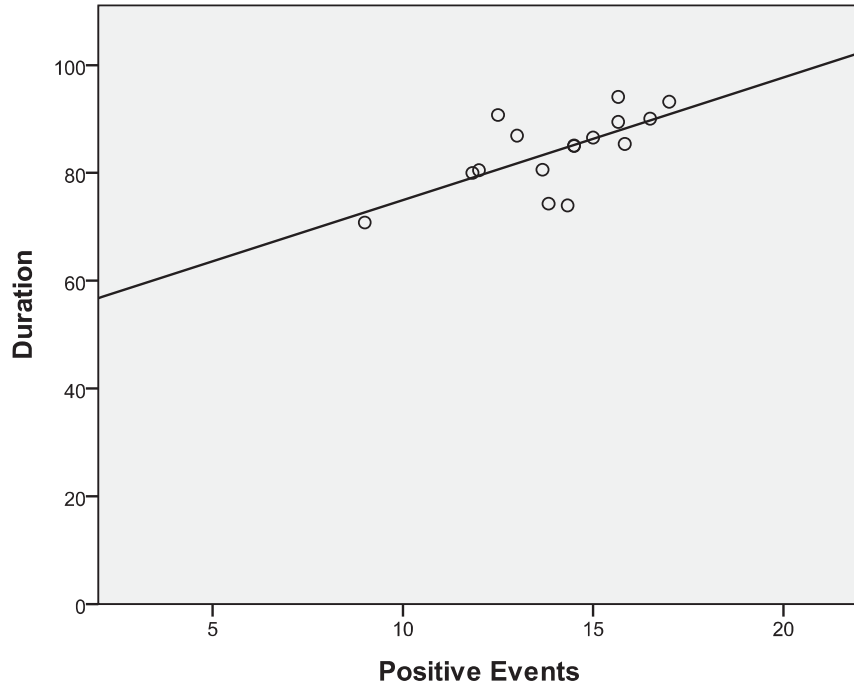
Figure 5. Scatterplot showing the association between the *Duration* activity level index and the *Positive Events* explanatory style index.
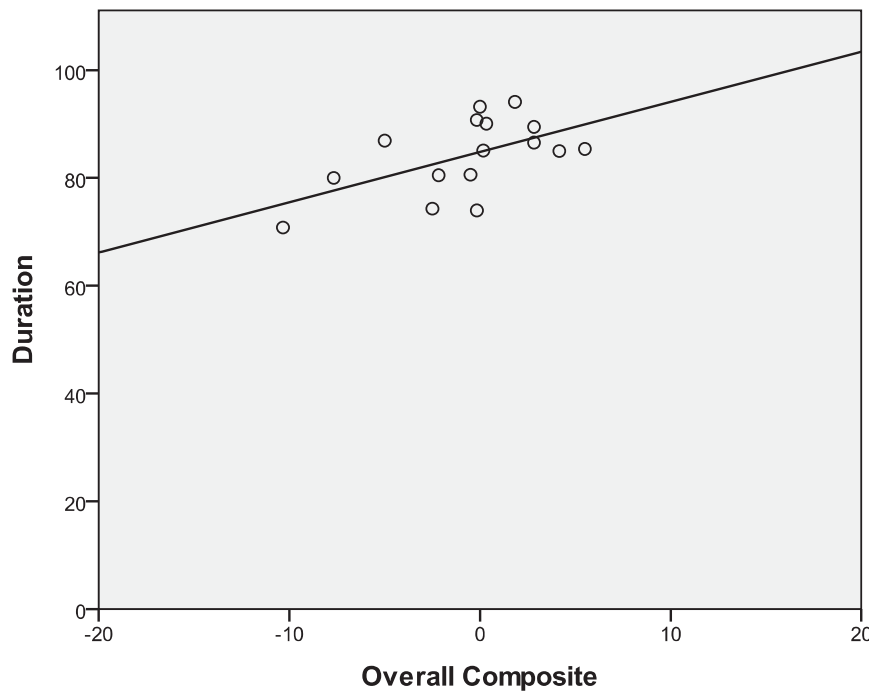
Figure 6. Scatterplot showing the association between the *Duration* activity level index and the *Overall Composite* explanatory style index.

Aim 2

To explore if there is an association between depression severity and activity level

Hypothesis

Those with greater activity levels will score lower on depression severity than those with lesser activity levels

Table 4 displays the Pearson's and Spearman's coefficients and significance values of the correlations between depression severity and the activity level indices. Two significant correlations were obtained; the Pearson's correlation between *Depression Severity* and *Variety*, and the Spearman's correlation between *Depression Severity* and *Frequency*. The coefficients suggest these were both moderate negative associations. The scatterplots with regression lines showing these significant associations are presented after Table 4.

Table 4

Pearson's Product-Moment and Spearman's Rho Correlation Coefficients and Significance Values, between Depression Severity and Activity Level Indices

Indices		Pearson's		Spearman's	
Depression Severity ↔ Activity Level	n	r	p	r_s	p
Depression Severity					
Duration	16	-.23	.399	-.28	.286
Variety	22	**-.44**	**.040**	-.39	.072
Frequency	23	-.37	.084	**-.44**	**.035**
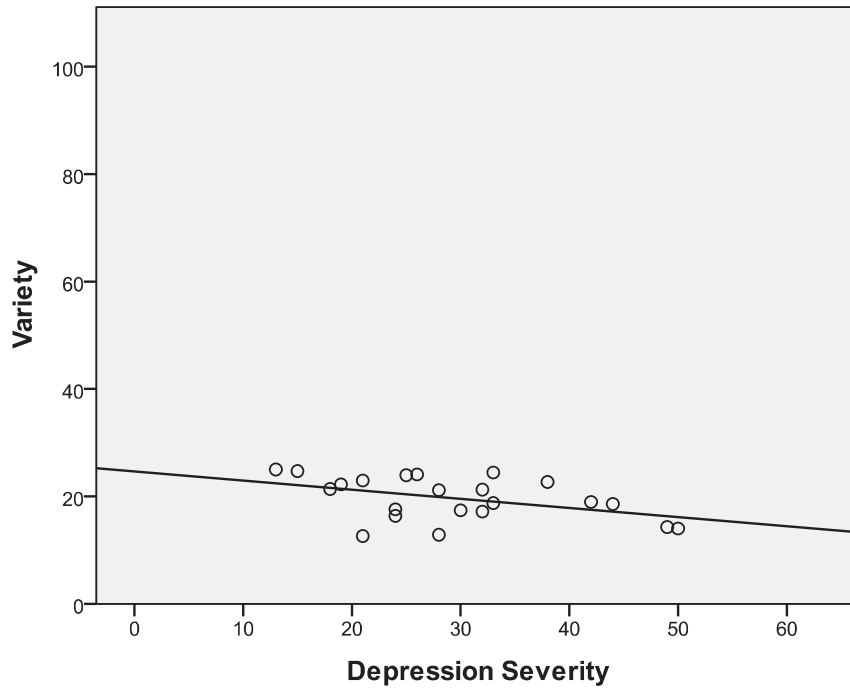
Figure 7. Scatterplot showing the association between the *Variety* activity level index and *Depression Severity*.
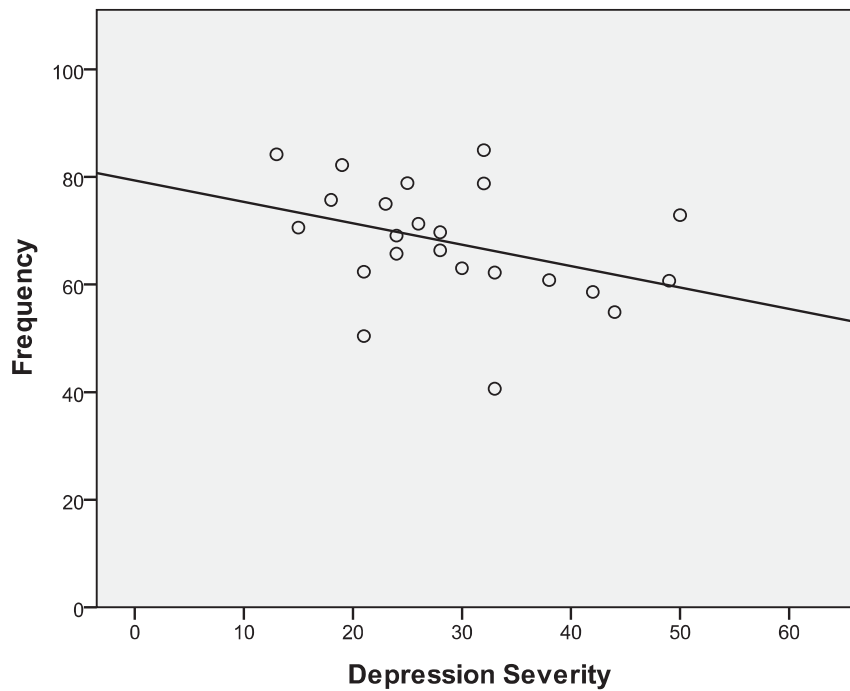
Figure 8. Scatterplot showing the association between the *Frequency* activity level index and *Depression Severity*.

Aim 3

To explore if there is an association between explanatory style and depression severity with a sample of clinically depressed adults in New Zealand

Hypothesis

Those with a more optimistic explanatory style will score lower on depression severity than those with a more pessimistic explanatory style

Table 5 displays the Pearson's and Spearman's coefficients and significance values of the correlations between depression severity and the three explanatory style indices. Strong positive Pearson's and Spearman's correlations were obtained between *Depression Severity* and *Negative Events*, and strong negative correlations were obtained between *Depression Severity* and *Overall Composite*. With regard to *Depression Severity* and *Positive Events*, only the Spearman's coefficient was significant, suggesting a moderate negative correlation between the indices. The three scatterplots displaying these associations are presented following Table 5.

Table 5

Pearson's Product-Moment and Spearman's Rho Correlation Coefficients and Significance Values, between Depression Severity and Explanatory Style Indices

Indices		Pearson's		Spearman's	
Depression Severity ↔ Explanatory Style	n	r	p	r_s	p
Depression Severity	29				
Negative Events		**.65**	**<.001**	**.63**	**<.001**
Positive Events		-.29	.127	**-.40**	**.031**
Overall Composite		**-.59**	**.001**	**-.65**	**<.001**
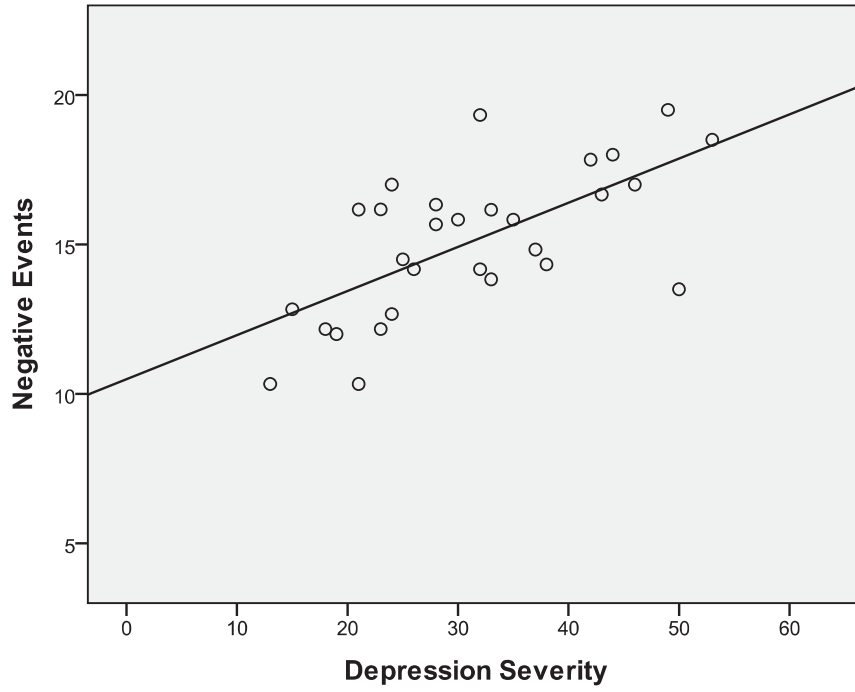
Figure 9. Scatterplot showing the association between the *Negative Events* explanatory style index and *Depression Severity*.
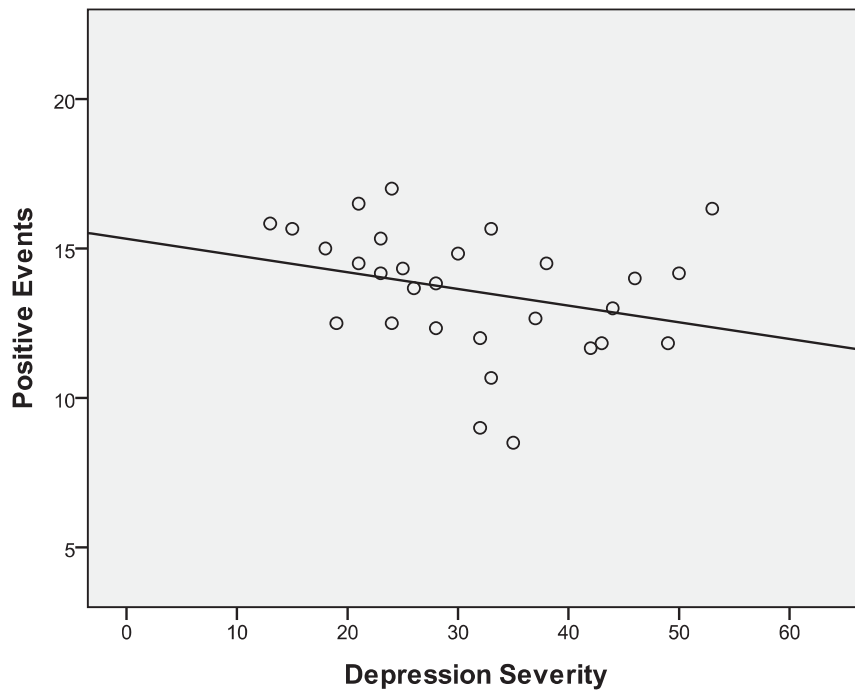
Figure 10. Scatterplot showing the association between the *Positive Events* explanatory style index and *Depression Severity*.
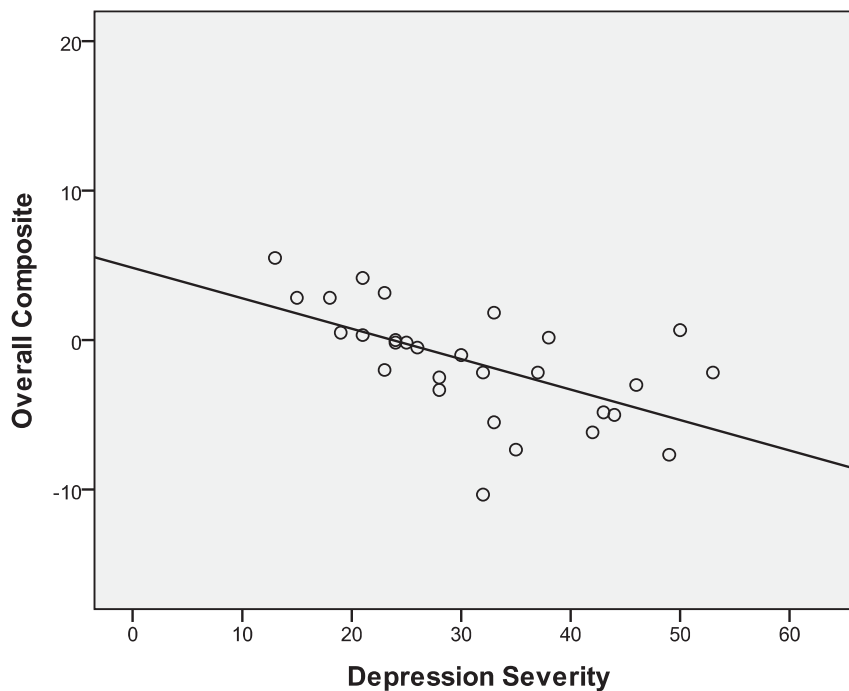
Figure 11. Scatterplot showing the association between the *Overall Composite* explanatory style index and *Depression Severity*.

Aim 4

To explore if activity type is associated with explanatory style and/or depression severity.

Explanatory style and activity type

Pearson's product-moment and Spearman's rho correlation coefficients were computed with each of the explanatory style composite scores separately for the *Active*, *Social*, *Mastery Frequency*, *Pleasure Frequency*, *Mastery Magnitude*, and *Pleasure Magnitude* activity type variables. The results are presented in Table 6.

Table 6

Pearson's Product-Moment and Spearman's Rho Correlation Coefficients and Significance Values, between Activity Type Variables and Explanatory Style Indices

Variables/Indices Activity Type ↔ Explanatory Style	n	Pearson's		Spearman's	
		r	p	r_s	p
Active	22				
Negative Events		-.35	.111	-.34	.121
Positive Events		-.05	.815	.03	.900
Overall Composite		.21	.360	.21	.340
Social	9				
Negative Events		-.18	.646	.13	.732
Positive Events		.64	.064	.40	.286
Overall Composite		.49	.177	.15	.700
Mastery Frequency	16				
Negative Events		.13	.642	.27	.312
Positive Events		.44	.086	.38	.147
Overall Composite		.13	.628	.07	.786
Pleasure Frequency	16				
Negative Events		.04	.873	.17	.531
Positive Events		**.50**	**.049**	.42	.107
Overall Composite		.22	.412	.17	.524
Mastery Magnitude	13				
Negative Events		-.22	.476	-.07	.831
Positive Events		**.74**	**.004**	**.70**	**.008**
Overall Composite		.51	.076	.41	.162
Pleasure Magnitude	13				
Negative Events		-.40	.182	-.35	.239
Positive Events		**.81**	**.001**	**.78**	**.002**
Overall Composite		**.67**	**.012**	**.61**	**.027**

As stated earlier in the current chapter, because *Active–Passive* and *Social–Nonsocial* scores add to 100%, only one member of each pair was selected for use in the analyses; the choice of member only affects the sign of the resulting coefficient. Significant correlations were obtained for four of the eighteen pair combinations.

For three of these pair combinations, both the Pearson's and the Spearman's correlations were significant; strong positive correlations were obtained between *Mastery Magnitude* and *Positive Events*, *Pleasure Magnitude* and *Positive Events*, and

Pleasure Magnitude and *Overall Composite*. A positive correlation, bordering between moderate and strong, was found between *Pleasure Frequency* and *Positive Events*, but only for the Pearson's and not the Spearman's correlation.

Visual inspection of the scatterplots appears to show a restricted range of scores for the *Positive Events* index, in terms of the 16/13 response values of clients who indicated/rated mastery and pleasure, respectively. Restricted ranges of scores often lead to the correlation being reduced. In Figure 12, almost half of the clients produced *Pleasure Frequency* scores spanning the variable's full range, while their *Positive Events* scores were almost constant. The remaining clients had limited variation in their scores on both variables. Both their *Pleasure Frequency* and *Positive Events* scores were high.
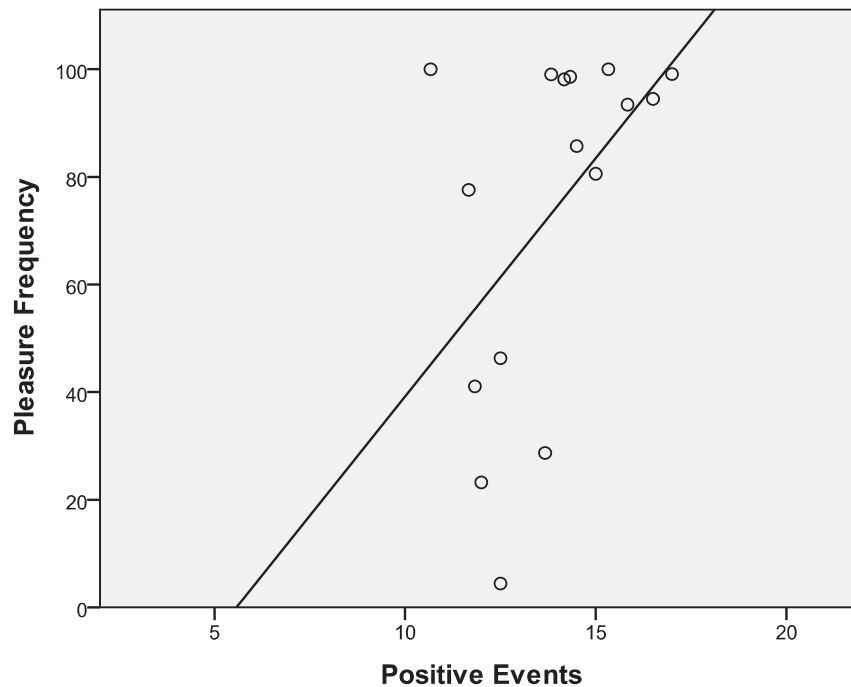
Figure 12. Scatterplot showing the association between the *Pleasure Frequency* activity type variable and the *Positive Events* explanatory style index.
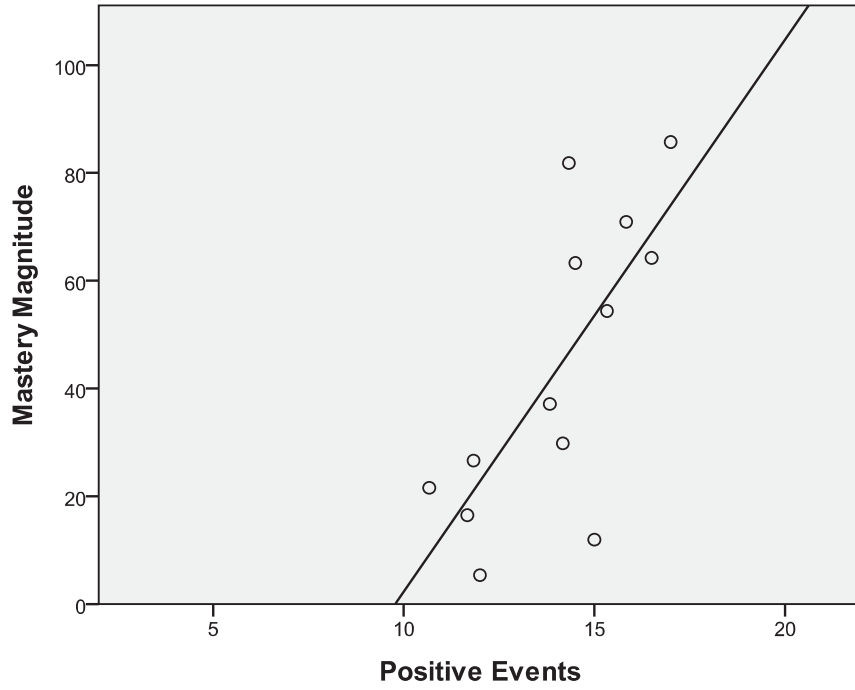
Figure 13. Scatterplot showing the association between the *Mastery Magnitude* activity type variable and the *Positive Events* explanatory style index.
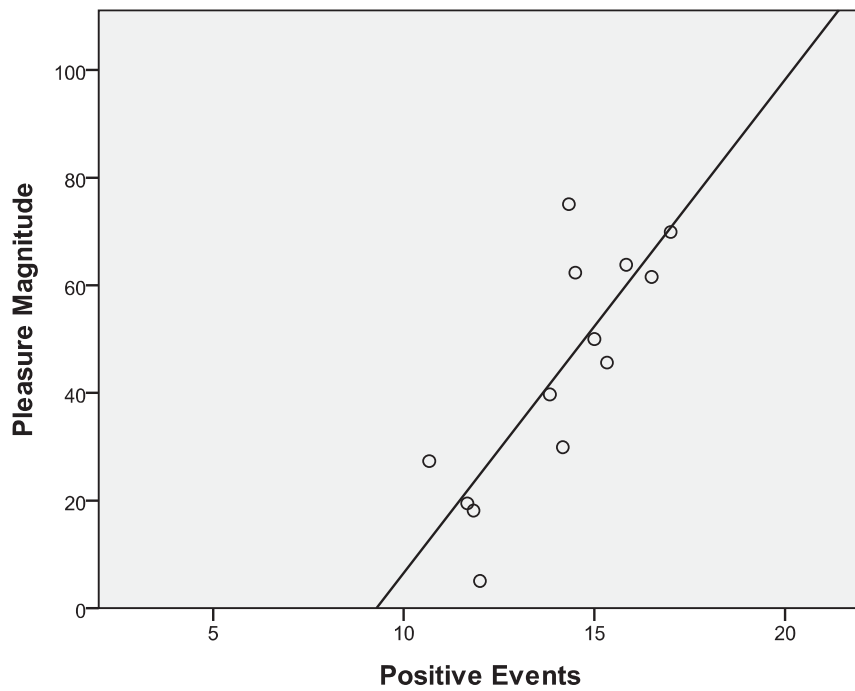
Figure 14. Scatterplot showing the association between the *Pleasure Magnitude* activity type variable and the *Positive Events* explanatory style index.
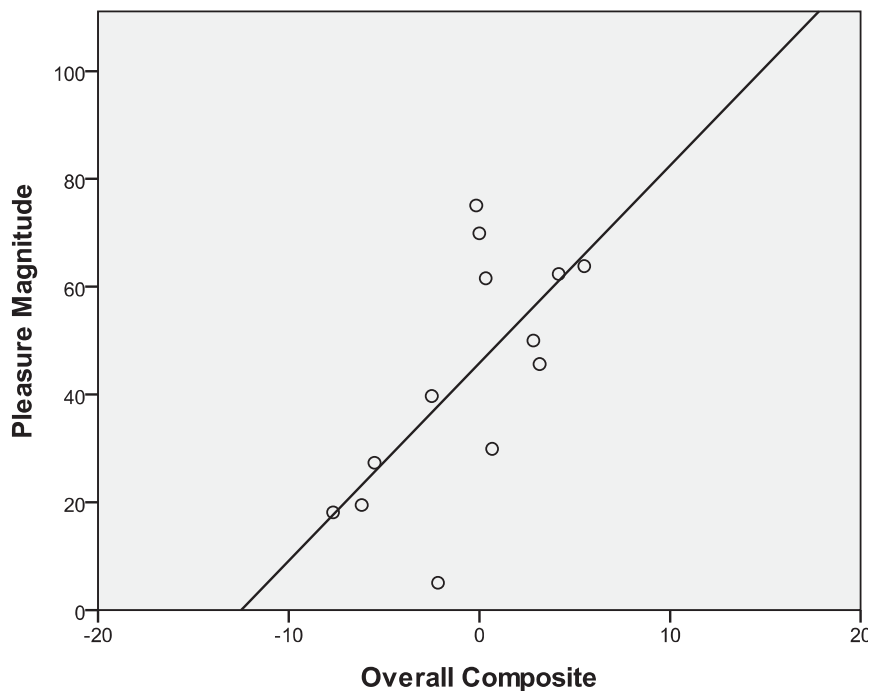
Figure 15. Scatterplot showing the association between the *Pleasure Magnitude* activity type variable and the *Overall Composite* explanatory style index.

Depression severity and activity type

Pearson's and Spearman's correlations were computed to explore the associations between depression severity and the activity type variables. The coefficients and significance values are presented in Table 7. Only one significant association was revealed. A strong negative correlation was obtained between *Depression Severity* and *Pleasure Magnitude*, displayed by the scatterplot in Figure 16.

Table 7

Pearson's Product-Moment and Spearman's Rho Correlation Coefficients and Significance Values, between Depression Severity and Activity Type Variables

Variables		Pearson's		Spearman's	
Depression Severity ↔ Activity Type	n	r	p	r_s	p
Depression Severity					
Active	22	-.15	.519	-.17	.463
Social	9	-.33	.391	-.33	.391
Mastery Frequency	16	.04	.895	.15	.581
Pleasure Frequency	16	-.05	.866	.04	.888
Mastery Magnitude	13	-.53	.065	-.43	.146
Pleasure Magnitude	13	**-.72**	**.005**	**-.70**	**.008**
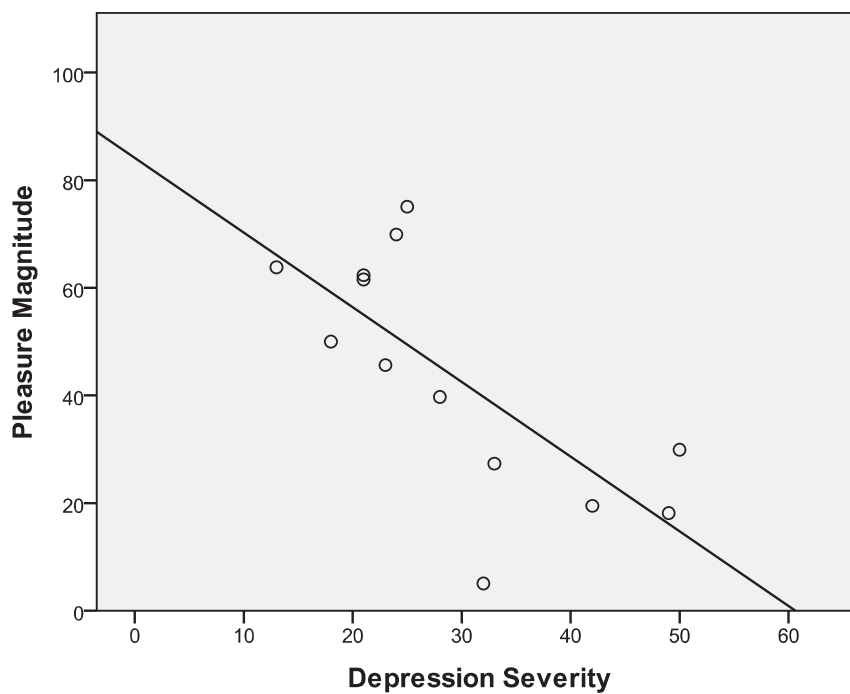
Figure 16. Scatterplot showing the association between the *Pleasure Magnitude* activity type variable and *Depression Severity*.

Visual inspection of scatterplots generated from sets of data not producing significant linear correlations did not suggest any likely nonlinear (e.g., u-shaped) relationships between the variables. A general discussion of the results detailed in this chapter is reserved for Chapter 12, where the findings from the project as a whole will be discussed and summarised. Prior to this, the background, method, and results of Study 2 are presented in the following chapter.

CHAPTER 11: Study 2

Background to the present study

Overview

The current research project began as a single study (Study 1), designed to extend the literature on explanatory style and its relationship with depression. The bulk of literature reviewed and the corresponding introductory chapters pertain to this purpose. However, in collecting data for Study 1's objective it became apparent that a clinical tool, namely the activity chart, may be more useful following an adaptation. This gave rise to two separate studies: Study 1 represented the primary purpose of the project, while Study 2 focused on the adapted activity chart. The rationale, aim, and hypotheses of Study 2 are described.

Rationale, aim, and hypotheses

It became apparent during data collection for Study 1 that although the *Active* versus *Passive* category of activity type could be determined on the basis of the researcher's judgement, the *Social* versus *Nonsocial* dimension was not always apparent. For example, a client may go out for coffee alone, or with a friend, but the details regarding the presence of others may not be provided on the chart. Thus, the objective of Study 1 to explore activity type led to an adaptation of a traditional activity chart, in the hope that this would assist with the information obtained. Further to this, it was observed that many clients forget to include ratings for mastery or pleasure and simply record the activity, either by itself or in conjunction with a mood rating. It was envisaged that including prompts for these dimensions within each cell may significantly increase the quantity of ratings made for these facets of the task, and hence improve the quality of information available. An improvement of this nature would not only assist with data collection for Study 1, but could also represent a useful advancement clinically. Collecting information is a primary objective of the tool because a clear understanding of clients' activity allows for a targeted behavioural activation approach. The adapted activity chart was produced during the data collection phase and utilised with all subsequent clients.

The adapted activity chart

The activity chart was adapted in a number of different ways (see Appendix B). First, a box was included within each activity cell for the client to indicate whether social interaction occurred for the majority of that timeslot. Second, boxes were included within each activity cell for the clients to record their mastery and pleasure ratings. Third, detailed instructions and "hints" were included on the adapted chart which incorporated a completed example cell. This was to ensure the clients had access to clear instructions outside of sessions when the therapist was not present. Finally, spaces were provided to include the date below each day of the week, based on the observation that this simple yet useful information was rarely recorded. Following these adaptations, consultation was sought from researchers with expertise in the behavioural activation and/or CBT for depression domains.

Consultation process and outcome

In addition to the supervisors of the current project, Dr. Nikolaos Kazantzis, Associate Professor Paul Merrick, and Dr. Jennifer Stillman, the following researchers (presented in alphabetical order) were consulted and provided feedback on the adapted activity chart described above: Keith Dobson, PhD, University of Calgary, Calgary, AB; David J. A. Dozois, PhD, The University of Western Ontario, London, ON; Steven D. Hollon, PhD, Vanderbilt University, Nashville, TN; and Christopher Martell, PhD, University of Washington, Seattle, WA. Dr. Aaron T. Beck, first author of the treatment manual used in *The Depression Study*, was also contacted. Dr. Sunil Bhar (University of Pennsylvania, Philadelphia, PA), Research Assistant Professor within Dr. Beck's team, provided feedback on Dr. Beck's behalf.

The feedback provided by the aforementioned researchers was positive and indicated an interest in the adapted activity chart. The feedback was discussed during a group research supervision meeting of *The Depression Study*, attended by the principal investigator of the parent study (Dr. Nikolaos Kazantzis), therapists, and research coordinators. During this meeting, further consultation was obtained from the attendees and decisions were made with regard to additional adaptations to the chart. One additional adaptation was made to the activity chart based on the consultations.

Dr. Bhar suggested the inclusion of a box for mood ratings, as a reminder for clients to complete them. Consequently, a set of parentheses were included within each activity cell, providing a space for the recording of mood ratings (see Appendix B). The overall objective of the present study was to explore the potential utility of the various chart adaptations. A summary of the specific aims and hypotheses in relation to Study 2 is presented below.

Aim and hypotheses

The aim of the study was to determine whether the adapted activity chart was superior to the typical activity chart with regard to the quantity and quality of information collected. Specifically, it was hypothesised that the inclusion of boxes for clients to indicate whether social interaction occurred would allow for the corresponding activity type variable to be calculated with every adapted chart used. It was also hypothesised that the inclusion of parentheses for mood ratings, and boxes for mastery and pleasure ratings, would prompt clients to make these ratings and hence lead to an increased quantity of information available pertaining to these facets of the task. The Method section outlines the way in which this study was conducted to examine these hypotheses.

Method

The data for the present study were obtained exclusively from the two different versions of activity charts completed by *The Depression Study* clients during their treatment. To recapitulate, these charts were used in Study 1 to measure activity level in three different ways (*Duration*, *Variety*, and *Frequency*), and to measure activity type along a number of different dimensions (*Active/Passive*; *Social/Nonsocial*; *Mastery* and *Pleasure Frequency*; and *Mastery* and *Pleasure Magnitude*). The charts were assigned to participants within the first few sessions of treatment, as specified in Chapter 9, allowing the closest practical approximation of baseline activity data.

With regard to Study 2, the use of two different activity charts essentially led to two different participant groups, defined according to the chart they completed. The adapted chart was instigated at the time when a larger enrolment of clients in *The Depression*

Study was expected, however, as previously mentioned, subsequently few clients fitting the parent study's criteria were available prior to its completion date. As such, the groups were smaller than originally anticipated. Nevertheless, comparisons were made between the two groups. The variables created to enable these comparisons are described.

Study variables

Three variables were created to test the hypothesis regarding the quantity of information available in terms of mood, mastery, and pleasure ratings. These variables were labelled *Mood Recording*, *Mastery Recording*, and *Pleasure Recording*. With regard to clinical utility, every cell completed, with the exception of those with sleep recorded, would ideally have a rating for mood, mastery, and pleasure (even if the rating is 0). Therefore, *Mood Recording* is the percentage of cells containing a mood rating out of the number of cells completed (not including those with sleep recorded). *Mastery Recording* and *Pleasure Recording* are calculated in the same way as for *Mood Recording*, although evidently pertaining to indications/ratings of mastery or pleasure instead of mood.

An additional variable, *Activity Recording*, was created to compare the two charts. *Activity Recording* is the percentage of completed cells (cells with either an activity or sleep recorded), out of the total cells available on the chart. As previously noted, both the original and adapted chart have 140 cells available. Ideally, every cell available is completed with either an activity or sleep, therefore this variable is measuring the extent to which that occurs. Recording *activities* remained the major purpose of both activity charts; however the adapted chart was designed to increase the quality of information about the activities engaged in. A potential concern with adapting the activity chart was that it may appear overly complicated to clients, and thus deter them from completing the task. Comparing the *Activity Recording* between charts allows for some exploration of this concern. An additional hypothesis was therefore adopted; that the extent of recording activities would be equivalent for both versions of the chart. The following section outlines the analyses conducted with the aforementioned variables, and the corresponding results and discussion.

Results and preliminary discussion

Social interaction

As previously outlined, it was hypothesised that the inclusion of boxes for clients to indicate whether social interaction occurred would allow for the *Social* activity type variable to be calculated with every adapted chart used. Indeed, all eight adapted activity charts allowed for the calculation of this score. By contrast, among the 15 clients utilising the original activity chart, the *Social* index could only be calculated for one client. In fact, this only occurred because the client's therapist had viewed the adapted chart (prior to it being available for use) and had encouraged the client to 'tick' each cell when social interaction occurred. This clearly shows the advantage of utilising the adapted chart to obtain information regarding social interaction.

Activity chart completion quality

The four variables described in the Method section were used to gauge the quality of completion of the activity chart homework task, namely *Mood Recording*, *Mastery Recording*, *Pleasure Recording*, and *Activity Recording*. In the analyses with these four variables, nonparametric Mann-Whitney *U* tests were used, rather than independent samples *t*-tests, in light of the small numbers and unequal sizes of the groups. These tests were used to compare the completion results of Chart 1 (original) clients with Chart 2 (adapted) clients.

The two groups differed significantly for both *Mastery Recording* and *Pleasure Recording*. Clients using the adapted activity chart made significantly more ratings of mastery and pleasure when compared with those using the original activity chart, in line with hypotheses. The results of these analyses are displayed below in Table 8. For *Mood Recording* there was no significant difference between the Chart 1 and Chart 2 scores, suggesting that the addition of a prompt for these ratings did not increase quantity of recording. The lack of difference obtained between the two groups for *Activity Recording* is in line with the hypothesis that adapting the activity chart would not change the tendency to complete the task.

Table 8

Median Recording Percentages and Mann-Whitney U Test Statistics and Exact

Significance Values as a Function of Activity Chart Completed

Variables	Chart 1 Median ($n = 15$)	Chart 2 Median ($n = 8$)	U	Exact Sig. (2-tailed)
Mood Recording	90.74	99.06	34.50	.102
Mastery Recording	1.11	98.36	13.00	.001
Pleasure Recording	4.44	98.36	9.50	<.001
Activity Recording	83.57	84.65	56.50	.837

Given the focus of the research, Mann-Whitney *U* tests were computed for *Depression Severity*, *Negative Events*, *Positive Events*, and *Overall Composite* as a function of chart used, with no significant differences obtained. This suggests that the difference in degree of completion is unlikely to be attributed to differences in depression severity or explanatory style between the two groups. A brief summary of the findings of Study 2 and a discussion of the implications appears in the following chapter.

DISCUSSION

CHAPTER 12: Discussion of Specific Findings

The current chapter presents an overall discussion of the research findings. The results of Study 1 and Study 2 are summarised in separate sections, alongside interpretations based on the findings.

Study 1: Findings and tentative conclusions

Study 1 was designed to explore the model proposed in Chapter 8, and depicted in Figure 1, reproduced below for ease of reference. Specifically, the major objective was to explore whether activity is associated with explanatory style and/or depression severity. The findings of Study 1, and the implications and conclusions based on these findings, are discussed according to each of the corresponding pathways portrayed in the figure. These pathways incorporate all of the aims (Aims 1 though 4) of Study 1. Appendix E presents a summary table displaying the significant correlations across Study 1, derived from Tables 3 through 7, as a reference for the discussions to follow.

It should be emphasised that the interpretations in this discussion are tentative, in light of the issues raised in Chapter 10 about the feasibility of hypothesis-testing. Significant correlations suggest possible associations that warrant further examination with a larger sample if strong conclusions are to be drawn.
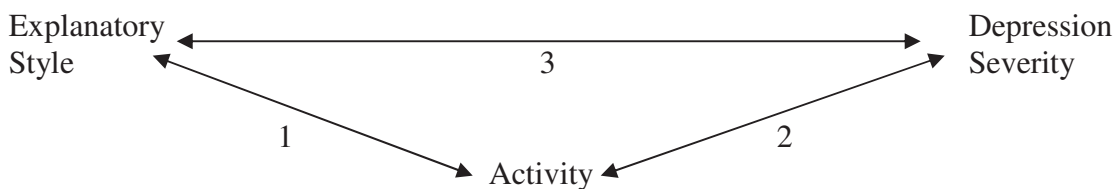
Figure 1. The proposed model; the reciprocal relationship between explanatory style, activity, and depression severity.

Path 1
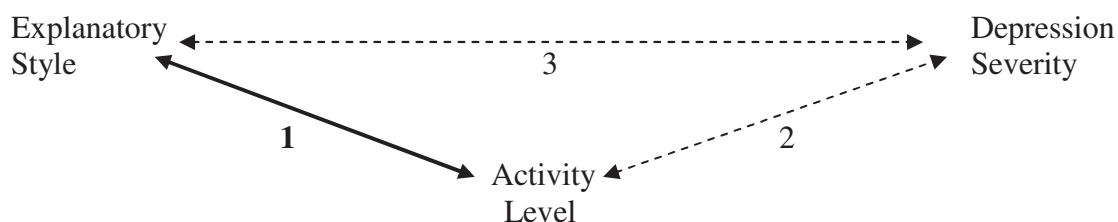
In the above representation of Figure 1, the pathway between explanatory style and activity level is highlighted as a reference for the discussion to follow. As outlined in Chapter 9, activity level was measured using three different indices, namely *Duration*, *Variety*, and *Frequency* (see Appendix C for variable descriptions), allowing for a more meaningful exploration of this variable.

The strong positive correlations between *Duration* and *Positive Events* indicate that clients with a more optimistic explanatory style for positive events spent more time engaged in activity, while those with a more pessimistic explanatory style for positive events spent less time engaged in activity. That is, clients who spent more time awake and engaged in activity were those who had a tendency to explain the causes of positive events in a more optimistic manner. Similarly, the correlations between *Duration* and *Overall Composite* suggested that clients with a more optimistic explanatory style, in terms of their overall difference score, spent more time engaged in activity. It should be noted that, given *Overall Composite* is the difference score between *Negative Events* and *Positive Events*, it is not as meaningful to discuss as explanatory style for negative or positive events. This is discussed further later.

The above results could suggest that clients who are more optimistic are more motivated to get out of bed, expecting positive outcomes to result, as opposed to those who are more pessimistic and prefer to escape the reality of their circumstances via sleep. However, the analyses are correlations, and the model is bidirectional. As such, the results could also suggest that spending too much time sleeping could be detrimental to an individual's explanatory style, possibly due to reduced opportunities to attain positive reinforcement.

The fact that strong correlations were obtained between the *Duration* activity level index and two of the explanatory style indices, *Positive Events* and *Overall Composite*, but not with the remaining composite score, *Negative Events*, implies that activity *Duration* is not meaningful with respect to explanatory style for negative events. In other words, making more optimistic, or more pessimistic, attributions for negative events is unrelated to amount of time spent engaged in activity. The fact that some explanatory style indices emerged as correlates of activity-related variables, while others did not, is discussed later.

Overall, the significant correlations discussed above provided a degree of tentative support for path 1 of the proposed model, and the hypothesis of Aim 1, in terms of an association between explanatory style and activity level. To recapitulate, the hypothesis of Aim 1 stated that those with a more optimistic explanatory style will have greater activity levels than those with a more pessimistic explanatory style. The results also suggest that, as pertaining to explanatory style, time spent engaged in activity (*Duration*) may be a more important activity level index than range of activities (*Variety*) and frequency of activity change (*Frequency*).

Path 2
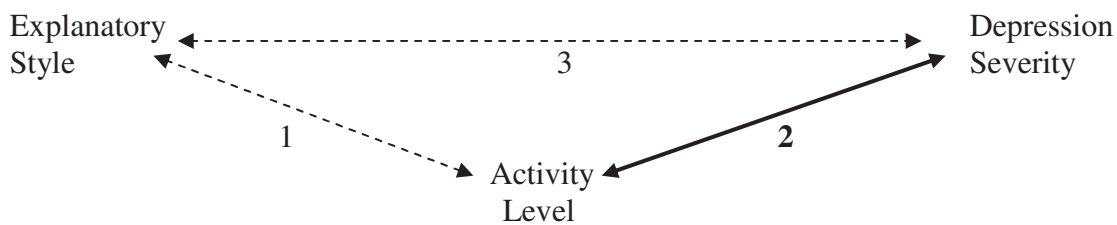
The moderate negative Pearson's correlation between *Depression Severity* and activity *Variety*, and the moderate negative Spearman's correlation between *Depression Severity* and activity *Frequency*, suggest that clients with higher levels of depression severity engaged in a smaller range of activities, and changed their activities less frequently. This is consistent with the reduced activity level that is characteristic of depression, and with research (Lewinsohn & Graf, 1973) cited in Chapter 9 in the section titled *Range*

of activities (Variety). The results could also suggest that the clients' reduced activity levels are impacting on their levels of depression severity, given the nature of correlations. Regardless, the associations between these two activity level indices and depression severity provide tentative support for path 2 of the proposed model.

The nonsignificant association between *Depression Severity* and activity *Duration* suggested that depression severity was unrelated to the amount of time spent awake and engaged in activity. Given the fact that *Duration* is essentially the percentage of time spent awake, the lack of association may have been due to the fact that, typically, some depressed clients suffer from insomnia while others suffer from hypersomnia. The above findings have implications with regard to behavioural activation, as they suggest that range of activity, and frequency of activity changes, may be useful areas to target in the treatment of depression. They do not, however, suggest that clients should be encouraged to spend more time awake, although presumably being awake longer would provide clients with greater opportunity to increase their range of activities and the frequency with which they change them. Measuring activity level by recording the duration of active periods and correlating this duration (as a percentage) with depression severity does not appear to be useful. This is not surprising given that sleep changes in depression may be in the direction of either more, or less, sleep than the individual ordinarily engages in when not depressed.

Paths 1 and 2

In addition to exploring activity level, Study 1 was designed to examine the proposed model by exploring whether different *types* of activities emerge as correlates of explanatory style and/or depression severity. The relevant pathways are highlighted in the representation of Figure 1 below.

Explanatory Style ←----------------- 3 -----------------→ Depression Severity

1   Activity Type   2
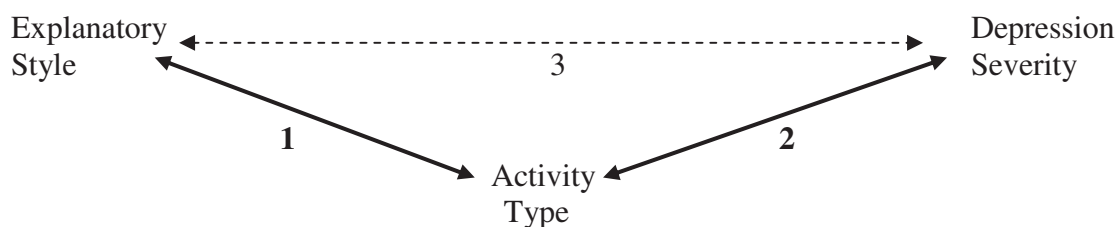
The strong positive correlations between *Positive Events* and both *Mastery Magnitude* and *Pleasure Magnitude* suggest that those with a more optimistic explanatory style for positive events also had a tendency to make higher ratings of mastery and pleasure associated with their activities. In addition, those with a higher *Overall Composite* score, and those with lower levels of depression severity, also experienced greater pleasure alongside activities. A positive Pearson's coefficient was obtained when *Pleasure Frequency* and *Positive Events* were correlated, however the scatterplot (Figure 12) did not corroborate this finding. Rather, as mentioned in Chapter 10, some clients produced *Pleasure Frequency* scores spanning the variable's full range while their *Positive Events* scores were almost constant. Other clients had limited variation in their scores on both variables, with their scores on both variables being high. This may have been related to a restricted range of scores for the *Positive Events* index, or could suggest that the variables are only linearly associated for clients with optimistic explanatory styles for positive events. No other significant associations were obtained between activity type variables and explanatory style or depression severity.

Not all explanatory style composite scores have emerged as correlates of the activity type variables, as will be discussed later. It would appear that explanatory style for positive events is a more meaningful construct in relation to activity type. The way in which positive events were interpreted was associated with the degree of satisfaction attained during activity engagement, while the way in which negative events were interpreted was not.

Overall, the most convincing outcomes related to Aim 4 involved the *Mastery Magnitude* and *Pleasure Magnitude* activity type variables. It may not be particularly surprising that a more pessimistic explanatory style would be associated with lower ratings of subjective mastery and pleasure. Some argue that negative cognitions may become more accessible during depression (e.g., Lewinsohn et al., 1981), in which case making less enthusiastic ratings of mastery and pleasure might be expected. Similarly, it may not be surprising that higher levels of depression severity would be associated with lower ratings of subjective pleasure, given a lack of enjoyment in previously-enjoyed activities (anhedonia) is a major symptom of depression. It is noted that *Depression Severity* and *Mastery Magnitude* were unrelated. This seems to support

the idea that the significant correlation between *Depression Severity* and *Pleasure Magnitude* may be solely related to overlap between these two constructs, possibly relating to anhedonia.

There were 13 clients in *The Depression Study* who made ratings of mastery and pleasure on their activity charts. Closer examination of these 13 activity charts appeared to show a pattern in terms of the relationship between depression severity and ratings of mastery and pleasure. The ratings of clients who were severely depressed were almost entirely low (below 5), while the ratings of clients who were moderately depressed were almost entirely high (above 5). This would seem to make sense, and fit with previous arguments which assume that the clients' perception about the activities they engage in is influenced by their depression. However, it is unclear why there was such a discrepancy in the tendency to make high or low ratings between these two small groups of clients. It was not appropriate with such small numbers to carry out formal testing to examine the patterns. Nevertheless, it is possible that these observations are suggestive of the role of cognitive biases relevant to depression and/or the use of rating scales, hence the patterns appeared noteworthy. It could be assumed that most people, on a day-to-day basis, carry out activities that they do not get a sense of achievement or enjoyment from. This might include chores, mundane jobs, or routine grooming, for example. This was not represented by the way in which the moderately depressed clients made their ratings. In fact, their ratings suggested that they experienced a strong sense of achievement and enjoyed the majority of their activities, an observation that would seem unusual in a clinically depressed group of clients. Rather than relating solely to their levels of depression severity, this could suggest particular cognitive biases involving some clients and not others. For example, some clients may feel the need to impress their therapist with high ratings (e.g., social desirability), while others may want to express their need for help with low ratings. In this sense, it would be interesting to know how members of the general population would rate mastery and pleasure alongside activities, or if personality traits bear any relevance to these tendencies. It may be the case that all depressed clients suffer from high negative affect, whereas only those experiencing anhedonia, a symptom which is known to be characteristic of more severe depression, suffer from low positive affect (Barlow & Durand, 2009). This possibility could also partly explain the patterns described above, particularly in terms of the tendency to rate pleasure as opposed to mastery.

The patterns observed may suggest a useful avenue for future research using activity charts, and may also argue that the relationships between variables are more complex than initially considered. The patterns may also have clinical implications; if a clinician noticed a large discrepancy in terms of the extent to which an individual was making high or low ratings, the therapist could explore this with the client in case this led to useful insights. If the client was trying to please the therapist, for example, this might be important to explore. Perhaps the client feels the need to do this in all of their relationships, and this could be impacting on the level of satisfaction they gain from social interactions. For instance, they might be attempting to please others at the expense of themselves, and then become resentful at times towards the very people they attempt to please. The key message here is that a wealth of information could be derived from the mastery and pleasure ratings of activity charts.

Overall, the findings relating to Paths 1 and 2 of the proposed model suggest that the actual amount of time spent engaging in active, social, mastery-promoting, or pleasure-promoting activities is unrelated to explanatory style or depression severity. In other words, the time spent engaged in these activities may not be as important as the subjective experience resulting from that engagement. Along these lines, Flora and Segrin (1998), cited in Chapter 6, suggested that simply engaging in activities that involve social interaction may not be as important in relationships as the degree of satisfaction resulting from that engagement, arguing that the variation in the quality of social interaction should be considered. The type of activity engaged in is important only insofar as it can influence *opportunities* to attain satisfying social interaction (Flora & Segrin, 1998).

Similarly, the findings of Price and colleagues (1978), as discussed in Chapter 2, suggest that control over the environment is more important in terms of behavioural response to aversive circumstances, than whether or not the response is active or passive. Both degree of satisfaction and perceived controllability could be considered cognitive factors that influence engagement in activity, in which case it would appear important to consider them in the treatment of depression. These arguments are consistent with behavioural accounts of reinforcement that place an emphasis on meaning (DeGrandpre, 2000), as well as Beck's formulation of cognitive theory emphasising the meaning or interpretation clients make for the events in their lives

(A. T. Beck, 2005). In this case, what is presumably important is the degree of satisfaction, or subjective level of mastery and/or pleasure, that clients take from the activities they have engaged in.

The discussion to this point has focused on one of the main objectives of the current research, exploring Paths 1 and 2 of the proposed model in terms of whether explanatory style and/or depression severity is associated with activity level and/or activity type. Over and above this objective, Path 3 of the model was examined to explore whether an association would be found between explanatory style and depression severity in a sample of clinically depressed adults in New Zealand. The findings are discussed below.

Path 3
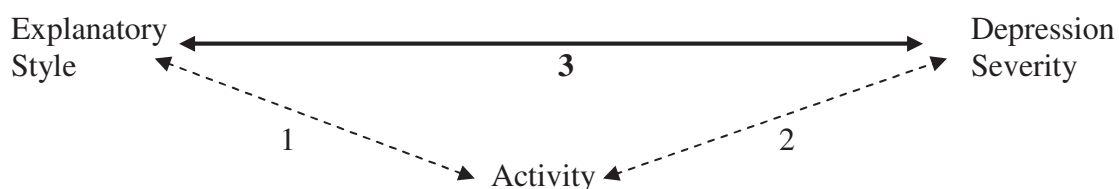
The strong positive correlations between *Depression Severity* and *Negative Events*, and moderate negative Spearman's correlation between *Depression Severity* and *Positive Events*, suggest that as explanations for events (negative/positive, respectively) became more optimistic, depression severity decreased, and vice versa. In keeping with these outcomes, as the difference between the two indices (*Overall Composite*) increased, reflecting a more optimistic explanatory style, levels of depression severity decreased. In other words, in line with predictions (the hypothesis of Aim 3), those with a more pessimistic explanatory style had greater depression levels than those with a more optimistic style. While this was evident across all three composite scores of the ASQ, stronger support was obtained for the *Negative Events* and *Overall Composite* explanatory style indices. Strong correlations were obtained for these indices with both the Pearson's and the Spearman's statistics, whereas only a moderate Spearman's coefficient was obtained in the correlation involving *Positive Events*.

Data were available for all 29 clients of *The Depression Study* for the variables involved in the Path 3 correlations. While this remains a small sample size, the findings appear more convincing than previous correlations, particularly because all three explanatory style indices have emerged as correlates of depression severity. It is argued that these findings provide support, albeit tentative, for Path 3 of the proposed model described in Chapter 8, as well as the reformulated learned helplessness theory described in Chapter 1. The results are also consistent with the empirical body of literature discussed in Chapters 2 and 3. Most notably, the metaanalytic reviews with both children and adolescent research (Gladstone & Kaslow, 1995) and adult research (Sweeney et al., 1986) have provided compelling evidence for an association between explanatory style and depression severity. Study 1, with respect to this abovementioned finding, has suggested that a pessimistic explanatory style is applicable to a New Zealand sample of clinically depressed adults. This is important, as it implies that therapists treating clinically depressed clients should be aware of the role that explanatory style may play in the aetiology and maintenance of this common disorder.

Differential associations across indices

Activity level indices: Explanatory style versus depression severity

In terms of the findings relating to Path 1 and Path 2, explanatory style and depression severity differed with regard to which activity level indices they were associated with. Specifically, activity *Duration* was a correlate of explanatory style, but not a correlate of depression severity. Conversely, activity *Variety* and *Frequency* were correlates of depression severity but not of explanatory style. *Duration* was assumed to be the least meaningful activity level index, mostly because it was essentially measuring percentage of time spent awake. Further to this, from observation of the completed activity charts, the recording of sleep was not particularly consistent either within or across participants. This was part of the reason why the sample size was smaller for *Duration* in comparison to the other activity level indices. In addition, the time period between 2 a.m. and 6 a.m. was not included on the activity charts. Typical activity charts do not span a 24 hour period, possibly due to an assumption that most people are asleep during the night. It is unclear whether the inclusion of this time period would have yielded different results, in the event that some individuals were not sleeping during this time.

It is understandable that *Duration* may not emerge as a correlate of depression severity, given the earlier discussion about the likelihood that some clients would suffer from insomnia whilst others may have hypersomnia. It would seem that links between *Duration* and depression severity would be better tested if clients with hypersomnia and insomnia were tested separately. *Duration* did correlate with explanatory style indices, and there appears to be no obvious reason why it would relate to explanatory style when it does not relate to depression severity, given the proposed links between variables.

Likewise, it is not clear why *Variety* and *Frequency* would be important in terms of depression severity, but not in terms of explanatory style. To recapitulate, *Variety* was measuring range of activities and *Frequency* was measuring how often activities are changed. The fact that *Variety* did not correlate with any of the explanatory style indices suggests that the range of activities individuals engage in is unrelated to their explanatory style. However, it would seem to make sense that being more optimistic might lead individuals to try out more activities, to expect better outcomes from a greater number of activities, and hence increase the range of activities they carry out. Similarly, it would seem to make sense that being more optimistic could lead individuals to change activities more frequently, as having a positive outlook could assist with completing activities faster, as previously discussed. Alternatively, being more positive could have the opposite effect; individuals might be more relaxed and feel no sense of urgency to move onto a new activity.

The tentative support that has been obtained suggests that, of the three activity level indices, *Duration* is the only meaningful index in terms of links with explanatory style. The findings also suggest that, with regard to explanatory style research, measuring activity level in terms of range of activities and frequency of activity changes is not useful. This is not to say, however, that measuring activity *Variety* and *Frequency* is not useful in depression research, or for therapeutic purposes. In fact, these two indices have correlated with depression severity in the present study and therefore have some relevance to the proposed relationships.

Overall, the findings suggest that explanatory style is associated with depression severity, and also appears to be correlated with the general amount of time a depressed client spends awake. However, the inclination to sample a variety of activities, and to

change activities frequently, decreases with increasing depression severity, irrespective of explanatory style. These mixed findings show the importance of determining an appropriate measure of activity level, a factor that the literature has thus far insufficiently addressed.

Explanatory style indices: Negative versus positive events

As discussed in Chapter 3, there have been mixed findings amid the explanatory style literature regarding which composite scores of explanatory style are more meaningful. In the present study, there is stronger support for the negative events composite, than the positive events composite, in terms of links with depression severity. This finding is in line with other research using clinical samples (e.g., Raps et al., 1982; Silverman & Peterson, 1993), which found that explanatory style for negative events was characteristic of depression while that for positive events was not.

A different pattern emerged in the present study in terms of links between explanatory style and activity-related variables. Explanatory style for positive events has emerged as a correlate of a number of activity level and activity type indices (e.g., *Duration*, *Mastery Magnitude*, *Pleasure Magnitude*), while explanatory style for negative events was associated with none of the activity-related variables. For example, explanatory style for negative events was unrelated to subjective levels of mastery and/or pleasure experienced alongside activities, whereas explanatory style for positive events was strongly associated with higher ratings of mastery and pleasure. It is unclear why attributions for negative events would not relate to activity-related variables, and why attributions for positive events would appear to be more important. Perhaps this relates to the fact that a lack of interest in previously enjoyed activities, a common occurrence in depression, implies a change in the way positive events are interpreted. This may have a greater influence on activity-related variables than the way in which negative events are interpreted. These results were obtained despite a restricted range of scores for *Positive Events*, which was particularly evident in correlations with activity-related variables. Often a restricted range results in lower correlations than could be obtained otherwise. Additionally, the *Positive Events* index of explanatory style showed moderate internal consistency, revealed in Chapter 9. This suggests a degree of doubt in terms of the reliability of this measure, and the extent to which the items in the scale

were measuring the same construct. It is unclear what effect this may have had on the findings. Overall, the mixed findings from previous research, along with the findings of the present study, suggest that future research should consider the potential differential relationships between composite scores for negative and positive events with depression and activity.

From a clinical standpoint, understanding the extent to which an individual is optimistic or pessimistic in explaining the causes of negative or positive events could be very useful therapeutically. During the course of therapy, negative and positive events are likely to occur in clients' lives, and the way in which these events are interpreted is worthy of exploration. Some clients might exhibit a self-serving attributional bias, by which they externalise negative outcomes and take credit for positive outcomes. Others might show the opposite pattern, and be more self-derogating, in line with the nature of depressive thought, at least according to authors of cognitive theories of depression (e.g., Abramson et al., 1978; A. T. Beck, 1967; A. T. Beck et al., 1979). Consideration of the way individuals perceive both the negative and the positive events that occur in their lives would appear to be useful, as opposed to only considering one or the other.

It was stated earlier that the *Overall Composite* difference score is not as meaningful to discuss as the *Negative Events* and *Positive Events* scores. The reformulated learned helplessness theory defines an optimistic or pessimistic explanatory style according to attributions about negative and positive events, not according to the difference between attributions for the two types of events. Furthermore, as mentioned in Chapter 9, researchers (Hjelle et al., 1996; Peterson et al., 1982) argued against combining the *Negative Events* and *Positive Events* scores to create the overall difference composite score. The orthogonality of the two indices demonstrated in other studies ($r = .02$) was not as convincing in the current project ($r = -.34$, $p = .075$), and it was decided that the *Overall Composite* index would be utilised in the present study in the event that this offered useful insights. The fact that the *Overall Composite* index emerged as a correlate of other variables of interest in the present study suggests that further examination of this index in future research is warranted.

Summary and conclusions of Study 1 findings

The findings suggest that explanatory style[9] may influence the amount of time that clinically depressed clients spend awake and engaged in activity, and vice versa. Explanatory style may not be as influential in terms of a depressed client's repertoire of activity, or the frequency with which they change their activities, although depression severity does appear to influence these factors. Both explanatory style and depression severity were associated with activity type, but only with regard to the degree of pleasure associated with the activities. Explanatory style was linked with the degree of mastery associated with activities, but depression severity was not. In line with previous research, explanatory style and depression severity were also associated with each other in the present study. Given the small sample sizes, and consequent low power of these analyses, the significant findings are considered noteworthy. As mentioned in Chapter 10, it is possible that the study failed to detect relationships that actually exist.

It is unclear why different explanatory style composite scores emerged as correlates of different variables in Study 1. The fact that each composite has emerged as a correlate of at least one of the other variables indicates that all three composite scores should continue to be utilised in research of this nature, until such time as further clarification is obtained. At the very least, the scores for both positive and negative events are considered essential.

Similarly, all three activity level indices have emerged as correlates of either explanatory style or depression severity. This suggests that all three indices may warrant further examination as well. The proposed model of Study 1 suggests a reciprocal relationship between explanatory style, depression severity, and activity level/type. Perhaps the differential associations suggest that the connections between variables are more complicated than can be addressed by the proposed model. Future research using larger sample sizes of clinically depressed clients may offer better insight into the model, and into which explanatory style scores and which activity level indices are most important.

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[9] At least one of the three explanatory style composite scores in each case was correlated with the activity level / activity type variable concerned.

It is noted that, of those sets of data that produced significant Pearson's correlations, the proportion of explained variance ranged from 19% to 66%. Given regression could not be carried out, hence only two of the three Study 1 variables were involved in each analysis, it is possible that some of the unexplained variance could be accounted for by the remaining third variable in each instance. It is equally likely that other variables, not measured in the present study, accounted for some of the unexplained variance, such as the related or overlapping constructs previously discussed.

Overall, the results of Study 1 have provided tentative support for the proposed model, and for the reformulated learned helplessness theory, in their application to clinical depression in New Zealand. The results of Study 1 also confirm the utility of activity charts as a data collection tool in clinical research. Despite the fact that they have been used clinically for decades, the wealth of information contained within these tools has been largely overlooked among clinical research. An activity chart that is able to reliably capture information about mastery and pleasure experiences, for example, promotes the development of the therapist's and client's insight into the types of activities that enhance the client's personal sense of mastery and pleasure and lead to improvements in their mood. The results of Study 2 provide further evidence as to the value of activity charts.

Study 2: Findings and conclusions

The findings of Study 2 are supportive of the utility of the adapted activity chart, at the very least for research purposes. As outlined in Chapter 11, one of the main incentives for adapting the activity chart was the observation that, in the original chart, it was difficult to determine whether other people were present during activity engagement. This was important with regard to the aim in Study 1 of determining levels of social interaction and exploring whether this relates to explanatory style and/or depression severity. As discussed in Chapter 6, positive social interaction is considered fundamental for mood, suggesting the importance of exploring this facet of activity because of potential implications for the aetiology and treatment of depression (Lewinsohn & Graf, 1973). It is perhaps not surprising that no significant associations between explanatory style/depression severity and levels of social interaction were

found in Study 1, given that, due to the limitation of the original activity chart, the sample size was only nine. In this light social interaction remains a potentially influential factor.

The results of Study 2 suggested that the adapted activity chart allowed for increased information to be obtained regarding social interaction, and better recording of mastery and pleasure ratings, when compared with a typical activity chart commonly utilised in therapeutic settings. Qualitatively, the adapted activity chart also allowed for quicker and easier scoring in relation to Study 1's objectives. This was possibly because the format for completing the chart became more standardised across clients, with ratings of mastery/pleasure and indications of social interaction easier to locate and interpret. The results did not support the contention that including a prompt for mood ratings would increase the likelihood of these being recorded. This could suggest that mood ratings require less prompting to carry out. This might be because they are well regarded by therapists as an essential feature of activity monitoring, or indicate that clients are eager to show their therapist the extent of their low mood. It may also have occurred simply because the original activity chart included mood rating as part of the instructions for the task, so essentially the clients were being prompted to do this already, despite there not being a prompt in every cell.

The capacity of the adapted chart to attain increased information could be useful for future research in this area. Furthermore, given the purpose of the activity chart in terms of gathering information, these results imply that the adapted chart should be particularly useful in clinical settings as well. There are a number of supplementary ways activity charts could be used in therapeutic settings. In addition to gathering information about a client's activity patterns at the beginning of therapy, often therapists might reassign the activity monitoring task at various stages of therapy. The resultant data could be graphed and presented to the client, potentially consolidating their learning regarding changes in their activity patterns over time. Ultimately psychotherapy strives to promote relapse prevention. By comparing the client's activity level and the types of activities engaged in, from early stages of therapy to later stages, clients may recognise that particular activities should become permanent features

of their everyday lives, due to the positive influence on their thoughts and emotions. It is very likely that the adapted activity chart would make this easier to do, and allow changes in social interaction levels to be explored as well.

Not only does the adapted activity chart of Study 2 provide prompts that could increase the quantity of recording during task completion, it also provides additional information regarding social interaction which typical activity charts do not capture. Further to this, there is no evidence to suggest that clients will be less likely to complete the chart due to its more complex appearance, as overall activity recording was not compromised by the use of the more detailed chart. The adapted chart is likely to be beneficial across both research and clinical settings. The outcomes and implications of the current research are discussed further in the following chapter.

CHAPTER 13: General Discussion

When evaluating the outcomes of this research, a number of issues need to be considered. These are, first, the conceptual overlap of related constructs relevant to the explanatory style field, as outlined in Chapter 1; second, the general limitations of the project; third, the implications of the findings for mental health; and finally, suggestions for future research.

Conceptual overlap and alternative explanations

A discussion regarding constructs hypothesised to be related to explanatory style, including self-esteem, self-efficacy, and hope, was presented in Chapter 1. Further to this, throughout the review of explanatory style literature, researchers have offered alternative explanations regarding the cognitive factors relevant to depression. As discussed in Chapter 2, research with both tertiary students and adults has suggested that cognitions relating to consequences of stressful events may be more relevant to depression than attributions about the causes of them (Gong-Guy & Hammen, 1980; Hammen & Cochran, 1981; Hammen & deMayo, 1982). The importance, or personal meaningfulness, of situations may also need to be taken into consideration (Gong-Guy & Hammen, 1980; Hammen & deMayo, 1982; Smolen, 1978) because the effect positive or negative events have on an individual may depend largely on how important the consequent outcomes were to them personally. The helplessness produced may be greater, for instance, when an outcome that could not be attained was deemed particularly important (Smolen, 1978). Degree of perceived uncertainty, degree of upset, and likelihood of events recurring may all be important factors to consider in terms of cognitions regarding stressful events (Gong-Guy & Hammen, 1980). The attributions that individuals make for positive and negative events, according to the reformulated theory, shape their expectations regarding future outcomes, and in turn influence reactions to future events (Nolen-Hoeksema et al., 1986). It has been argued that the characteristics of events are a major determinant of the attributions an individual makes, and that explanatory style has its effect when reality is perceived to be ambiguous (Raps et al., 1982). It would appear constructive for explanatory style researchers to remain mindful of these factors, in addition to the related constructs

discussed in Chapter 1, namely self-esteem, self-efficacy, and hope. Further consideration of the reformulated learned helplessness theory in relation to overlapping constructs is presented next.

The helplessness reformulation suggests that learned helplessness stems from exposure to events that are uncontrollable, leading to the belief that future similar circumstances will also be uncontrollable. In this sense, the future events are only *perceived* to be uncontrollable; they do not necessarily need to be uncontrollable. Besides explanatory style, two other cognitive constructs are relevant in terms of perception about personal control; namely, self-efficacy, as previously discussed, and locus of control. There has been debate regarding the similarities and differences among explanatory style, self-efficacy, and locus of control (Bandura, 1992; Peterson & Stunkard, 1992; Rotter, 1992; Seligman, 1992). Self-efficacy is a type of belief an individual holds about themselves; hence it can be assumed that lowered self-efficacy would only result if the situation is perceived by the individual to be uncontrollable specifically to them, but not necessarily uncontrollable to other people. If the event was perceived to be uncontrollable to everyone, then it would not make sense for this to change the view the individual holds about themselves, but more likely the view they hold about the world in general. In other words, if their self-efficacy diminished it would be because they believed they were helpless to influence a situation which they considered other people would be able to manage. Along this line of reasoning, the construct of self-efficacy should take into account the comparisons individuals draw between themselves and others.

There is likely to be a bidirectional association between degree of self-efficacy, and the experience/perception of uncontrollable events, similar to the proposed model of Study 1. As alluded to above, self-efficacy most likely determines whether or not some events will be perceived to be uncontrollable, depending on whether the individual believes they have the ability to influence their situation. Likewise, it would make sense that prior and future experience with events that are uncontrollable impacts on self-efficacy, depending on the attributions made about the events. This reference to attributions, and discussion about controllability, illustrates the intricate conceptual ties between explanatory style and self-efficacy. Similarly, locus of control bears some resemblance to the internal–external dimension of explanatory style. Essentially, it is the extent to

which individuals expect outcomes or reinforcements to be contingent on their own characteristics or behaviour, versus an external factor such as chance or another person (Phares, 1972; Rotter, 1972, 1990). It differs from the internal–external dimension of explanatory style in two notable ways; it does not separate positive versus negative events, which clearly can be perceived in different ways, and it refers to expectancies for the future as opposed to attributions for the cause of events. Nevertheless, it is possible that this construct, locus of control, believed to be a facet of personality, influences the attributions an individual makes and hence their explanatory style.

Further to this discussion regarding controllability, the distinction between the concepts of hopelessness and helplessness is of relevance. The term "hopeless" suggests that there is no hope regardless of who you are. By contrast, it is possible that an individual may feel "helpless" to influence their circumstances regardless of whether the circumstance is uncontrollable for everyone (no individual possesses the required ability to change the circumstance) or uncontrollable only for them. Conceptually, it would make sense if self-efficacy is related only to this latter process of helplessness, given it involves a judgement about oneself as opposed to the world in general. The hopelessness theory of depression (Abramson et al., 1989), as cited in Chapter 4, states that a significant event does not need to be perceived as uncontrollable. However, as mentioned, if self-efficacy is indeed related to hopelessness, as researchers have suggested (e.g., Houston, 1995), then the significant event *is* perceived by that individual to be uncontrollable, at least for them.

The fact that the reformulated learned helplessness theory takes into account the importance of uncontrollability, or perceived uncontrollability, is considered important given the significant potential effects of uncontrollability discussed in Chapter 1. Further to this, the reformulation considers both universal and personal helplessness and as such is broader than the hopelessness theory. As discussed above, personal helplessness appears to be conceptually tied to self-efficacy, while universal helplessness appears conceptually tied to hopelessness. Furthermore, self-esteem is incorporated into the reformulated learned helplessness theory in terms of the consequences of internal attributions for negative events, and locus of control may be inherently linked with the internal versus external attributional dimension.

Although the distinctions between all of these constructs and theories are currently somewhat ambiguous, the reformulated learned helplessness model, with its corresponding construct of explanatory style, appears broad enough to take each of them into consideration, and future research might usefully explore the association between these important constructs. This is not to suggest that other theories, such as the hopelessness theory, should not be considered in greater detail. In fact, a broad and inclusive approach is precisely what is required in the face of such ambiguity. The proposed model of the current project has taken into account a number of theories. Rather than attempting to claim disparity and superiority over these earlier theories, the proposed model has been designed in accordance with its compatibility with these previously established models, as discussed in Chapter 8. In particular, the interrelated nature of the model suggests that change in one variable can cause change in other variables, and vice versa.

If the variables of the current project are reciprocally connected as proposed, it is also possible that indirect, bidirectional, mediated associations exist between the variables concerned. The bidirectional arrows in the model capture the idea that a perpetuating cycle is likely to occur if the nature of these variables is indeed interactive. There are various possibilities pertaining to mediation between explanatory style, depression, and activity. First, a maladaptive explanatory style may lead to a reduction in activity, which in turn may lead to depression. Likewise, depression severity could influence activity levels, or activity choices, which in turn could influence explanatory style. Second, the link between activity and explanatory style could, in some cases, be influenced by depression severity. Activity could influence depression severity, which in turn could influence explanatory style. Likewise, explanatory style could influence depression severity, which in turn could influence activity. Finally, some researchers (Hammen & Glass, 1975) have implied that a reciprocal relationship may exist between mood, activity, and event evaluations, whilst others (Lewinsohn & Libet, 1972) have suggested that certain individual difference variables may moderate the link between activity and mood. Therefore, not only is it plausible that depression can influence activity directly, it may influence activity indirectly via explanatory style. Explanatory style is an individual difference variable that may be able to determine evaluations about events, and depression severity is linked with low mood. Explanatory style may

be able to influence future activity via expectations about that activity. Regarding the opposite direction, activities may influence explanatory style, which in turn may influence depression severity.

The present study was unable to test for mediation between the variables, given the small sample size, nor was it designed to. Due to the proposed bidirectional links between all variables concerned, this research aimed to examine relationships between the variables to explore whether provisional support could be found for the proposed model. Examining whether the anticipated correlations might exist was considered the first step in exploring the likely validity of this model. Overall, the suggestion of these combined pathways is intended to portray the message that the relationships between variables in the proposed model are presumed to be interrelated, and could be more complex than the research was able to address. Future researchers may be interested in testing whether these mediated associations exist. The possibility that mediation occurs between the three variables in the proposed model has treatment implications relevant to behavioural activation. It suggests that intervention directed towards activity could impact either directly on depression severity, or it could impact on depression severity via change in explanatory style. Prior to further consideration of implications for mental health, limitations of the present research are discussed.

Limitations of the research

A major limitation of this research relates to the small sample size, a common issue among research with clinical populations, due to difficulty accessing these samples, and the time-consuming and challenging nature of treatment outcome research processes (Kazdin, 2003). This factor restricts the statistical power to detect associations among variables, and hence the ability to make strong conclusions. The fact that some significant correlations were obtained despite the small sample size is promising with regard to the proposed model. The small sample size was particularly evident when exploring associations with activity-related variables. As mentioned in Chapter 10, three clients did not complete their activity charts, two of which were classified at intake as severely depressed, and the final client was classified as moderately depressed. It is possible that, had they complied with the task, stronger support for the proposed model may have been obtained. In this sense, the fact that these clients were

noncompliant with the task could have been reflective of their levels of depression severity. Perhaps their activity levels were particularly low and they were noncompliant with the task in an effort to conceal this information from their therapist. Similarly, completing the task was an activity in its own right, hence noncompliance could be indicative of low activity levels. Although, in reality, there are numerous factors that could have caused their noncompliance. It is interesting to note that one of the three clients that were noncompliant with the task was the only individual in *The Depression Study* who had previous experience of CBT. Perhaps the client's familiarity of activity scheduling deterred him/her from engaging in the task. The fact that none of the clients who produced activity-related data had previous experience of CBT or behavioural activation was beneficial in terms of the findings of Study 2, given the study was focused on compliance with the task across the original and adapted charts. It suggests that activity scheduling was likely to have been a novel task for all of these clients. Familiarity with activity scheduling could have impacted on compliance with the task, either by increasing or decreasing the likelihood of task completion, depending on the client's prior experience and perception of the task.

Another significant issue has arisen through the data collection method of the activity-related variables. Specifically, the explanatory style (ASQ) and depression severity (BDI-II) data were collected prior to the clients beginning therapy, at exactly the same time. However, the activity charts were assigned during the early stages of therapy, and hence a truly cross-sectional design could not be achieved. It is possible that simply attending therapy, or the brief passage of time between the pretreatment assessment and the assignment of the activity chart task, may have influenced the resultant activity-related data. For example, attending therapy may have provided hope for clients that had a direct and positive impact on their activity levels or activity type choices. Furthermore, attending therapy is an additional activity in its own right. By contrast, there does not appear to be a logical argument in support of the opposite direction; it would seem unlikely that the majority of participants faced factors that had a detrimental impact on their activity levels or activity type choices during this brief time period. In this sense, the hypothesised relationships between variables may have been stronger had the activity charts been completed at exactly the same time as the ASQ and BDI-II questionnaires.

As stated in Chapter 9, it was the *process* of collecting activity-related information that necessitated clients having already started their therapy. It was a requirement of *The Depression Study* that clients were assigned activity charts as part of their treatment. Within the constraints of this requirement, the process employed allowed the closest approximation to baseline activity data. Furthermore, self-monitoring is considered therapeutic activity in and of itself, hence any use of an activity chart for this means, regardless of when administered, could arguably produce similar confounds. While self-report questionnaires can be completed during one "sitting", the process of monitoring behaviours to determine their normal rate of response often requires considerably longer time periods. Explanatory style and depression severity data could have been used to predict activity-related data prospectively, and the proposed model and related arguments could have been adjusted to fit with this possibility. However, this would not have been true to the researcher's hypotheses regarding the nature of the relationships between variables. The research has suggested that there are some associations between explanatory style/levels of depression severity, and the activity levels or degree of activity satisfaction occurring shortly after. As such, it can be argued that it is likely, according to the proposed framework, that these associations would have been present if the study was a truly cross-sectional design as well. While the findings of the present study are not able to substantiate this claim as it currently stands, it is argued that the findings at least offer a close approximation and hence preliminary support for the proposed model.

There are other limitations relating to the research design of the parent study. The recruitment method of *The Depression Study* meant that all clients were volunteers, prepared to attend a University psychology clinic to receive psychotherapy from student therapists. Therefore, the likelihood of self-selection bias warrants consideration. The participants of the present study may differ in some ways from other depressed individuals. For example, the fact that they volunteered could be because they liked the idea of assisting with research, or because the therapy was immediately available and provided at no cost. If they liked the idea of assisting with research, perhaps they were also more likely to introduce social desirability effects in the way they responded to questionnaires or therapy tasks. Other individuals may have been deterred by the idea of having student therapists, or may have been in a financial position to pay for private psychotherapy instead. Clients with more severe levels of depression severity would be

more likely to meet criteria for psychotherapy assistance through the public health system. The implication of this is that clients in *The Depression Study* may have had lower levels of depression severity than groups within the public system. The fact that a community sample of adults was used is also suggestive of lower levels of depression severity than inpatient samples, and, as with all research, suggests that the findings can only be generalised to similar groups. It is noted, however, that the mean depression severity intake score of the present sample was 31 (see Appendix D). This statistic is only slightly above the cut-off between moderate and severe depression, in terms of clinical interpretative ranges. The benefit of using a clinical sample of clients would diminish if the majority of clients were only mildly or subclinically depressed. The use of student therapists, as opposed to experienced clinicians, may have influenced the results. Limited experience assigning activity charts may have had a detrimental impact on the clients' compliance with the task. Although, as previously mentioned, the therapists received thorough training in the delivery of homework tasks in accordance with the parent study's objectives, and would have been motivated to perform well in assigning the tasks. Furthermore, using student therapists at similar stages of their training may have introduced less variability than using fully qualified clinicians with varying levels of experience and competence. Finally, some research has shown that trainee CBT therapists did not produce worse results to those of experienced clinicians, in terms of treatment outcome measures (Myhr et al., 2007).

A potential limitation of Study 2 stems from the fact that a different group of clients were assigned the original chart to those assigned the adapted chart. Those assigned the adapted chart also began therapy at a later date, hence in many cases different therapists were involved with treatment. As previously mentioned, a group of three therapists were initially recruited in *The Depression Study*, and later four additional therapists were recruited when the initial group were due to begin their internship year. As a result of these factors, it is unclear whether the differences obtained between Chart 1 and Chart 2 were influenced by between-group differences, whether pertaining to client characteristics or resulting from having different therapists. The fact that the researcher of the current project was one of the therapists in *The Depression Study* could be considered a significant issue given the researcher's vested interest in the outcome. However, the adapted activity chart only became available for use during the researcher's internship year, at which point involvement as a therapist in *The*

Depression Study had ceased. The researcher provided therapy to three of the clients, all of whom completed activity charts utilised for the present study, and began therapy at the same time. All three of these clients completed the original activity chart, as the adapted activity chart had not been devised at the time they began therapy. In fact, it was observations from providing this therapy that prompted the researcher to adapt the activity chart; the three clients made no ratings of mastery or pleasure, and gave no indications of when social interaction occurred. This was information the researcher sought for Study 1, hence was motivated to obtain. It is also noted that the three clients did not produce outlier scores for any of the variables, suggesting the researcher's involvement did not impact significantly on the data obtained. These factors, including the timeline of events outlined, cast doubt on the idea that the researcher's involvement caused a potential source of bias. By contrast, the researcher's involvement could actually have reduced potential sources of bias resulting from the passage of time. The vested interest in the outcome motivated the researcher to assign the activity chart as early as possible, given the objective to approximate baseline data. Nevertheless, two of the clients began their chart at session two and the third client at session three, similar to the vast majority of clients.

Further to this, the fact that there were seven therapists in total introduces a source of bias. In particular, therapists may have differed in the way they assigned the activity monitoring task. The potential variation is minimised due to the main objectives of *The Depression Study*. First, the parent study was examining adherence and competence to a manualised homework protocol. As a result, all therapists were monitored on their adherence and competence with assigning homework tasks, including the activity charts. Second, all therapists received the same additional training in CBT required for involvement in the study. While this does not remove the possibility of between-group differences caused by multiple therapists, it does suggest that all therapists would have been motivated to assign and review the task in the best way they could. Furthermore, it would seem unlikely that the differences obtained between Chart 1 and Chart 2 can be attributed solely to between-group differences or other potential sources of bias.

The present research is not exempt from some of the confounding factors discussed in Chapter 3, particularly relating to the measurement instruments used. First, a common methodological limitation amid the explanatory style research conducted to date is the

use of all self-report measures. This could lead to measurement bias resulting from the interplay between the constructs and the methods by which they are assessed. Further, as Raps and colleagues (1982) pointed out, the reliance on self-report questionnaires could lead to social desirability influencing the results. Self-report measures are most often used to measure depressive symptoms and cognitive phenomena because, by their very nature, personal reports of these experiences are more appropriate than reports from others. However, a clinician rated measure of depression severity, such as the *Hamilton Rating Scale for Depression* (M. Hamilton, 1960) could have been used in *The Depression Study*, had funding been available to employ a suitably qualified independent clinician to rate each client's presentation. The inclusion of an independent observer-rated measure would have been useful to confirm the findings of the present research. Although, it should also be noted that Beck, Steer, and Brown (1996) have reported high agreement (Pearson's *r* of .71; *n* = 87) between the self-report measure used in the present study (the BDI-II) and the revised version of the Hamilton Rating Scale for Depression (Riskind, Beck, Brown, & Steer, 1987). Furthermore, the BDI-II and ASQ have both been shown to have good psychometric properties, including reasonable internal consistency, and good construct/content validity.

Second, as has been alluded to previously, there could be overlap in the content of the measures used in the present study. The BDI-II has an item measuring pessimism, which could overlap with explanatory style. Similarly, the BDI-II measures loss of pleasure, loss of interest, loss of energy, and tiredness or fatigue, all factors that could cause a depressed individual to become less active. As mentioned in Chapter 3, some researchers (e.g., Garber et al., 1993) explored the possibility that overlap in the content of depression severity and explanatory style scales may be partly responsible for the correlations obtained between the variables. Their findings suggested that the link commonly found between explanatory style and depression is not merely the result of overlap in the scales. It is noted that these researchers used the BDI and CDI to measure depression severity, and there does not appear to have been similar research conducted with the BDI-II. However, given the nature of the differences between the BDI and BDI-II, it is unlikely that different findings would emerge.

With regard to potential overlap with the BDI-II and the activity-related variables of the current research, loss of interest, loss of energy, and tiredness or fatigue are factors that could influence activity, but they are not measuring activity per se. The fact that explanatory style, depression severity, and activity are expected to be closely related, according to the proposed model of the present research, could be the very reason why the overlap is apparent. In addition, if the current project's findings have merely tapped into depression symptoms, this does not necessarily mean they do not have implications for clinical practice. For example, loss of pleasure is a common symptom of depression, but does not account for the condition entirely. Furthermore, knowing that this is a symptom of depression does not necessarily mean that the clinician is targeting this symptom. By understanding the impact of loss of pleasure on activity levels and activity choices, and vice versa, this transforms the symptom into a tangible target for intervention. While rating mastery and pleasure is not a novel intervention, there are advantages to understanding how important this intervention may be. Implications for clinical practice are discussed further in the following section.

Some of the limitations of the current project, discussed above, could have been avoided had the researcher obtained data from an alternative source. As noted previously, the researcher of the current project not only served as a clinician for *The Depression Study*, but was also dependent on its data. There were advantages and disadvantages to this type of arrangement. First, the researcher benefited clinically from additional training in CBT, experience in the provision of CBT, and clinical supervision. A disadvantage of this was a large investment of time during an already demanding course. Second, the researcher benefited from access to a clinical sample that had been carefully screened and diagnosed, as stated earlier. However, the main disadvantage resulting from this involvement was a lack of control over a number of factors, the most notable being the resultant sample size. Another factor was the inability to introduce new measures outside of those required for the parent study. One of the conditions of utilising data from *The Depression Study* for a secondary project was that additional measurement instruments or clinical activities, outside of those required for the parent study's own objectives, could not be introduced. Despite these factors, involvement as both a clinician and researcher through the parent study led to the development of the adapted activity chart examined in Study 2; a development which has both clinical and research implications.

Overall, there are various limitations of the present research, and many of these impact on the conclusions that can be drawn. However, throughout the project there has been extensive exploration of prior research and an effort to take into account a variety of theories and breadth of empirical support. Numerous bodies of literature have been considered, including cognitive theory, learned helplessness theory, mechanisms of change, and the effectiveness of therapeutic approaches such as behavioural activation. A common theme appearing throughout the literature discussed in the preceding chapters relates to the overly simplistic nature of unidirectional models. It is also very apparent that numerous other constructs may interface with explanatory style and its relationship with depression; hence researchers should be aware of this overlap and the alternative explanations that may exist. The proposed model has been developed to capture these important themes; hence, despite not adequately tested, its development could be regarded as a useful contribution in its own right. Prior to discussing suggestions for future research, the implications of the present research, particularly in relation to explanatory style and depression, are discussed.

Implications for mental health

Implications for clinical practice

The findings of Study 1 have implications for behavioural activation in the treatment of depression. As stated in Chapter 9, in relation to the different indices of activity level, a clearer understanding of the best means by which activity level can be bolstered may guide behavioural activation interventions. The fact that the range of activities engaged in was associated with depression severity indicates that behavioural activation focused on increasing this range may be beneficial for clients with depression. If a client's activity chart reveals a limited range of activities across the week, the therapist could encourage the client to increase this range to explore if this is helpful. Likewise, the fact that the frequency with which activities were changed emerged as a correlate of depression severity indicated that this may be useful to bolster with this client group as well. For instance, the clinician could suggest a behavioural experiment with a client where they spend one day changing activities every two hours, and another day changing them every hour, regardless of what the activity is. Clearly practical

considerations would need to be addressed in order to achieve this, but if carried out, this experiment would allow an exploration of whether changing activities more frequently has a positive impact on the client's mood.

In terms of activity types, the findings add further support for the well-known contention that the treatment of depression should include a focus on increasing the activities that a client experiences as pleasurable. In doing so, it may be important to be aware of the client's explanatory style in relation to positive events, as the results suggest that their interpretation of positive events is likely to impact on their sense of enjoyment and achievement. In fact, in attempting to promote activities that foster mastery and pleasure experiences for their clients, there are many factors that the therapist should take into account. These include the client's individual characteristics and preferences regarding what these activities may be. The task is assigned in such a way as to encourage clients to choose the activities that are meaningful to them. However, this does not mean the clients are necessarily choosing activities that promote mastery and pleasure experiences. For example, a client may be working long hours and not making time for pleasurable activities. They may feel they do not deserve to enjoy themselves, or believe pleasurable activities are not a good use of their time. If a client's activity chart reveals a lack of mastery and pleasure experiences, this presents an opportunity for the therapist to explore with the client possible reasons behind this.

From a cognitive behaviour framework, this exploration would consider the interplay between cognitions, mood, behaviour, and physiology. Given the nature of activity scheduling, one of the targets for intervention is clearly behaviour. However, clients might differ in terms of the factors influencing their behaviour, depending on the individual's particular experience or circumstances. For example, it may be the case that an individual does not derive pleasure from activities, which in their experience is solely due to their low mood. A behaviourist might argue that the individual learnt an association between the activity and their low mood, and therefore has become less likely to carry out that activity. A cognitive behaviour therapist would be more likely to explore the interplay between cognitions, mood, and behaviour. This exploration might reveal that the individual noticed their low mood while carrying out the activity, and subsequently decided "what's the point bothering" to carry out the activity in the future. In this sense, they have negative expectations about the enjoyment, or lack thereof, that

the activity will bring. Scheduling activities that previously brought satisfaction could challenge the notion that the activities can no longer be enjoyed, which in turn could improve mood. It is equally possible that this tactic could confirm the notion that activities are not enjoyable. Some clients might respond better to a focus on physiological processes. For example, exercise is often considered to have a direct positive impact on mood, no doubt relating, in part, to chemicals released in the body. From a cognitive behaviour perspective, a focus on physiological processes will in turn influence mood and cognitions. These arguments demonstrate the difficulty in separating the targets for intervention in CBT, due to the intertwined nature of the relationships. Working with a client to promote mastery and pleasure experiences may involve experimenting with each client to determine what works best for them.

Often the mastery and pleasure rating aspect of activity scheduling is considered an "optional extra", and many therapists are cautious not to overburden their clients with homework. Even researchers that were consulted about the adapted activity chart were concerned it may seem overwhelming for clients, yet there was no evidence to suggest this was the case, either from the findings of Study 2 or from reports from therapists who indicated no concerns with using the adapted chart. This may have been different in a group of clients with higher levels of depression severity. Nevertheless, the findings of the present research have indicated the potential importance of gathering mastery and pleasure ratings, which is possibly overlooked by many clinicians. In fact, it may be that the results of Study 2 were obtained because the therapists themselves were prompted to assign the mastery and pleasure rating aspect of the task, rather than the adaptations acting solely as prompts for the clients. Either way, the prompts have appeared to be useful. Similar to Study 1, the findings of Study 2 have implications with regard to the practice of behavioural activation.

Study 2 suggested that more information can be obtained pertaining to a client's activities through the use of the study's adapted activity chart. Using the adapted chart with a client could lead to better monitoring of the activities that are important for the client. A greater level of insight in this regard allows the client and therapist to focus their efforts on bolstering activities that are more meaningful.

The importance of continued clinical research

A greater understanding of the role of explanatory style and activity in depression could lead to numerous positive consequences for mental health. In terms of interventions for the prevention and treatment of depression, according to the literature there are certain variables that, in general, appear most important to target. These include the fostering of optimism and a less maladaptive explanatory style, bolstering of social support, and encouraging activities that promote physical well-being, increased self-esteem, and general health (Lewinsohn et al., 1994). These goals can all be achieved within a CBT framework. With older adults in particular, some research has suggested that the goal may not be to simply foster optimism (Isaacowitz & Seligman, 2001), but to consider the larger contextual picture of their circumstances. It may be more useful for therapists working with older adults to promote their adjustment to aging within the realm of expectations that are realistic. Along these lines, some have argued that rather than attempting to change the explanatory styles of depressed clients from a pessimistic one to a more optimistic one, it may be more useful for their explanations to become more in line with reality based on the available evidence in their lives (Silverman & Peterson, 1993). Certainly this is very similar to Beck and colleagues' (1979) line of reasoning, in the sense that cognitive distortions are responsible for maintaining psychopathology, therefore obtaining evidence to challenge the maladaptive beliefs is crucial. Similar arguments are discussed in the literature on *realistic optimism* (Schneider, 2001), which involves being optimistic within the constraints of what is possible. It may be useful for therapists working with depressed clients to consider the extent to which their explanatory style is in line with their circumstances. Explanatory style is an important factor to consider in the treatment of depressed clients. It has been suggested that not only is it possible CBT could alter explanatory style and thereby increase *quality* of life, it is also possible it could influence *quantity* of life as well (Peterson, 1988). Any advancement into an understanding of how to increase both quality of life and life expectancy is considered fruitful.

With regard to prevention, findings suggesting that depression in childhood can impact negatively on explanatory style (e.g., Nolen-Hoeksema et al., 1992) indicate the importance of early detection and intervention for depression. This may prevent the development of a stable pessimistic style rendering children at risk for future depressive

episodes. CBT approaches to treatment have been recommended in this regard (Nolen-Hoeksema et al., 1992). Progress in determining how explanatory style develops has considerable implications for mental health; preventative measures could be taken which may lead to decreases in the prevalence rates of depression.

Overall, there is sufficient evidence to conclude that a pessimistic explanatory style is related to depression, and interventions focused on the prevention and treatment of depression should take explanatory style and activity into account. To achieve this in the most effective way, it is important that further research is conducted to clarify the unanswered questions within the literature. The following section outlines suggestions for future research that have become apparent in the course of conducting the current project.

Suggestions for future research

The literature points to numerous areas within the explanatory style domain where further research is warranted, due to the implications for mental health of gaining a greater understanding in these areas. First, research should consider the potential influence of comorbid anxiety disorders or symptoms on the associations obtained, due to the mixed findings apparent in the literature regarding the specificity of the reformulated theory to depression. Approximately half of the clients in *The Depression Study* had comorbid anxiety disorders, according to the CIDI. The mean depression severity and explanatory style scores of those with comorbid anxiety-related disorders were very similar to those of clients without comorbid conditions. As such, there is no obvious indication that this comorbidity impacted on the results. Second, it is possible that self-esteem may interact with attributional tendencies and thereby contribute to depression (e.g., Metalsky, Joiner, Hardin, & Abramson, 1993; Tennen & Herzberger, 1987), hence further examination of the role of self-esteem is warranted. Third, research showing an association between an optimistic explanatory style and health benefits (e.g., Dykema et al., 1995; Peterson, 1988), as cited in Chapter 2, suggests that explanatory style is not only applicable to the field of clinical psychology, but health psychology research should also consider its influence (Peterson, 1988).

Finally, particular behaviours of depressed clients should be researched further. For example, it appears clear that if an individual believes aversive circumstances or inabilities are their own fault, and are beyond their control, it is likely that a depressive mood response will occur (cf. Peterson et al., 1983). Whilst having thoughts of this nature may be considered maladaptive, they may in fact bring with them an adaptive behavioural response. Seeking therapy may be one of the resultant behaviours of making internal, or self-blaming, attributions relating to stressful events (Gong-Guy & Hammen, 1980). Presumably, clients enter therapy because they believe that either there is something intrinsically wrong with them, or they lack the ability to cope with their circumstances. Further research with clinically depressed samples who have not sought help could help clarify the feasibility of this argument (Gong-Guy & Hammen, 1980). This might involve considering the role of hope, as presumably clients who volunteer for therapy believe, to some degree, in the possibility that therapy could help.

Further to this discussion regarding behaviours of depressed clients, and relevant to the field of behavioural activation, additional research on exercise with clinically depressed clients would be useful. There are many methodological issues with the research conducted to date in this area, therefore questions remain in terms of how exercise can most effectively be implemented (Daley, 2008). It is an important area, as exercise can be a cost effective and convenient intervention approach, with minimal side effects and the potential for wide-ranging health benefits (Daley, 2008).

Some suggestions for the future have stemmed from limitations of the current project, or matters that the project could not sufficiently address. As noted earlier in the current chapter, the use of all self-report measures leads to potential biases. As a result, it has been recommended that more research using interviews and accessing various informants could be useful (Robinson et al., 1995). Transcripts taken during therapy sessions with clients could be used. Following sessions in which clients report their engagement in activities, they could be asked about their experiences. Future researchers utilising activity charts in a similar manner to the present research may wish to include the time period between 2 a.m. and 6 a.m. on the activity chart, to gather information over a 24 hour period. This provides further opportunity to capture difficulties with sleep onset and maintenance, which many depressed clients suffer from. It may also yield different results pertaining to the *Duration* activity level index,

as previously noted. Along these lines, the activity level and activity type variables developed for Study 1 warrant further examination, given several emerged as correlates of either explanatory style and/or depression severity. As stated previously, future research using larger sample sizes of clinically depressed clients may obtain greater support and clarify which variables/indices are most important. Similarly, further examination of why different explanatory style composite scores emerge as correlates of different activity level indices may be beneficial. Study 1 indicated that until further clarity is gained with regard to which composite is the most appropriate, all three composite scores should continue to be utilised in research of this nature.

Further to these suggestions, future researchers may wish to utilise the mood ratings within activity charts, to explore potential links with activity level and activity type variables. However, there are certain obstacles that would need to be considered. First, clients typically choose the most appropriate mood to rate based on their individual emotional difficulties; hence this is unlikely to be the same mood across clients. Second, individuals may differ with regard to their understanding and experience of certain emotions. For instance, one client may define and experience anxiety in a manner quite distinct from another client. This variability across clients could confound the results obtained via investigations of this nature. Nevertheless, the link between activities and mood represent two of the key elements, depicted within Beck's Five Part Model, that are able to be explored via activity charts. Exploring this link is a fundamental objective in terms of the clinical utility of activity charts; it may prove to be of great value for research purposes as well. Some researchers might be interested in diurnal mood variation; a common experience in depression, typically presenting as mood being worse in the morning compared with the evening, potentially as a result of weakened circadian function (Murray, 2007). In this sense, activity charts could be used to examine changes in mood over the course of the day.

Other directions for future research pertaining to explanatory style are specific to particular age groups. The findings of Isaacowitz and Seligman (2001), and the implications for mental health discussed earlier, suggest that more research is needed among older adults in the field of explanatory style. Demographically, older adults are a growing population, therefore there is a need for increased numbers of psychotherapists trained to work with this population (Laidlaw & Pachana, 2009). The

needs of this population are distinct from other client groups, as older adults are facing the challenges of adjusting to aging and the physical comorbidities and significant losses characteristic of this life stage (Knight, 1996; Laidlaw & Pachana, 2009). Theories have been formulated to guide the way psychotherapists work with older adults, in light of the cohort differences and unique contextual factors (Knight, 1996; Knight & Poon, 2008). CBT has been shown to be an effective form of therapy with this client group (Laidlaw & McAlpine, 2008). Practical guidelines have been developed for adapting CBT processes with older adults, with the goal of enhancing the treatment's efficacy with this population (Kazantzis, Pachana, & Secker, 2003; Secker, Kazantzis, & Pachana, 2004). These are useful advancements; however it is timely for future research to thoroughly explore the role of explanatory style in older adults with depression.

At the opposite end of the life stage spectrum, different implications of explanatory style research emerge. With regard to research with children, future researchers may wish to further explore the convergence between mother (or caregiver) and child explanatory styles and depressive symptoms (cf. Seligman et al., 1984), as previously discussed. This may provide a better understanding of how explanatory style develops, which, as noted in the previous section, has implications for preventative intervention.

Finally, attributional evenhandedness, a concept introduced in Chapter 2, warrants further attention. In doing so, it would be useful for researchers to consider the broader context, in terms of the literature that has explored cognitive biases. For example, self-evaluations that are overly positive have been linked with psychological maladjustment (Colvin, Block, & Funder, 1995). On the other hand, in contrast to the earlier argument regarding realistic optimism (Schneider, 2001), beliefs which are unrealistically optimistic have shown a protective function in terms of health (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). It would be beneficial to have clear guidelines in terms of when, and for whom, unrealistic cognitive biases should be regarded as helpful, versus when accurate appraisals are more appropriate.

Concluding comments

Study 1 of the current project extended the research base on depression by proposing a feasible model of depression that has not been explored in the past. It is argued that overly simplistic causal models of depression do not take into account the vast individual differences that exist among human beings and their experiences, nor the momentous complexity of the human brain, mind, and behaviour. Some explanatory style researchers have argued that a maladaptive explanatory style is merely a depression symptom, thereby, contrary to the suggestion of the reformulated learned helplessness model, does not have a causal role in depressive symptom development (e.g., Nolen-Hoeksema et al., 1986). What these authors did not consider is the possibility that explanatory style and depression severity interact in a reciprocal manner, as proposed in Study 1. The proposed model of the current project is essentially a revision of the reformulated learned helplessness theory, taking into account the role of activity as well as bidirectional links between variables. The research was initially devised to test this model, however the resultant sample size only permitted a preliminary exploration. Despite the need for further empirical support, the results suggest that the model offers a promising and conceivable framework to guide our understanding of depression.

The consideration of behavioural elements, such as activity, among interrelationships between explanatory style and depression has been long overdue. The inclusion of bidirectional pathways acknowledges the complexity among variables that has been argued in the literature for some time. The interrelated nature proposed by the model also offers a promising treatment implication, analogous to Beck's cognitive theory, in that change in any one variable can produce changes in others. The target variable within therapy can therefore be collaboratively identified and individualised to suit the needs of the client. Regardless of the variable targeted, improvement can be anticipated across all variables concerned. The main difficulty with testing bidirectional models is determining when, and under what conditions, one direction of causality should be explored over the other. This is not to say that it is a pointless endeavour to examine likely variables and create and explore models, such as the model proposed in Study 1.

However, it is also important to continually accept that alternative possibilities may exist and to maintain a focus on individualistic formulations and conceptualisations in the assessment and treatment of clinically depressed individuals.

Further to this argument regarding alternative possibilities, even the tools utilised in the provision of therapy are able to be adapted to suit the needs of particular researchers, therapists, or clients. For decades the activity chart typically used in CBT for depression has remained relatively unchanged, despite the fact that minor adaptations may be extremely beneficial, as argued in Chapter 11. The activity, in general, of depressed clients is an area that, without dispute, requires further examination and empirical support. The current project has explored one specific possibility; the inclusion of activity amid the interplay between explanatory style and depression. Sufficient evidence was obtained to indicate that it is timely for further examination of this proposed framework to occur. Not only can the adapted activity chart of Study 2 assist with this process, it promises to be a useful revision of a well-established and effective tool in the treatment of depression. It is hoped that, in the spirit of optimism, future research activity will continue to advance the theories and processes relevant to the aetiology, maintenance, and treatment of depression.

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APPENDICES

APPENDIX A: Original Activity Chart

Tracking Activities – Weekly Activity Schedule. Write in each box: (1) Activity. (2) Mood ratings (0–100). Mood I am rating: _____

Time	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
6 – 7 A.M.							
7 – 8 A.M.							
8 – 9 A.M.							
9 – 10 A.M.							
10 – 11 A.M.							
11 – 12 P.M.							

12 – 1 P.M.	**1 – 2 P.M.**	**2 – 3 P.M.**	**3 – 4 P.M.**	**4 – 5 P.M.**	**5 – 6 P.M.**	**6 – 7 P.M.**

7 – 8 P.M.	**8 – 9 P.M.**	**9 – 10 P.M.**	**10 – 11 P.M.**	**11 – 12 A.M.**	**12 – 1 A.M.**	**1 – 2 A.M.**

APPENDIX B: Adapted Activity Chart

ACTIVITY and MOOD CHART

STEP 1 – the **EMOTION/MOOD** I am rating is _____. **STEP 2** – write the **MAIN ACTIVITY** you were doing in each timeslot. **STEP 3** – note the intensity of your emotion/mood (0 to 100 or 1 to 10, ranging from "none" to "most emotion/mood I have ever experienced".) *Ask yourself: how strong was this emotion/mood while doing this activity?* **STEP 4** – Tick the box SI (**SOCIAL INTERACTION**) if your main activity in each hour slot involved spending most of the time **INTERACTING** with another person (can be verbal or non-verbal communication; in-person or on the phone/internet). *In the example shown, SI has been ticked as this person watched TV with a friend. Being on a busy bus with others would not have SI ticked unless verbal/non-verbal interaction with others was the focus.* **STEP 5** – rate your **MASTERY** (0 = no mastery to 10 = most mastery). *Ask yourself: how strong was my sense of accomplishment in doing this activity?* **STEP 6** – rate your **PLEASURE** (0 = no pleasure to 10 = most pleasure). *Ask yourself: how much pleasure/enjoyment did I get from this activity?*

	EXAMPLE
	Date: *20 June 2007*
6–7 A.M.	*Watched TV (20)* — SI ✓ / M 2 / P 7

	MONDAY Date:	**TUESDAY** Date:	**WEDNESDAY** Date:	**THURSDAY** Date:	**FRIDAY** Date:	**SATURDAY** Date:	**SUNDAY** Date:
6–7 A.M.	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P
7–8 A.M.	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P
8–9 A.M.	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P
9–10 A.M.	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P
10–11 A.M.	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P
11–12 P.M.	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P	( ) SI / M / P

Hints: *Start completing the chart in the day representing today and include the date. Once you have completed the Sunday simply continue with Monday until the chart is completed for one week. Sometimes people forget to complete a day or part of a day. If this happens, do not be discouraged and continue from the earliest timeslot you can recall.*

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	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
12–1 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P
1–2 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P
2–3 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P
3–4 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P
4–5 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P
5–6 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P
6–7 P.M.	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P	SI M ( ) P

Hints: *Start completing the chart in the day representing today and include the date. Once you have completed the Sunday simply continue with Monday until the chart is completed for one week. Sometimes people forget to complete a day or part of a day. If this happens, do not be discouraged and continue from the earliest timeslot you can recall.*

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
7–8 P.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P
8–9 P.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P
9–10 P.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P
10–11 P.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P
11–12 A.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P
12–1 A.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P
1–2 A.M.	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P	SI M P

Hints: Start completing the chart in the day representing today and include the date. Once you have completed the Sunday simply continue with Monday until the chart is completed for one week. Sometimes people forget to complete a day or part of a day. If this happens, do not be discouraged and continue from the earliest timeslot you can recall.

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APPENDIX C: Variable Descriptions

Study 1: Activity Variable/Index Descriptions

Variable/Index	Description
Duration	Total time spent engaged in any activity (excluding *sleep*[i]) as a percentage of *usable cells*[ii]
Variety	Number of different activities recorded (excluding *sleep*) as a percentage of *activity*[iii]
Frequency (activity change)	Number of instances different activities occurred (chronological; excluding *sleep*) as a percentage of *activity*
Active	Number of cells containing activities requiring physical movement as a percentage of *activity*
Social	Number of cells containing activities carried out in the company of others (excluding *sleep*) as a percentage of *activity*
Mastery frequency	Number of cells containing an indication of mastery (excluding *sleep*) as a percentage of *activity*
Pleasure frequency	Number of cells containing an indication of pleasure (excluding *sleep*) as a percentage of *activity*
Mastery magnitude	Total sum of all mastery ratings (converted to scores out of 10 if applicable) as a percentage of *activity* multiplied by 10
Pleasure magnitude	Total sum of all pleasure ratings (converted to scores out of 10 if applicable) as a percentage of *activity* multiplied by 10

Study 2: Variable Descriptions

Variable	Description
Mood recording	Activity cells with a mood rating (including *illegible*[iv], excluding *sleep*) as a percentage of *completed*[v] cells minus *sleep*
Mastery recording	Activity cells with a mastery rating (including *illegible*, excluding *sleep*) as a percentage of *completed* cells minus *sleep*
Pleasure recording	Activity cells with a pleasure rating (including *illegible*, excluding *sleep*) as a percentage of *completed* cells minus *sleep*
Activity recording	Percentage of *completed* cells out of *total cells*[vi] available on the chart used

---

[i] *Sleep*   Cells with sleep recorded.
[ii] *Usable cells*   Cells with an activity recorded minus *illegible* activities (including *sleep*).
[iii] *Activity*   Cells with an activity recorded (excluding *illegible* and *sleep*) **OR** *usable cells* excluding *sleep*.
[iv] *Illegible*   Cells completed with an illegible activity recorded.
[v] *Completed*   Cells with an activity or sleep recorded (including *illegible*).
[vi] *Total cells*   Cells on the chart that were available and expected to be completed.

APPENDIX D: Descriptive Statistics of Study 1 Variables/Indices

Table D1

Descriptive Statistics of Study 1 Variables/Indices

Variable/Index	*n*	Mean	*SD*	Min	Max
Depression Severity	29	31.21	10.92	13	53
Negative Events	29	15.10	2.47	10.3	19.5
Positive Events	29	13.58	2.10	8.5	17.0
Overall Composite	29	-1.52	3.74	-10.3	5.5
Duration	16	84.17	6.97	71	94
Variety	22	19.65	3.99	13	25
Frequency	23	67.79	11.00	41	85
Active	22	13.35	7.64	0	32
Social	9	58.03	20.58	22	92
Mastery Frequency	16	70.90	34.26	1	100
Pleasure Frequency	16	73.15	32.76	4	100
Mastery Magnitude	13	43.79	27.57	5	86
Pleasure Magnitude	13	43.69	22.35	5	75

APPENDIX E: Summary Table of Significant Study 1 Correlations

Table E1

Derived Table Summarising Significant Pearson's and/or Spearman's Correlations from Study 1 Analyses, Grouped According to the Paths of Figure 1

Variables/Indices	n	Pearson's		Spearman's	
		r	p	r_s	p
Path 1: Activity level ↔ explanatory style					
Duration	16				
Positive Events		.67	.005	.64	.008
Overall Composite		.56	.025	.50	.050
Path 2: Activity level ↔ depression severity					
Variety	22				
Depression Severity		-.44	.040		
Frequency	23				
Depression Severity				-.44	.035
Paths 1 and 2: Activity type ↔ explanatory style and activity type ↔ depression severity					
Pleasure Frequency	16				
Positive Events		.50	.049		
Mastery Magnitude	13				
Positive Events		.74	.004	.70	.008
Pleasure Magnitude	13				
Positive Events		.81	.001	.78	.002
Overall Composite		.67	.012	.61	.027
Depression Severity		-.72	.005	-.70	.008
Path 3: Depression severity ↔ explanatory style					
Depression Severity	29				
Negative Events		.65	<.001	.63	<.001
Positive Events				-.40	.031
Overall Composite		-.59	.001	-.65	<.001