Pathways to Depression from Childhood and Adulthood Attachment

by

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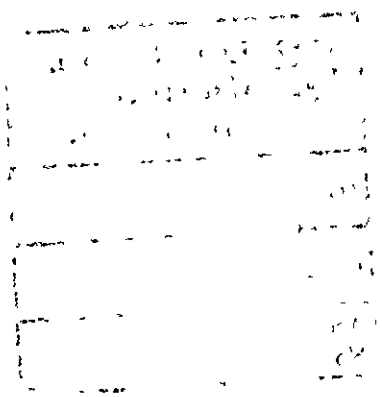
Doctoral Thesis

Submitted in partial fulfilment of the requirements
For the award of

Doctor of Philosophy of Loughborough University

December 2005



Acknowledgements

There are a number of people who I would like to thank:

Dr Duncan Cramer for his commitment, support, guidance, and good advice

Miss Jacqui Hollows, for her patience, her belief in me, for her words of encouragement, and for giving me strength when things got tough.

To my family; Julie, Phillip, & Amy Nicholls, and Betty & Jack Timmins: who have supported, encouraged, and believed in me.

To Miss Kerry Sheldon for her excellent sense of humour, friendship, and those long coffee days in Loughborough which kept me going during the various "PhD crises".

To the participants, who gave freely of their time and shared their experiences.

Dr. Dennis Howitt for his support and guidance.

Loughborough University Department of Social Sciences for my research funding.

Prof. Paul Gilbert, staff at the Mental Health Research Unit for Southern Derbyshire Community and Mental Health Trust, Mr Karl Olsen, and Dr Barlow Wright for their early encouragement and guidance.

Mr. Peter Riley-Jordan for coping with my numerous queries about web pages and for his technical assistance.

Prof. John Krantz for posting my data collection web site on the APA web page.

In loving memory of my Grandad (Jack Timmins) and Uncle Fred (Fred Beardsmore).

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Abstract

Background: The overall aim of the present study was to clarify the role of attachment as a vulnerability factor towards depression. Further aims were to examine whether attachment was continuous and offered a conduit through which childhood experiences could have an effect on mood in adulthood; and to explore whether each of childhood and adulthood attachment each had separate roles with regards to vulnerability towards depression Due to discontinuity between childhood and adulthood attachment, it was hypothesised that the attachment system would not act as a conduit between childhood experiences and depression. It was hypothesised that the association between childhood attachment and depression could instead be mediated by a third variable outside of the attachment system; the Involuntary Defeat Strategy.

Attachment theory holds that attachment style moderates the effect of stressors upon depression. It was therefore hypothesised that adult attachment style would moderate the association between stressors and depression. The temporal association between adult attachment and depression is unclear. Based on the findings of prospective studies, it was hypothesised that adult attachment would predict depression over time

Previous research had used the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) as an indicator of childhood attachment. It was hypothesised that the Parental Bonding Instrument was not an adequate measure of attachment and by using this measure, past research had been impeded. A new measure of childhood attachment was therefore constructed for the present study.

Method. Data were collected using questionnaires on current depression, childhood attachment experiences, adult romantic attachment, social comparison, and defeat.

Data were collected at two stages, with a five month interval. Internet Mediated data collection and the "paper and pencil" method were both used There were 244 (200 females and 44 males) participants at time one, of which 70 (55 females and 15 males) returned at time two.

Results: It was found that the new measure was an improved measure of childhood attachment when compared with the Parental Bonding Instrument. As expected, the association between childhood attachment and depression was mediated by the third variable outside of the attachment system; the Involuntary Defeat Strategy. Contrary to expectations, the association between childhood attachment and depression was mediated by adulthood attachment Changing to a secure adult attachment style had the effect of attenuating the influence of childhood experiences on depression. As hypothesised, it was found that adulthood attachment moderated the association between a stressor and depression Specifically, a significant association was found between a stressor and depression only for those participants with an insecure attachment style. Finally, the temporal association between adult attachment and depression could not be established. Both attachment and depression were consistent over time.

Conclusions: It was concluded that attachment was a stable vulnerability factor through which childhood experiences could have an effect on depressed mood in adulthood. The pathway from childhood attachment to depression was also mediated by the Involuntary Defeat Strategy. It was concluded that childhood attachment presented an early vulnerability factor, and adult attachment moderated the association between a source of stress and depression Suggestions were made for future research where a temporal association between adult attachment and depression would be detected.

Chapter 1.

Literature Review (Part 1)

Attachment Theory and the Stability of Attachment

1.1 Epidemiological Features of Depression

The rising prevalence of depression calls for a clear definition of factors that render an individual vulnerable to depression. By 2020 depressive disorders are expected to be the second highest cause of disease burden worldwide (Brown, 2001). Worldwide epidemiological research has indicated that between 7 3% (China) and 52.5% (Chile) of individuals attending primary care have mental ill health, and that this is most likely to be depression (Goldberg & Lecrubier, 1995). According to reports by the World Health Organization (WHO), depression accounted for 4.2% of the world's burden of disease (WHO, 2001a), and was rated the fourth leading cause of disability in 2000 (WHO, 2001a). Depression is highly prevalent; it was estimated that in 2001, 121 million individuals worldwide had depression (WHO, 2001b). Nearly 10% of young adults in North America have experienced an episode of Major Depression (Nesse & Williams, 1997). It is estimated that the annual prevalence of depression is around 4% according to the International Classification of Diseases (WHO, 1992) criteria, and around 5% according to the Diagnostic and Statistical Manual (DSM; American Psychiatric Association, 1994) criteria (Bebbinton, 2004). In England alone, there were 2615 deaths due to depression, and 109 7 million working days lost in 2000 (Thomas & Morris, 2003)

The propensity towards becoming depressed is not shared equally by all members of a given population. There is a high incidence of depression in the age groups where reproductive activity peaks For example, depression was the world's leading cause of disease burden in individuals aged between 15 and 44 years in 1990 (Murray & Lopez, 1997). The prevalence of depression rises as a function of social deprivation, with the most depression occurring in areas of deprivation in the UK (Office for National Statistics, 2000). The average age of first onset for depression is approximately 25 years (Coyne, Pepper, & Flynn, 1999). In a recent epidemiological

survey, women reported a younger age of onset (24 3 years) than did men (26.5 years, Marcus *et al.*, 2005).

The average episode of depression lasts from six months to two years (Üstün & Chatterji, 2001; WHO, 2001a) The restrictions placed on participation in every day life by depression have been weighted by the WHO as being equivalent to the impairment in functioning caused by blindness, or by paraplegia (when calculating the "Disability Adjusted Life Year"; Ustun & Chatterji, 2001). Community Mental Health Patients who report mood related symptoms rate these symptoms as causing moderate to severe interference with their lives, and when anhedonia (a symptom of depression) was endorsed, over 80% regarded this symptom as moderately to severely distressing (Gilbert, Allan, Nicholls, & Olsen, 2005).

Depression is two to three times more likely in women than in men (Kessler *et al.*, 1994; O'Brien, Singleton, Sparks, Meltzer, & Brugha, 2002; WHO, 1999, 2001a). This pattern has held throughout the latter half of the twentieth century (Mattison, Bogren, Nettelbladt, Munk-Jorgensen, & Bhugra, 2005) and has been demonstrated as young as fourteen years (Cyranowski, Frank, Young & Shear, 2000, Wade, Cairney, & Pavalin, 2002) In contrast to the suggestion that the gender gap is narrowing (Gotlib & Hammen, 1992), figures spanning five years 1994-1998 inclusive, show that the prevalence of depression in the UK is rising for males and females, but more so for the females, with the gap between the sexes getting larger each year (Office for National Statistics, 2000).

Sex differences in the prevalence of depression may be explained as fundamental differences in biological or psychosocial functioning of men and women (Cyranowski *et al.*, 2000; Gotlib & Hammen, 1992). It has been found that social cognitions are more often associated with depression in women. For example, Bos *et al.* (2005)

found, in a group of depressed patients, that women were more likely than were men to make negative perceptual biases. Women were also better at emotional recognition, and more sensitive to interpersonal cues to depression than were men, (Bos *et al.*, 2005). Alternatively, it has been proposed that the higher rate of depression in women is due to environmental differences such as employment, income, and social support (Golding, 1988). A further possibility is that males report experiencing fewer episodes of depression as they are more likely to forget these aversive experiences (Aneshensel, Estrada, Hansell, & Clark, 1987).

1.2 Definition, Symptoms and Features of Depression

Diagnostic criteria, stipulated by the DSM-IV (American Psychiatric Association, 1994) define those features which constitute a clinically significant episode of depression. A clinically significant episode of depression includes emotional and somatic symptoms, persists over time (at least two weeks), and impairs cognitive, social, and physical functioning. Depression is a painful emotional experience characterised by feelings of dysphoria, hopelessness, and thoughts of suicide and death. Furthermore, individuals with depression lose the capacity for enjoyment and pleasure (anhedonia); they lose the ability to intiate, typically lose interest in everything from sex, to work, friends, and family, and demonstrate poor social skills (Gilbert, 1992; Gotlib & Hammen, 1992). Individuals with depression are prone to changes in body weight, difficulties with sleep regulation, and a reduction in mental and physical alertness (Hale, 1997). Cognitive processes such as concentration, and decision making, and memory are diminished (Airaksinen, Larsson, Lundberg, & Forsell, 2004; Den Hartog, Derix, Van Bemmel, Kremer, & Jolles, 2003). These cognitive processes perpetuate the depressive episode through influencing the way an individual interprets their own behaviour and that of others, creating increased negativity, feelings of low self worth, self-criticism, and self blame for the depressive

episode (Beck, 1967). A major depressive episode may be categorised in terms of a single episode, chronic, or recurrent; as psychotic or non-psychotic, and in terms of severity

Depression can refer to a relatively transient period of low mood, in reaction to a negative event, such as disappointing news, failing a test, or feeling forced to make a difficult decision. Although this experience may be unpleasant, and may be accompanied by some of the hallmarks of depression such as negative thoughts, crying easily, and a loss of interest, it passes quickly, and leaves no permanent dysfunctional problems. An issue surrounding the definition of depression is whether the clinically significant episode of depression is an extension of normal low mood (the continuum hypothesis) or whether there are qualitative differences in these experiences (Beck, 1967; Gotlib & Hammen 1992; Santor & Coyne, 2001; Solomon, Haaga, & Arnow, 2001) Based on a continuum model of depression a clinically significant episode of depression would be a quantitative extension of a normal mood. Crucially, it is argued that that clinically significant depression consists of the same symptoms, but they are experienced as more severe than normal mood variation (Gotlib & Hammen, 1992; Solomon *et al.*, 2001). The extrapolation of findings from a non clinical sample to a clinical population is justified based upon the continuity hypothesis.

Beck (1967) described four similarities between normal mood and depression which support the continuity hypothesis. Beck (1967) noted that both individuals with depression and those with low mood use comparable terminology to describe their mood, adopt behavioural similarities, have related somatic symptoms, and experience fluctuation in their mood. Evidence is mixed. Santor and Coyne (2001) found that community samples evidenced different depressive symptoms when compared to clinical samples, suggesting that the experiences of depression are not

continuous between these two samples. However, Flett, Vredenburg, and Krames, (1997) examined the continuity of depression between clinical and non clinical populations on the basis of phenomenological, typological, aetiological, and psychometric features. Their findings supported a continuum model of depression. A further study compared mild, moderate, and severe depression (Kessler, Zhao, Blazer, & Swartz, 1997) Differences were observed with regard to length of the episode, the number of episodes experienced, and functional impairment, which indicated continuity of symptoms, but differences in severity. It has also been suggested that studying only clinically significant cases of depressed mood limits that exploration of the "wide range of symptomatic presentations" (Gruenberg, Goldstein, & Pincus, 2005, pp 9). The present study draws on the continuity hypothesis of depression. This issue is pertinent to the measurement and definition of depression in research (e g., Santor & Coyne, 2001; Solomon *et al.*, 2001) and will be discussed further, regarding the operationalisation of depression and sample for the current research, in chapter four.

A further feature of depression is recurrence. Recurrent depression is frequently reported. Research conducted with a community sample has found a 55% prevalence rate of prior depression (Coyne, Thompson, & Racioppo, 2001). The rate of recurrence for individuals who have recovered from their first episode is approximately 35% within the first two years and 60% within 12 years; these figures are higher if the first onset occurs at age 45 or over (WHO, 2001a). Fewer than 20% of individuals who experience depression only have a single episode (Angst, 1986). In a sample of depressed psychiatric patients, Coyne *et al.* (1999) found that participants had experienced an average of eight prior episodes of depression With each recurrent episode of depression, the interval between episodes decreases and the risk of further episodes increases (Lewinsohn, Pettit, Joiner, & Seeley, 2003; Solomon *et al.*, 2001) Retrospective studies have indicated that a history of

depression is significantly correlated with current subsyndromal levels of depression, (Carnelley, Pietromonaco, & Jaffe, 1994, study 2; Haaga *et al.*, 2002, Whiffen, Kallos-Lilly, & MacDonald, 2001). It has also been found that individuals with recurrent depression had higher cortisol levels, a biological marker of stress, than did those who have only experienced one episode of depression (Bos *et al* , 2005). Over a 12 year period, it was found that 46% of individuals who exhibited residual symptoms following their initial remission went on to experience three or more episodes of depression, compared to only 7% who did not experience depression again during the study (Judd *et al* , 2000). Evidence therefore indicates that residual symptoms persist following an episode of depression, which may heighten later vulnerability to a subsequent, or recurrent episodes of depression.

In agreement with the above findings, prior depression is significantly related to current depressed mood (Coyne *et al.*, 1999; Maciejewski, Prigerson, & Mazure, 2000). Bifulco, Brown, Moran, Ball, and Campbell (1998) found that experiencing prior depression, especially as a teenager, was associated with the onset of depression in a sample of women over a 14 month study period. Further, Coyne *et al.* (1999) found that of the currently depressed participants in primary care, 85% had prior episodes of depression and in the mental health services, 78% had prior experiences of depression. These findings demonstrate that prior depression has implications for an individual's current level of depressive symptoms It was therefore expected that in the present study, current depression would be significantly higher in those with prior depression, than in never depressed individuals.

1.3 Subtypes of Depression

Aside from major depression, the two other major depressive disorders are Dysthymia and Bipolar. Dysthymia is the presence of at least two features of

depression over a period of two years or more. Dysthymia is a likely precursor of major depression (Lewinsohn, Rohde, Seeley, & Hops, 1991); occasionally however, these disorders co-exist. This is known as "double depression" This has been found to have an early onset, compared with major depression, and to occur in approximately 25% of patients (Keller, Lavori, Endicott, Coryell, & Klerman, 1983), and in 10% of a depressed community sample (Lewinsohn *et al.*, 1991). Bipolar Affective disorder refers to major depression, which is characterised by periods of elation, mania, loss of concentration, overconfidence, and agitated activity. Bipolar depression has a much lower prevalence rate than major depression, at 0.4% (WHO, 2001a). The focus of the present study is on the presentation of depressive symptoms, not on a specific disorder such as major depression, dysthymia, or bipolar depressive disorders.

A number of subtypes of major depression may be diagnosed. However, evidence suggested that subtypes were of little use in understanding the aetiology of depression, or in providing effective treatment (Keller, 1988). In an attempt to better understand aetiology, and prescribe appropriate treatment, two types of depression have been delineated based on a biological disease versus a psychosocial disorder. Historically, the first distinction was made between reactive and endogenous depression. Reactive depression was thought to arise because of a negative event, or a stressor, whereas endogenous depression was thought to stem from a biological predisposition. However, no marked difference in symptoms could be detected between endogenous and reactive depression, and endogenous depression has been found to follow negative life events (Hirschfield, 1981, Keller, 1988; Leber, Beckham & Danker-Brown, 1985). A second distinction has been formed between non-biological and biological depression in the form of neurotic and psychotic subtypes, respectively. Psychotic depression referred to a more severe depressive episode characterised by hallucinations, and neurotic depression, to a mild episode.

To date, no biological markers or genes that can be applied to the diagnosis of depression have been found (Gruenberg *et al.*, 2005).

Depressive episodes have been differentiated to the extent that they are the primary diagnosis, or secondary to another mental or physical ill health. Most cases of lifetime major depressive disorder occur as secondary disorders alongside another mental health diagnosis (Kessler *et al* , 1996). Depression has been found to have co-morbidity with personality disorder (Farmer & Nelson-Gray, 1990), substance misuse, eating disorders, and anxiety (Rohde, Lewinsohn, & Seeley, 1990). Physical illnesses that co-occur with depression may include occasions where depression has evolved from the stress of experiencing a physical illness (e.g., Beck & Koenig, 1996). In addition, there are somatic elements of depression (e.g., sleep disturbance, bodily pain) which may require independent treatment

1.4 Communalities

Gotlib and Hammen (1992) place an emphasis on the variety of experiences encompassed by the diagnosis of depression, and suggest that, in research, a specific subtype of depression should be isolated for study as "sweeping theories of the etiology of depression do not fit the clinical reality of diverse types that differ in origin and course of the disorder" (pp 12) Recently, however, Sloman, Gilbert, and Hasey (2003) have argued that the variability of experiences in major depression are counterbalanced by a number of affective symptoms, cognitive experiences, and behaviours which are common to depressive experiences. They argue that common affective symptoms include a loss of positive affect (Watson *et al* , 1995a; 1995b), anhedonia (Willner, 1993), a loss of interest, apathy, and heightened anger (Brody, Haaga, Kirk, & Solomon, 1999) Common cognitive symptoms include impairment in memory, concentration, and attention (Watts, 1993). Negative thoughts are also

common and include seeing the self as a failure, being pessimistic about one's future (Beck, Rush, Shaw, & Emery, 1979), and feeling defeated and trapped (e.g., Gilbert & Allan, 1998). Behaviourally, there is a loss of energy (Klinger, 1993), social withdrawal, submissive behaviour (Allan & Gilbert, 1997), and isolating one's self (Coyne, 1976a; 1976b; Segrin & Abramson, 1994). Instead of attending to the various ways experiences of depression can be subdivided, Sloman *et al*, (2003) focussed upon the evolved mechanisms that may underpin these communalities. The evolved mechanisms underpinning experiences of depression are the focus of the present study, specifically, the mechanisms of the attachment and social rank systems.

1.5 The Relationship between Attachment and Depression

Depression has reached prevalence great enough to be considered an epidemic (Dawson & Tylee, 2001). This has heightened interest in the vulnerability factors involved in the development of a depressive episode. Two central vulnerability factors emerge in relation to depression; these are cognitive vulnerability (e.g., Alloy *et al*, 1999; Abramson, Metalsky, & Alloy, 1989; Airaksinen *et al.*, 2004; Beck, 1967) and interpersonal vulnerability (e g., Brown & Harris, 1978; Coyne, 1976a, 1976b). Cognitive vulnerability refers mainly to the availability of the negative depressive schema, which places a negative skew on the interpretation of events, interpersonal interactions, and personal achievements and goals. The role of interpersonal processes refers to the adequacy of an individual's social network, their ability to use it to access support, gratification, and protection, and the stability and security of that network.

As will be discussed later in the review, cognitive and interpersonal factors are both implicated in the attachment system. It is argued that attachment theory is therefore

a parsimonious means of conceptualising and studying vulnerability to depression. Other models have been outlined which propose an interaction between cognitive and interpersonal factors, for example the cognitive interpersonal model proposed by Gotlib and Hammen (1992). However, there are a number of inconsistencies with the cognitive interpersonal model, which are not found when using attachment theory.

Gotlib and Hammen (1992) rely on childhood experience as the chief factor which influences individual differences in vulnerability towards depressed mood in adulthood. However, they do not elaborate the mechanisms through which childhood experiences may be carried forward to influence depression as an adult. As will be outlined later, an advantage of attachment theory is there are mechanisms, integral to the attachment system, which operate as a channel into adulthood for childhood experiences. Whilst Gotlib and Hammen (1992) show that cognitive and interpersonal factors complement one another in explaining the aetiology and course of depression, the actual interaction between these two elements is unclear. However, the interaction between cognitive and interpersonal factors is central to attachment theory. The attachment framework emphasises continuous feedback between interpersonal experiences and two underlying cognitive dimensions. A further strength of attachment theory, over the cognitive-interpersonal model is that non-pathological development (secure attachment) can be explained within the same framework, and factors which protect or "buffer" against depression can be explored This is of value to therapeutic applications which may seek to promote these non-pathological factors within individuals with depression (Hazan & Shaver, 1994). Therefore, exploring vulnerability to depression within the attachment system (Ainsworth, Blehar, Waters, & Wall, 1978, Bartholomew, 1990; Bowlby, 1969; 1973; 1980) offers a more integrative account of cognitive and interpersonal vulnerability

than the cognitive-interpersonal model proposed by Gotlib and Hammen (1992), or either of cognitive or interpersonal factors alone.

Of the theories and models proposed to explain individual differences with regard to the onset and vulnerability towards depression, attachment plays a vital role. For example, evolutionary theory draws upon the formation and evaluation of alliances in explaining the social processes surrounding depression (Sloman *et al*, 2003) Coyne (1976a; 1976b) draws upon the need for reassurance from others in his interactional theory of depression. Freud (1917) focuses upon loss. Beck (1967) although focussing on intrapersonal aspects of depression also highlights sensitivity towards rejection as a stressor (or vulnerability factor) and positions the development of the depressive constellation as resulting from 'identification with key figures such as parents, siblings, and friends' (pp 275, Beck, 1967). Attachment, and the effect of its absence, removal, or disruption, therefore underlies the aetiology of depression according to a number of theoretical perspectives.

The centrality of social relationships and cognitive functioning in explaining vulnerability to depression makes the attachment framework a parsimonious theory for conceptualising vulnerability to depression in adulthood. Hazan and Shaver (1994) concluded that attachment theory is important for understanding some of "society's pressing problems" (pp 77) of which depression was one. They also stated that attachment theory is influential in the field of developmental psychopathology and has potential clinical applications In addition, Hammen *et al.* (1995) championed the role of attachment theory in explaining vulnerability to depression as it integrates cognitive, interpersonal, and childhood factors.

The aim of the present study was to clarify the role of insecure attachment as a vulnerability factor towards depression, whether attachment was continuous and

offered a conduit through which childhood experiences could have an effect, and to examine whether each of childhood and adulthood attachment had separate roles with regard to vulnerability to depression. To begin, attachment theory will be outlined in relation to childhood then adulthood attachment. Theory and research concerning the stability of attachment across the lifespan will next be outlined, to evaluate the capability of attachment theory to explain how childhood experiences can be carried forward to influence depression in adulthood. Following this review, a separate chapter will be dedicated towards outlining the association between attachment and depression. The third chapter outlines the role of attachment as a vulnerability factor towards depression, the role of third variables in the association between attachment and depression, and the problems with the existing literature which the present study will attempt to address. Although the present study is concerned with childhood attachment, the focus is within a normal range of childhood attachment experiences, and not on childhood abuse for example.

1.6 Childhood Attachment

Drawing on ethological reasoning, Bowlby's (1969, 1973, 1980) hypothesis was that humans were innately equipped with an attachment system, which served to promote the survival of infants through securing their proximity to stronger and wiser caregivers (attachment figures), thereby ensuring their safety, and allowing them to engage in exploratory behaviours. Attachment can be defined by the three functions it serves Firstly, the attachment system maintains proximity between an attachment figure and an infant. Secondly, attachment provides a safe haven where one can retreat to in times of need Thirdly, attachment provides a secure base from which to explore one's surroundings (Ainsworth *et al*, 1978).

A distinction was made between the attachment bond and attachment behaviour. Whereas the bond endures, the behaviours which serve to preserve it are only apparent when the need arises. Bowlby (1969) proposed that an infant developed a repertoire of attachment behaviours during the first year, which were directed towards the "set goal" of maintaining proximity to the attachment figure The attachment behaviours include clinging, approaching the attachment figure in times of need, pointing to gain attention and vocal signs of distress such as crying, and screaming. These behaviours evolved as a means of providing security for the human infant during its long neonatous state. Whilst the attachment figure is within acceptable proximity to the infant, the set goal is being met, the attachment behaviours are dormant, and the infant is secure.

Bowlby (1969) explained attachment within an ethological framework, which is reflected in the use of terminology such as the attachment behavioural system, the set goal, and the application of activating and terminating circumstances to trigger the attachment system Bowlby (1969) conceived that the dynamics of the attachment system were homeostatic in nature, with the goal of the system being proximity to the primary attachment figure. According to this hypothesis, the attachment system should be activated in response to the emotional appraisal of events, when the infant is afraid, or angry for example. Such events include a change in the proximity of one's attachment figure. For example, when the attachment figure moves out of sight, or moves outside of an acceptable range, the infant may be fearful. Activation would also occur if the infant encounters anything unfamiliar, dangerous or threatening (e g., an unknown adult approaching), or is uncomfortable in any way (e.g , tired, ill or injured). The threshold at which the system is activated and terminated will depend upon how close the attachment figure needs to be for the child to feel secure. This original presentation was later adapted by Ainsworth *et al.* (1978) to include a continuously activated system. It was

recognised that deactivating the system entirely would mean that the infant no longer monitored the proximity of the attachment figure, which would leave them open to danger. It was proposed that attachment *behaviours* were activated and deactivated, rather than the attachment system.

The infant's aim, when initiating attachment behaviours, is to re-establish a comfortable level of proximity with their attachment figure. The attachment figure and the child complement each other within a system of requesting proximity and delivering of attention As such, the attachment figure's response to the attachment behaviour is crucial feedback for the infant regarding their effectiveness at maintaining their set goal. Should the attachment figure respond positively and return to the child, the set goal is met and the child may disengage the attachment behaviour. However, if proximity, and therefore security, is not restored, the attachment behaviour would be engaged over a prolonged period, which could become pathological. The accumulative outcome of these simple requests and responses are the building blocks for the cognitive dimensions of the attachment system, which provide a prototype for attachment relationships throughout life. Any disruption in the relationship, Bowlby (1980) states, will typically induce anxiety, anger, or sadness. For this reason, Bowlby (1951) asserted that children needed a close and continuous relationship in order to thrive emotionally and that maternal deprivation, especially during the first three years of life, puts a child at risk for physical and mental illness.

Separation from one's attachment figure is one distinctive event which would activate attachment behaviours The attachment response is elicited upon separation, but also whenever proximity is threatened in some way. Bowlby drew attention to the uniformity with which children responded to separation in three discrete stages; firstly protest, secondly despair and finally emotional detachment (Robertson & Bowlby,

1952) The set goal of the attachment system is to maximise accessibility and responsiveness for the three phases of separation. In children, separation from the attachment figure will first be met with protest, crying, struggling to maintain proximity, and being defiant. The dominant emotions during this stage are fear, anger, and distress. Whilst the anger provided motivation to search for the lost attachment figure, the fear and distress were a reaction to the child's appraisal of their vulnerability in absence of their caregiver. Critically, during this stage, the infant believes that their attachment figure will return. Once the child realises that they have been separated from their attachment figure there will follow despair, the second stage. The key emotions experienced by the infant in this stage include hopelessness regarding their caregiver's return, and sadness. Once a loss is accepted and an individual recognises that their attachment figure is unavailable sadness occurs, accompanied by withdrawal from other relationships. The third stage, detachment, only takes place after the separation has been long term. Detachment, whether it occurs because of bereavement, or long term separation, is a defensive effort to deactivate the attachment system and give time to redefine cognitive representations in terms of their loss.

Bowlby noted that whilst the separation response may be productive in securing proximity an attachment figure, they could also be maladaptive if exercised over a prolonged period. For example, with the realisation that the loss cannot be recovered comes deep rumination, despair, and depressive mood. The three stages have been likened to behaviour observed in individuals with depression (Sloman, Gilbert, & Hasey, 2003). For example, Klinger (1977) noted four stages of behaviour following a loss or failure to achieve a goal Firstly the individual decreases their activity. This is followed by aggression and anger over the loss. Subsequently, the individual experiences grief, apathy and depression, and finally detachment and recovery. These stages mirror the separation response in attachment theory.

Sloman *et al.* (2003) observed a similar effect in adults who have lost social rank, these findings highlight one connection between depression and attachment style. Any disruption or loss of a central attachment figure during early childhood is likely to predispose an individual towards depression in later life.

1.6.1 Individual Differences in Childhood Attachment

Whilst Bowlby was chiefly concerned with the effects of separation and loss, Mary Ainsworth and her colleagues (1963; 1967; 1968; Ainsworth & Bell, 1970; Ainsworth *et al.*, 1978) turned their attention towards defining individual differences in patterns of attachment. The quality of an attachment relationship may be referred to as the extent to which it is secure. Although attachment research stemmed from investigating the effects of long-term separation and loss, as outlined above, it was recognised that on a routine basis, loss and separation could be redefined as the emotional unavailability, or perceived unresponsiveness of the attachment figure (Kobak, 1999). The response of the attachment figure to the emotions, or mood, of an infant is the central force which shapes individual differences in attachment style. In observation studies in Uganda and in Baltimore, Ainsworth (1963; 1967; *et al.*, 1978) noted that sensitive mothering had a pivotal role in the development of attachment patterns. The development of attachment patterns, or "styles" eventually gave way for attachment theory to be extended to adults (Hazan & Shaver, 1987). Research has been concerned with exploring the attachment styles that are most often associated with depression (e g , Bifulco, Moran, Ball, & Bernazzani, 2002; Priel & Shamai; 1995) with the aim of illuminating some of the developmental antecedents of depression. It is therefore useful to outline the three attachment styles as found in infancy, defined by Ainsworth *et al.* (1978).

Drawing on an experimental paradigm, the Strange Situation, Ainsworth and her colleagues (1978) studied the reaction of infants to a variety of stressors in order to explore individual differences in infants when separated from an attachment figure whilst in a strange environment. A sequence of eight episodes was typically used, each episode lasted for three minutes. In total, the infant experienced two opportunities to engage with the stranger, two separations from the mother, and two reunions with their mother. The behaviour of the attachment figure and the infant was observed and coded (Ainsworth *et al.*, 1978). The infant was rated on their proximity seeking, their avoidance, the extent to which they resisted any comfort that was offered, maintenance of contact with the attachment figure, searching, and communications with the attachment figure. Ainsworth and her colleagues derived three attachment types; secure, avoidant, and ambivalent. Each attachment type was defined by a different set of behaviours, and a different threshold at which attachment behaviours were activated in the strange situation.

The secure infants (type B) used the mother as a secure base from which to explore the new toys provided, and the unfamiliar environment. They maintained proximity, through visual or verbal contact. When separated from their mother, crying was not always present, but the exploratory behaviour was lessened by the absence of the mother. Secure infants were positive upon the return of their mother, and were comforted by her, if upset. This demonstrated that they were able to use their mother as a safe haven in times of need. The secure group was midway on the continuum between the avoidant and the resistant groups.

Like the secure infant, the avoidant infant (type A) happily explored the strange environment. However, these infants were differentiated based on their lack of proximity and contact seeking, both when the mother was present, and upon the reunion. The avoidant infant only showed a little distress on separation from their

attachment figure. The avoidant group demonstrated the highest threshold at which attachment behaviour would be initiated. They did not cry for help until the stressor was severe.

An interesting element of avoidant attachment is the conflict present in these infants. Ainsworth *et al.* (1978) suggested that the behaviour of the avoidant individual was a product of an internal conflict. This conflict is between the desire for, and the fear of proximity. As Bowlby (1969) stated, all individuals have an inborn need for proximity, the avoidant infants are no different in this respect. It is thought that the reason why they do not seek their attachment figure at these times of conflict is to avoid the risk of being rejected.

The third attachment strategy identified by Ainsworth and colleagues was resistant, also known as ambivalent, attachment. This group demonstrated exaggerated attachment behaviours Out of all groups, these infants were the most distressed by separation from their attachment figure. However, unlike securely attached infants, they were not easily comforted when they were reunited with their attachment figure. They either demonstrated anger towards their attachment figure (group C1) or continued being distressed and helpless regardless of the attempts to comfort them (group C2). These infants were the least likely to play with the new toys and explore their environment, especially after separations. The intensity of their attachment behaviours is indicative of a low threshold for activating the attachment behaviour. Only minimal distress is required before an ambivalent infant engages attachment behaviour.

All three attachment types follow a strategy, and behaviours are organised by that strategy, towards a common goal. In the course of classifying infants, a number of cases were identified where the infant did not meet classification criteria for any type.

These infants expressed both avoidant and resistant behaviours, and because of this the "type" was labelled A/C (Crittenden, 1985; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985). A review of these cases led Main and Solomon (1986) to determine the disorganised attachment style The hallmark of a disorganised attachment style was simply that there was no evidence of the infant following a single attachment strategy (avoidant, secure, or resistant) Rather, these infants would employ behaviours from different strategies sequentially, or in combination. Typically, strong proximity seeking (resistant) would be accompanied by avoidance of the attachment figure once proximity was gained (avoidant). These infants also assumed anomalous postures, and disturbed movements, they appeared apprehensive of the parent, and their behaviour was generally disorganised and stilted.

1.6.2 Measurement of Childhood Attachment

To date, there are no means of measuring retrospectively, attachment to one's parents as a child Research which explores childhood experiences, tends to use the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979). The Parental Bonding Instrument has been used extensively as an indicator of childhood experiences with parents in relation to current depressed mood, and adult attachment (e.g., Carnelley *et al*, 1994). The Parental Bonding Instrument was designed to "assist research in defining the parental contribution to optimal bonding and in considering the sequelae of distorted parental bonding" (Parker *et al*, 1979, pp 9) and consists of two subscales, care, and overprotection. During the development of the scale, the overprotection subscale was less homogenous than the care scale, more difficult to define, and achieved lower inter-rater reliabilities and validity results. This is an indication that the Parental Bonding Instrument is a more reliable measure of care, than of overprotection. The two subscales were not

independent; a lack of care was associated with overprotection. Criticisms of this instrument will be outlined in chapter three, following a review of research that has implemented this measure.

1.7 Working Models of Attachment

Underlying the three patterns of infant attachment, Ainsworth *et al.* (1978) found two dimensions (as diagrammed in figure 10, Ainsworth *et al.*, 1978). These two dimensions overlap with two working models of attachment first proposed by Bowlby (1969) to be the cognitive mechanisms that operated in the attachment system. Working models of attachment are cognitive representations of the self and other within the attachment system. The security of an attachment relationship can be referred to as the extent to which positive or negative working models are held of the self and other. Recall that the response of the attachment figure is crucial in providing an infant with feedback regarding the effectiveness of their attachment behaviour in maintaining proximity. This feedback informs the infant of the ability of the *self* to attract others and the propensity of the *other* to respond to calls for support. The disturbance or balance between the infant's behaviour and the attachment figure's response results in a collection of experiences, behaviours, and expectations which are internalised and encoded to create cognitive representations of the self and the other within the attachment system The attachment system therefore represents an interaction between interpersonal experiences and cognitive mechanisms. Feedback from interpersonal experiences informs and shapes the cognitive working models, and in turn, these cognitive mechanisms further inform future interpersonal exchanges. In this way the attachment can represent both interpersonal and cognitive vulnerability towards depression.

The working models are cognitive representations of the attachment system. The working model of self monitors proximity to attachment figure, the working model of other appraises the responsiveness of the attachment figure. The working models map onto two behavioural dimensions of attachment (Bartholomew, 1990). The working model of other maps onto the avoidance dimension. A negative working model of other is therefore congruent with an avoidant attachment style. An avoidant attachment style is characterised by self reliance, being dismissive of attachment figures. The working model of self maps onto the anxious dimension. A negative working model of self is therefore congruent with an anxious attachment style. This style of attachment is characterised by feelings that one is unworthy of the attention of others, and behaviours such as searching, clinging, and following, even in adults (Fraley & Shaver, 1998). Both working models inform expectations and guide behaviour. Each individual may hold either a positive, or a negative view of themselves, or others, resulting in secure (positive view of self and others) or insecure (negative view of self, others or of both) attachment (Bartholomew, 1990). The first relationship is regarded as the most important as it acts as a prototype for behaviour and expectations in future attachment relationships. Bowlby (1973) stated that the working models are gradually formed during infancy and through childhood until they become relatively stable during adolescence.

Drawing on information theory, Bowlby hypothesised that these working models were continuous and self-maintaining; the individual will attenuate information which refutes their mental representation, and will seek out information to affirm their model of self and other. In support, the selection of romantic partners, or the maintenance of a relationship has been related to the tendency of the partner to confirm an individual's attachment models. For example, Swann, Hixon, and De La Ronde (1992) found that individuals who confirm our working models of others are preferred as partners to those who do not. It is through these working models that early

experiences are carried forward to guide later attachment behaviour and psychological functioning, including depression Thus, according to attachment theory, it is expected that adult attachment dimensions in adulthood would be congruent with attachment experiences as a child This concept is explored more fully below.

1.8 Adult Attachment

Attachment theory was first introduced to explain the bond between an infant and an attachment figure, but Bowlby (1973) emphasised that attachment was important from "cradle to grave" (pp 129). The extension of attachment theory to adult attachment, and the measurement of adult attachment did not take place until the nineteen-eighties. Hazan and Shaver (1987) argued that the patterns of infant attachment identified by Ainsworth *et al* (1978) were conceptually similar to the love styles observed in adulthood by Lee (1973) Consequently, they adopted and revised Ainsworth's three patterns of attachment to describe three styles of adult romantic attachment; the Romantic Attachment Questionnaire (see table 1.1). Hazan and Shaver (1987) found that individual's self-reported adult attachment style was related to beliefs about love and relationships and recollections of early relations with one's parents. In support of Bowlby's (1977) "cradle to grave" (pp 129) theory that early attachment experiences act as a prototype for those in later life, Hazan and Shaver (1987, 1994), concluded that adult romantic attachment was shaped by childhood experiences, with one's attachment figure.

Table 1.1. Adult Romantic Attachment Questionnaire. (Replicated from Hazan & Shaver, 1987, pp 515)

Secure	I find it relatively east to get close to others and am comfortable depending on them and having them depend on me I don't often worry about being abandoned or about someone getting too close to me.
Avoidant	I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being.
Anxious/ambivalent	I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away.

Taking as the starting point Bowlby's concept of working models, Bartholomew (1990; Bartholomew and Horowitz 1991) modelled a four-category conceptualisation of adult attachment. The four categories were derived from a high or low presence of each model described by Bowlby; working model of self, and working model of others (see figure 1.1). At around the same time, Sperling and Berman (1991) developed a four-category classification of adult attachment based around two dimensions of affiliation and aggression. The present study is concerned with Bartholomew's (1990; Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994) model of adult attachment, as it is the most consistently referred to, and maps onto the work of Bowlby and Ainsworth on attachment in infancy.

Bartholomew's model (1990) arranges four attachment styles along two conceptual dimensions, attachment related anxiety and attachment related avoidance. As stated earlier anxiety and avoidance map onto the working models of self and other (respectively). Attachment related anxiety is therefore concerned with variation in vigilance of attachment related cues. Those scoring highly on this dimension are anxious about the availability and responsiveness of their attachment figures, whereas those scoring low on anxiety are confident in the availability of their

attachment figure. Attachment related avoidance determines individual differences in proximity seeking versus withdrawal from relationships A high score on this dimension reflects a tendency to withdraw from close relationships, a low score reliance on others as a secure base, when needed. In order to conceptualise the four attachment styles, the dimensions of anxiety and avoidance are represented in two dimensional space as shown in figure 1.1.

Bartholomew's (1990) contribution was the proposal that avoidant attachment in adulthood was more complex than Ainsworth's (*et al.,* 1978) categorisations of infant attachment[1]. Bartholomew pioneered research into the identification of two subtypes of avoidant attachment in adults; these were fearful avoidance and dismissing avoidance (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Griffin & Barthlomew, 1994). Both attachment styles are typified by negative expectations of others. The consequence of these negative expectations is that they tend to avoid close relationships to prevent the pain of loss or rejection. The key difference between the two types of avoidant attachment is in their working model of self. Those with dismissing avoidance have a *positive* model of self and their avoidance is therefore motivated by a conscious effort to avoid making close emotional attachments. They are motivated to be independent and self-reliant. This is achieved through defensive denial of the importance of close relationships and instead championing the value of independence. Individuals with a fearful attachment style have *negative* models both of their self and of others. In the case of those who are fearfully avoidant, their avoidance is motivated by an attempt to suppress their insecurities, as they are afraid of being hurt and rejected by another. This means that they shun close relationships, but also that they feel that they are

[1] See table 2 1 for an indication of how infant and adulthood attachment styles have been proposed to overlap (Beech & Mitchell, 2005, Hesse, 1999)

unworthy of such relationships. This is in contrast to those with dismissive avoidant attachment, as they would retain a sense of self-worth.

Figure 1.1. Model of Adult Attachment. (Replicated from Bartholomew and Horowitz, 1991, pp 227, figure 1).

		Model of Self (Anxiety)	
		Positive (Low)	Negative (High)
Model of Other (Avoidance)	Positive (Low)	**CELL I** **SECURE** Comfortable with intimacy and autonomy	**CELL II** **PREOCCUPIED** Preoccupied with relationships
	Negative (High)	**CELL IV** **DISMISSING** Dismissing of intimacy Counter-dependent	**CELL III** **FEARFUL** Fearful of intimacy Socially Avoidant

Fearfully avoidant individuals are represented by a high score on both anxiety and avoidance. Dismissing avoidant individuals are represented by a high score on avoidance, but a low score on anxiety, as they are not concerned by the availability of their attachment figure, but with their own self-reliance. Preoccupied individuals are represented by a high score on anxiety, they are concerned with the availability of their attachment figure, however they score low on avoidance, as they do not withdraw from their attachment figure. Securely attached individuals score low on both anxiety and avoidance. These four attachment styles have been used to explore individual differences in vulnerability to depression (e.g , Priel & Shamai, 1995). These definitions have been supported in an observational study of adult separation (Fraley & Shaver, 1998) which is outlined in a later section.

1.8.1 Measurement of Adulthood Attachment

The development of attachment theory is closely tied to the development of new measures, this is especially so for adult attachment Just as the strange situation (Ainsworth *et al* , 1978) allowed for the empirical advancement of Bowlby's theory in infants, the development of a self-report measure of adulthood romantic attachment (Hazan & Shaver, 1987) spurred theory and research in this area. Bartholomew (1994) claimed that the development of new methods of assessment aided "conceptual clarity and further theoretical development" (pp 23). The development of self report measures of adulthood attachment is presented in appendix A

Of relevance to the present review, the measurement of adulthood romantic attachment has taken two forms. Either the individual's attachment style is categorised (e.g., The Relationships Questionnaire; Hazan & Shaver, 1987, or the Romantic Attachment Scale; Bartholomew & Horowitz, 1991) or a continuous score on a dimensional measure of attachment can also be used (e g., The Revised Adult Attachment Scale; Collins & Read, 1990). Attachment style has most often been categorised into secure, preoccupied, dismissing, and fearful attachment styles. The dimensions most often used in the measurement of attachment are those of avoidance, which refers to working model of other and anxiety, which refers to working model of self (e.g., the Experiences in Close Relationships Scale; Brennan, Clark, & Shaver, 1998). There is much debate concerning which method is the most valid for the measurement of adult attachment (e g., Fraley & Waller, 1998; Griffin & Bartholomew, 1994). It has been suggested (e.g., Brennan *et al* , 1998, Hazan & Shaver, 1994; Fraley & Waller, 1998) that more reliable results can be expected when dimensional measures of romantic attachment are used. This is because dimensional measures can be subject to factor analyses and reliability analyses whereas categorical measures cannot Dimensional measures also allow for more

variability and precise data, and because dimensions are more variable, they are more sensitive to changes over time. However, as Hazan and Shaver (1994) pointed out "thinking in terms of categories may be useful when theorizing and generating dynamic hypotheses" (pp 74). Dimensional scores can be used to categorise participants into types if the research calls for such a need (e g., the Experiences in Close Relationships Scale, Brennan *et al.*, 1998). Therefore measuring dimensions gives the researcher more flexibility due to the option of categorising participants if the research question calls for this method of indicating attachment (Hazan & Shaver, 1994).

Use of both categorical and dimensional measurement of attachment within the same study is controversial. It has been argued that the two methods of measurement are diametrically opposed given their theoretical bases. The dimensional method is derived from Bowlby's (1969; 1973, 1980) theory, and tends to measure working models or other concepts that Bowlby considered were associated with attachment (e g., Compulsive Self Reliance, as measured by Harris & Bifulco, 1991). Alternatively, the categorical method of classifying attachment style was borne from Ainsworth's study of individual differences in attachment However, there are three reasons why these two methods of measuring attachment can be used together. Firstly, Bowlby (1973) used Ainsworth's seminal papers on patterns of attachment (e g , Ainsworth & Bell, 1970) in his book on separation, where he explored the roles of working models of attachment in response to distress. Ainsworth *et al.* (1978; figure 10) outline and diagram how there are two dimensions, reflecting the working models of self and other underlying their three patterns of attachment. Secondly, Bartholomew's two-dimensional model outlined how the dimensions of self and other represent four attachment styles, which were part derived from Ainsworth's (*et al.*, 1978) classifications. Finally, Brennan *et al.* (1998) developed a measure which could be scored dimensionally, and those scores used to assign an individual with

their attachment style. Therefore, not only are typological and dimensional models grounded together in theory, but also the dimensions of attachment can be combined to describe types of attachment, and to measure types of attachment. In line with Crowell, Fraley, and Shaver (1999), it is therefore argued that the measures of categorical or dimensional models in attachment research should be selected based upon the needs of the research question. The present study will use both types of measurement. It is argued that this does not contravene theory, and this argument is supported by previous research (Levy, Blatt, & Shaver, 1998), which has utilised both dimensional and categorical definitions of attachment in the same study.

1.9 The Association between Childhood and Adulthood Attachment

In line with attachment theory, and the assumed continuity of attachment, it would be expected that working models, which are present in adulthood, mediate the association between childhood attachment experiences and depression, because the working models would be the cognitive mechanisms through which childhood attachment experiences would later have their effect. This will be explored further in chapter three. In order for the attachment system to be the conduit through which childhood experiences can have an impact on depression in adulthood, attachment should be stable across the lifespan. Although Bowlby (1969) speculated that working models adapted according to life experiences, he also stated that any adaptation was constrained by the influence of the existing model. Furthermore, some elements of the working model, those that were subconscious, would resist change altogether. The emphasis was that early experiences would mould the development of working models, and that by this method early experiences would be carried forward. More recently, Fraley and Shaver (2000) drew on existing evidence to advance the theory that working models, though flexible to some extent, were

more likely to assimilate new information that was consistent with the existing model, or to distort the new information to fit the existing model. The working models are therefore formed during childhood and subsequently 'fine-tuned' by other relationships. Thus, the working models in adulthood are the product of an aggregated representation of all prior or current relationships. The stability of attachment is explored below. Firstly, with respect to the congruence between childhood and adulthood attachment, the extent to which each is rooted within the same system is outlined. Secondly, empirical evidence relating to the stability of attachment across the lifespan and over time is presented. Thirdly, the predictors of discontinuity and change in attachment style are discussed. Finally, the implications for discontinuity of attachment upon vulnerability to depression will be considered.

1.9.1 Congruence between Childhood and Adulthood Attachment Systems

The extent to which childhood and adulthood attachment can be generated from the same underlying framework has come under consideration (e g., George & West, 1999; Hazan & Shaver, 1994; Weiss, 1994), as a number of differences have been observed between childhood and adulthood attachment relationships. For example, in late adolescence, the primary attachment figure typically shifts away from parents and towards peers, or to a romantic partner (Hazan & Shaver, 1994). It could be considered that this shift in primary attachment figure would indicate discontinuity in the working models of attachment. However, this transition between attachment figures has actually demonstrated a continuous aspect of the attachment system - that is, the stages through which attachment develops (Hazan & Shaver, 1994). Attachment figures are defined by the three functions they serve, namely the provision of proximity, the provision of a safe haven, and the availability of a secure base. According to Hazan, Hutt, Sturgeon, and Bricker (1991), when a new

attachment figure is identified, the three functions are serially transferred from the previous attachment figure to the next. Proximity is transferred firstly, followed by the safe haven, then the secure base[2]. This corresponds to the three stages of attachment development in infancy, outlined by Ainsworth *et al.* (1978); Pre-attachment, attachment in the making, and clear-cut attachment.

Fraley and Davis (1997) examined the transfer of attachment functions in young adults. Using self-report questionnaires, the participants were assessed on who they would use for proximity maintenance, who they would go to for a safe haven, and who would provide a secure base. They found that peer relationships were more caring, more intimate, and more trusting in young adults who had transferred more of these functions to their peers. Attachment seems to develop in the same fixed pattern throughout life, and in different relationships (e g , parent-child relationships, friendships, romantic relationships). This suggests that childhood attachment and adulthood attachment are alike in the functions they serve, and in the manner these functions develop

George and West (1999) argued that Bartholomew's (1990) model of adult attachment failed to incorporate protective features of attachment as described by Bowlby (1969, 1973; 1980), such as the provision of protection and safety and the notions of self as worthy of protection. However, it has been found, that attachment working models are activated in adulthood when threat is perceived (Mikulincer, Gillath, & Shaver, 2002) Mikulincer *et al.* (2002) found that when threat was perceived representations of attachment figures were activated in adult participants. They concluded that activating this representation formed the first stage in seeking

[2] It may seem odd that Hazan and Shaver (1994) claim the development of an emergency behaviour (proximity seeking) occurs before the establishment of a normal pattern of development (secure base) However, Crowell and Waters (1994) argue that initially it is easier to go to a potential attachment figure in times of crisis, whereas turning towards them on a day-to-day basis would not occur until later in the relationship when they have become a secure base

the attachment figure. Furthermore, it has also been found that attachment behaviours are activated in adults when they are exposed to events that are distressing (e g., Rholes, Simpson, & Orina, 1999; Simpson, Rholes, & Nelligan, 1992) These findings provide support for the protective functions of the attachment system in adulthood, and therefore dispute the criticisms of George and West (1999).

Weiss (1994) argued that childhood and adulthood attachment could not be conceived of as operating within the same system. Weiss (1994) suggested that attachment in adults needed to be studied through observation of adult response to separation and loss, in the same vein as the Ainsworth Strange Situation paradigm (e g., Ainsworth *et al.*, 1978). In answer to this, Fraley and Shaver (1998) presented evidence from a naturalistic observation of couples parting at an airport. Only data from women were consistent however. Participants completed the Relationship Styles Questionnaire (Griffin & Bartholomew, 1994) and their attachment style was categorised based upon their response. Subsequently, the participants were observed in an airport when separating from their romantic partner. Attachment behaviour was encoded. For example a brief hug, eye to eye contact, or sitting close. They found that adult attachment behaviour was organised in a similar way to that observed in children by Ainsworth *et al.* (1978), and was reminiscent of attachment behaviour observed between an infant and their mother. For example, in those who were separating, proximity maintenance behaviours, such as holding onto, following and searching for the partner were observed. In contrast, for those who were not separating (i.e., they took the plane together), attachment behaviours were not as frequent, and were more subdued. As with childhood attachment, therefore, the activation of attachment behaviours was a function of separation, and was directed towards proximity maintenance. Furthermore, these observations reflect the differences in working models between the four attachment styles and provided empirical support for the validity of Bartholomew's (1990) two dimensional

conceptualisation of adult romantic attachment and for the continuity of working models and attachment behaviour (Bowlby, 1969) into adulthood. For example, individuals with a negative working model of other (fearful or dismissing attachment style) were observed physically to pull away from their partners, which is reminiscent of the behaviour of an avoidant child observed by Ainsworth *et al.* (1978). It has also been observed that avoidant women pulled away from their partners in a stressful situation (Simpson *et al.*, 1992).

Childhood and adulthood attachment are similar in their goal (Fraley & Shaver, 1998), activation and termination events (Mikulincer *et al.*, 2002; Rholes *et al.*, 1999; Simpson *et al.*, 1992), in their development (Hazan *et al* , 1991), and response to separation (Fraley & Shaver, 1998). It is proposed that these similarities emerge from sharing the same internal mechanisms, and the same set goal of proximity maintenance. Some behavioural facets of the attachment system in infancy are paralleled in adult romantic relationships. Further examples include, ventral-ventral contact, baby talk, cooing, and sharing interesting experiences (Fraley & Shaver, 2000) This evidence suggests that the working models of the attachment system and their associated behavioural strategies prevail over time.

Hazan and Shaver (1994) highlighted some of the key differences between childhood and adulthood attachment. Adult attachment is more likely to be reciprocal, whereas childhood attachment is usually one-sided in terms of parental care provision. As described above, the attachment system is activated throughout life when an individual needs their attachment figure, to maintain proximity, or to feel safe. However, in adulthood attachment, proximity to another individual may be motivated by additional "systems". According to Hazan and Shaver (1994) in adults, proximity may also be sexually motivated or motivated by the caregiving system. Sex is conceptualised as a separate system to attachment (Shaver, Hazan, & Bradshaw,

1988). However, the eliciting of care and the provision of care emerge from a single regulating system in adults (Crowell, Treboux, Gao, Fyfe, Pan, & Waters, 2002). Therefore, it was argued that adult attachment comprised both care giving and care eliciting, whereas childhood attachment referred only to the latter (Weiss, 1994).

In response to the above argument however, it has been noted that a degree of reciprocity on the child's part emerges in the final stage of attachment development. Bowlby (1969) termed this stage the "goal-corrected partnership" (pp 368). Both Bowlby (1969) and Ainsworth *et al.* (1978) argued that at this stage the child is aware of the needs of others and has begun to appreciate that their own needs can be met only in cooperation with the needs of others. This phase occurs between four and five years of age. The child is said to internalise the role of the parent in their attachment relationship, not just their own role. Therefore, the securely attached child learns what it is to give care and respond to the needs of others (Crowell & Waters, 1994). Retrospective measures of childhood experiences with parents typically refer to the period below the age of 16 (e g , the Parental Bonding Instrument, Parker *et al.*, 1979). By this time, a degree of reciprocity in the relationships with parents would have been achieved.

Main, Kaplan, and Cassidy (1985) noted that by the age of six years, the attachment system began to incorporate cognitive and affective representations This greatly extends the range of events that can operate to terminate the attachment system. As one matures, temporary separations are less anxiety provoking, as it is enough to know that the attachment figure can be contacted if needed. According to Sroufe and Waters (1977) the critical element is felt security. Adults have more methods of achieving felt security than do children. As such, with maturity, individuals become better equipped to cope with separation, both practically and cognitively. However,

frequent, prolonged, or unexpected separations from a primary attachment figure tend to be distressing even during adulthood (Vormbrock, 1993).

Over the second half of an infant's first year, attachment behaviours become more focussed, organised, and age-appropriate changes take place (Kagan, 1971; Main *et al.*, 1985). With maturity, the attachment behaviours that are employed increase in sophistication. However, adult behaviour observed in times of stress, or separation is related to the same behaviour shown by infants in those situations (Fraley & Shaver, 1998; Rholes *et al.*, 1999; Simpson *et al.*, 1992). Therefore, although the behaviours increase in the sophistication of their expression, the behavioural strategy, which initiates the activity, remains consistent.

The key differences proposed to exist between childhood and adulthood attachment are that adults are capable of reciprocity whereas children are not, adults are capable of more sophisticated attachment behaviours, and the attachment figure differs between children (parent) and adults (romantic partner). Each of these arguments have shortcomings, as highlighted above. Furthermore, evidence indicates that there is continuity between attachment as observed in children and attachment observed in adults. This evidence provides support for the presence of behavioural strategies and the working models of attachment over the life span. However, evidence is mixed with regard to whether or not a stable attachment style is observed across the life span. This is the focus of the following section.

1.9.2 Stability of Attachment Over Time

The extension of attachment theory to adulthood attachment was based upon the assumption that early attachment experiences can have far-reaching effects on attachment relationships in later life through the action of working models (Bowlby,

1979; Hazan & Shaver, 1987) Furthermore, it is through the action of these working models that childhood attachment is deemed to exert its influence on depression in adulthood. Therefore, the stability of attachment across the lifespan has important implications for explaining the origins of vulnerability to depression in adulthood. If the attachment system *is* the system through which childhood experiences come to influence depression in adulthood, it would be expected that attachment would be continuous between childhood and adulthood. It has been found that two dimensions underlie both adult and childhood attachment, those of avoidance (model of other) and anxiety (model of self) (Ainsworth *et al*, 1978; Bartholomew, 1990; Bartholomew & Horowitz, 1991; Brennan *et al*, 1998). It has been hypothesised that continuity of attachment throughout the lifespan is achieved through the action of the working models (Bowlby, 1969). Of interest to the present study, these working models also play a critical role in the regulation of mood in *both* childhood, and in adulthood (Rholes *et al.*, 1999, Simpson *et al.*, 1992), this will be reviewed in chapter two.

Three predictions have been outlined regarding how early experiences influence attachment style throughout life (Fraley, 2002). Early experiences may form the basis for flexible models that are revised and overwritten with new experiences. This is known as the "revisionist perspective" (Fraley, 2002). Alternatively, working models formed from early experiences may remain unchanged throughout life: the "prototype perspective" (Fraley, 2002). In contrast, Kobak (1999) argued that attachment is a discontinuous relationship construct, which is derived from the interaction between the internal working models and current relationships. A further alternative is that all three hypotheses are true; the working models can accommodate new information. However, the selection of new information is constrained by the early relationships. A cycle would therefore persist in which the expected behaviour is elicited, or sought, thus confirming expectations, and maintaining stability. In this way, early relationships could exert an influence on the

choice of attachment figure and on how individuals will behave in and appraise romantic relationships. The cyclic nature of attachment styles and choice of attachment figures has been demonstrated across a number of studies (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996, Brennan & Shaver, 1995; Collins & Read, 1990; Frazier, Byer, Fischer, Wright, & DeBord, 1996; Simpson, 1990).

To test the continuity of attachment, retrospective measures of attachment to one's parents have been used with adults, and then compared with their current attachment style. Such studies have two main aims To explore the extent of continuity between childhood attachment and adulthood attachment, and to explore the extent to which childhood experiences influence adulthood attachment. Hazan and Shaver (1987) found that securely attached individuals were more likely to have had respectful and accepting parents, than were avoidantly or anxiously attached adults. Securely attached individuals have been found to have positive perceptions of their early familial relationships, avoidant individuals were more likely to report separation from their mother, and anxious ambivalent individuals reported a lack of independence as a child (Feeney & Noller, 1990).

Carnelley *et al.* (1994) found some evidence for the stability of working models from childhood experiences through to adulthood relationships. In a regression analysis, they demonstrated that the dimensions of adult attachment were the mechanisms through which childhood experiences with the mother had an effect on current romantic relationship functioning They further found that insecure adult attachment was related to less positive childhood experiences as measured by the Parental Bonding Instrument. Collins and Read (1990) found that individuals who perceived their parental relationships as warm and not rejecting were more likely to depend on others as an adult, suffered less anxiety associated with abandonment, had a more positive self-image, and were more trusting. Using the Parental Bonding Instrument

and the Adult Attachment Questionnaire developed by Bartholomew and Horowitz (1991), Gittleman, Klein, Smider, and Essex (1998) found significant differences between the four adult attachment styles on parental overprotection and care. It was noted that individuals with secure adult attachment reported higher levels of maternal care.

Although these studies demonstrated some continuity between childhood attachment to one's parents, and the attachment relationships with a current romantic partner, one criticism is that the variables selected to describe childhood experiences reflect the behaviour of the parent, rather than attachment. The Parental Bonding Instrument is not a measure of childhood parental attachment. At present, an alternative retrospective measure of childhood attachment is not available. This criticism is associated with the attachment literature and more generally with the literature on the association between attachment and depression. This issue is elaborated in chapter three.

More unusually, longitudinal studies have been undertaken to assess the continuity and stability of attachment from infancy into early adulthood. The findings from these studies are mixed. Lewis, Feiring, and Rosenthal (2000) did not find stable attachment between one year and eighteen years. Participants were observed in the strange situation at one year, and were interviewed at 18 years. The interview transcripts were subject to the Attachment Q-Sort (Kobak, 1993). Lewis *et al.* (2000) found 38.0% of the infants who were classified as insecure, were still insecure at 18 years. However, of the secure infants, 43 0% were classified as insecurely attached at 18 years. A criticism of this study is that the follow up measures were taken during late adolescence which is a turbulent period with regard to attachment relationships (Shulman & Ben Artzi, 2003). Other research which has taken measures of

attachment at 20 years has more successfully demonstrated continuity (e g., Waters, Merrick, Treboux, Crowell, & Albersheim, 2000, Weinfield, Sroufe, & Egeland, 2000)

Waters and colleagues conducted three longitudinal studies to investigate the continuity of attachment from infancy to early adulthood (Hamilton, 2000; Waters, Hamilton, & Weinfield, 2000; Waters *et al* , 2000; Weinfield *et al.*, 2000). Infant attachment was ascertained using the Ainsworth strange situation paradigm (Ainsworth *et al* , 1978). Adult attachment was assessed using the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985; Main & Goldwyn, 1994). Data were collected from 50 participants at 12 months, 18 months, and 20-22 years. Three classifications of attachment were measured (avoidant, ambivalent, and secure), 64.0% of participants were within the same classification at both stages of the data collection (Waters *et al.*, 2000).

In a 'high-risk' sample comprised of infants who were rated highly for poverty and poor developmental outcomes, the rate of continuity in attachment style was 38 6% (Weinfield *et al.*, 2000). Hamilton (2000) found that the type of family an individual grew up with (conventional two parent or non-conventional) did not significantly affect attachment security, continuity of attachment, or the experience of negative life events. 77.0% of participants were classified as having the same attachment style in infancy and in late adolescence (the age range was 17-19 years), and infant attachment style significantly predicted adulthood attachment style.

The stability of attachment has also been explored over time during adulthood. Sibley and Liu (2004) demonstrated the short-term temporal stability of attachment style using the revised edition of the Experiences in Close Relationships scale (Fraley, Waller, & Brennan, 2000). Over a period of six weeks they found 86.0% of the variance in the avoidance subscale was shared, and 86.5% shared variance was

observed for the anxiety subscale. The high degree of reliability is most likely accounted for by the short intervening time.

It has been suggested that the stability of adulthood attachment, may stem from the assessment method used to measure attachment at each period. Scharfe and Bartholomew (1994) employed three methods of measuring attachment, deriving both categorical and continuous data. Self report ratings, expert ratings of semi-structured interviews, and the reports of romantic partners showed moderate stability over a period of eight months in a group of young adults who were currently involved in a relationship of two years or more duration, but without any children. Self report ratings of attachment were taken using the Relationship Questionnaire (Bartholomew & Horowitz, 1991), and the relationship scales questionnaire (Griffin & Bartholomew, 1994). Using these scales the same attachment style was reported over time for 63% of females and 56% of males. The reliability was higher using semi structured interviews to assess attachment style (75% of females, and 80% of males reporting the same attachment pattern over time) and when partners were asked to report attachment style (55% of females, and 73% of males retaining the same attachment pattern). The differences in stability between these methods may reflect the internal reliability characteristics of the measure. Nevertheless, it was concluded from this study that adult attachment was stable over an eight month period.

Klohnen and Bera (1998) conducted an analysis of longitudinal data from between 65 and 86 women at the ages of 21, 27, 43, and 52. At the age of 52, participants completed Hazan and Shaver's (1987) three category measure of adult attachment Seventy percent of the participants (n = 65) were classified as secure, and 25% (n = 23) as avoidant. Only 5% of the women endorsed the preoccupied attachment style, therefore this study contrasted the securely attached women with the avoidant women. The stability of participants' working models was assessed by examining

items from an adjective checklist which resembled theoretical understanding of working models. The women who were avoidantly attached at age 52 had earlier (aged 27 and 43) scored themselves, less interpersonally close, less socially confident, more emotionally distant and more self reliant than did the securely attached individuals. These adjectives are associated with an avoidant attachment style. Therefore these findings support the stability of attachment style across adulthood.

Combined, these cross sectional and longitudinal studies have demonstrated firstly that childhood "attachment" experiences, as measured by the Parental Bonding Instrument, are a predictor of adulthood attachment. This suggests that childhood experiences influence adult attachment. These findings support the hypothesis that working models influence attachment throughout life and are based on a prototypic model that develops during childhood. These studies secondly show that childhood and adulthood attachment are congruent, that attachment is stable over time, but that the stability is not guaranteed.

If working models of attachment are to be the channel through which childhood attachment can have an effect on depression in adulthood, then it is assumed that continuity between childhood and adulthood attachment would be demonstrated Equally important is an understanding of the factors which lead to discontinuity in working models As will be discussed below, the factors which lead to discontinuity in the attachment system may also predict vulnerability to depression. This has important implications for the utility of the attachment system in explaining vulnerability to depression

1.9.3 Predictors of Discontinuity and Change in Attachment Style

It has been demonstrated above that childhood and adulthood attachment have a degree of temporal stability, and that the degree of security, if not the attachment style, is likely to remain stable throughout life. Although most studies exploring the stability of attachment have focused on those individuals who remain stable, this section will discuss those studies that have focused on the individuals who demonstrate a change in their attachment style over time

According to Bowlby (1953), changes in attachment style were expected to link to a negative life event, rather than occurring randomly. The influence of negative life events on change in attachment style during adulthood has been considered. Using a self-report measure of attachment Scharfe and Bartholomew (1994) found that 37% of the females and 44% of the males in their sample experienced a change in their adult attachment style over a period of eight months. Using the Life Events Survey (Sarason, Johnson, & Siegel, 1978), Scharfe and Bartholomew (1994) found that interpersonal life events did not consistently account for changes in attachment style. When compared, interpersonal life events (e g , arguments) were no more predictive of a change in attachment style than were independent life events (e g , financial difficulties) Of particular note, no significant differences in attachment style were reported for a group of individuals who had recently experienced a major relationship transition (e g., relationship dissolution).

Three longitudinal studies have been conducted to explore attachment in relation to a life event. In contrast to the findings of Scharfe and Bartholomew (1994), Ruvulo, Fabin, and Ruvulo (2001) found that a relationship break down was associated with changes in attachment over a five month period. After a relationship breakdown, a change towards insecurity was observed, but a change towards security was

observed in the group where a relationship was sustained. It has also been found that approximately 30% of participants changed their attachment style over the two-year period following graduation from college (Davila, Burge, & Hammen, 1997). Davila *et al.* (1997; Davila, Karney, & Bradbury, 1999) suggested that changes in attachment are related to stable underlying vulnerability factors. Cozzarelli, Karafa, Collins, and Tagler (2003) explored change and stability in attachment over two years for women who had experienced an abortion. Changes in attachment style were observed for 46% of participants. The most stable group were secure individuals

The present study sought to test the stability of attachment security within adulthood attachment by exploring changes in adult attachment over a five-month period and comparing individuals who experienced a life event during the five month interval with those who did not. It was expected that participants who report experiencing a negative life event should change in their attachment style, whereas those who did not report an event should be continuous over time It was hypothesised by Hazan and Shaver (1994) that if change occurs, change would be towards security Therefore, it was of interest to explore whether this was supported with the data in the present study. Amongst those with discontinuous attachment, it was expected that more individuals would change towards security than towards insecurity.

1.9.4 Implications of Discontinuity on the Role of Attachment as a Vulnerability Factor for Predicting Depression

It is clear that attachment style has some flexibility and is liable to change over time. Across four longitudinal studies, the mean rate of discontinuity between infancy and early adulthood was 56.28% (Lewis *et al.*, 2000; Hamilton, 2000; Waters *et al* , 2000; Weinfield *et al.*, 2000) This discontinuity means that a number of individuals who

have an insecure attachment in childhood, change towards security in later life These individuals have been labelled "earned secure" (Main & Goldwyn, 1994) The reasons why changes in attachment occur are yet unclear. There is some indication that adverse life events contribute towards changes in attachment, although findings are inconsistent Not all individuals change in their attachment style following a life event. Explaining vulnerability to depression with regard to the attachment framework is hampered if life events result in a change in attachment style. This is because those life events, hypothesised by Bowlby (1953) to predict a change in attachment style, overlap with the life events proposed by Brown and Harris (1978) to predict the onset of depression. Therefore, the case for continuity of attachment in individuals with depression is even weaker and there is a case to expect *discontinuity* in attachment for these individuals. If both depression and working models of attachment are changed by the same factors, then the case for the working models as a conduit for childhood experiences is weakened. An alternative cognitive mediator should therefore be sought to explain the association between childhood experiences and depression.

There are two implications of discontinuity in attachment for the role of attachment as a vulnerability factor towards depression. Firstly, discontinuity of attachment across the lifespan implies that childhood attachment influences current depression through cognitive mechanisms other than the attachment system. One mechanism proposed to mediate this association is the Involuntary Defeat Strategy (Sloman, 2000). This will be outlined in chapter three. Secondly, the presence of discontinuity in attachment also suggests that each of childhood and adulthood attachment have separate roles in predicting vulnerability to depression. Again, these pathways will be explored in chapter three. Chapter two turns towards a discussion of the association between attachment and depression.

Chapter 2

Literature Review (Part 2)

The Association between Attachment and Depression

The previous chapter has outlined attachment theory, and discussed the stability between childhood attachment and adulthood attachment. There are four central problems with defining the role of attachment as a vulnerability factor towards depression. The first has already been outlined in the previous chapter; that is the discontinuity of attachment in response to life events. A further three problems will be outlined in chapter three. This chapter is concerned with reviewing the literature regarding the association between attachment and depression.

2.1 The Association between Childhood Attachment and Depression

2.1.1 Early Parental Loss

The association between early experiences and depression was initially directed towards exploring the effects of early parental loss during childhood on later psychopathology. However, research evidence regarding this association is inconclusive. Lloyd (1980a) and Nelson (1982) completed reviews which concluded that there was a distinct relationship between losing a parent and experiencing depression in later life. Conversely, both Crook and Eliot (1980) and Tennant, Bebbington, and Hurry (1980) concluded from their research that there was not any relationship. Lloyd (1980a) stated that whilst losing a parent at a young age had associated risk for the development of depression, not all individuals with depression had experienced such a loss, therefore other contributory factors should be considered Furthermore, Lloyd (1980a) concluded that loss of parent may not be a risk factor specific to depression, but may generally predispose one to ill mental health.

More recently, it has been found that maternal separation or death was more likely to occur in women with depression than in a non-depressed control group (Kunugi, Sugawara, Aoki, Nanko, Hirose, & Kazamatsuri, 1995; Takeuchi, Hiroe, Kanai, Morinobu, Kitamura, Takahashi, &Furukawa, 2002). However, it has also been found that 48% of non-depressed participants experienced early parental loss of mother or father by death, or separation for one month or more (before 16 years of age) but only 35% of depressed patients had experienced early parental loss or separation (Furukawa, Ogura, Hirai, Fujihara, Kitamura, & Takahashi, 1999). It may be more important to consider the type of disruption experienced, rather than generic loss. For example, Mack (2001) found that those individuals who experienced their

parents' divorce before the age of 19 had a lower relationship quality with their parents as a child and lower depression in adulthood than did those who experienced parental *loss* before the same age. Early onset of depression, before the age of 20, has been associated with maternal loss (Kessler & Magee, 1993). This could indicate that maternal loss poses a vulnerability factor through early prior depression leading to recurrent episodes These more recent studies have therefore not contributed to the argument beyond preserving inconclusive evidence.

Community and prospective studies have been able to examine parental loss as a vulnerability factor towards depression compared with other psychosocial and environmental vulnerability factors. For example, Schoon and Montgomery (1997) conducted a prospective community study and found that death of a parent did not increase risk for adult depression when separation from the mother, being bullied, financial difficulties in family as a child, and domestic conflict were controlled for. In another community sample, Kessler and Magee (1993) found lifetime prevalence of depression was not more likely in participants that had experienced early parental loss (before 16 years of age). Depression was associated with family alcohol misuse, family mental illness, violence in the home, and parental marital problems including divorce. These findings suggest that the quality of the relationship and childhood experiences were of importance. In a separate study, when modelling the development of major depression in women, Kendler, Gardner, and Prescott (2002) found that early parental loss uniquely predicted low educational attainment, and not depression.

It was suggested that the quality of care received after the loss of the parent might determine the child's later vulnerability to depression (Bifulco, Brown, & Harris, 1987) Adult women who had lost a parent, and subsequently received poor care were more likely to experience depression when faced with stressful life events than

were those that received satisfactory care (Bifulco *et al.*, 1987). Bifulco *et al* (1987) further found that premarital pregnancy, marital separation and divorce and a negative evaluation of self may intervene between the lack of care and later depression. Harris, Brown and Bifulco (1990) explored parental loss, helplessness and environmental factors such as premarital pregnancy in an attempt to map the relationship between maternal loss and subsequent depression. They found that a lack of care in childhood, recent poor support, and helplessness in both childhood and adulthood provided the best model of depression in women who had experienced maternal loss. Within the group of women who had lost their mother through death, a lower percentage experienced childhood helplessness than for those who lost a mother through separation (i e. the child was deserted or given into care). This is attributed to the adequate care the mothers may have provided before their death which may have been a buffer against future helplessness. Further support for this was found as those who lost their mother after the age of six, experienced helplessness at a lower rate, possibly because they received care for longer (Bifulco, Harris, & Brown, 1992) The mothers who separated from their children are thought to have given less than adequate care during their time with their child and therefore not provided a protective buffer against later depression which was seen in the bereaved individuals. Although this provides some evidence of the harmful effects of maternal loss, it also highlights the role of quality of relationship with the mother prior to the loss, and with others following the loss.

Support has been found for the notion that quality of care is an important determining factor in vulnerability to depression in individual who experience early parental loss. For example, Saler and Skolnick (1992) found that participants who had a good relationship with their surviving parent were less likely to be depressed than those who described their surviving parent as less caring and more overprotective (according to the Parental Bonding Instrument; Parker *et al*, 1979). It has also been

found that the severity of depressive episodes is greater in individuals who spend less time with their parent before the bereavement, severity tends to be worse in participants who experience the loss of their mother before the age of eleven (Patten, 1991) or nine (Agid *et al.*, 1999).

Therefore, rather than exploring the continuity of attachment between the parent and child in relation to depression, the quality, or security, of attachment became the focus of interest. This has produced more consistent findings than the research regarding early parental loss. Individuals with depression tend to report more adverse experiences during childhood (Chapman *et al.*, 2004), less caring, and more overprotective parents.

2.1.2 Development of Pathological Affect Regulation

Importantly, the attachment system explains why early experiences, and attachment in adulthood, should be associated with depression. Before exploring that literature which has found an association between childhood attachment experiences and depression, the mechanism responsible for this association will be explored.

As outlined earlier (see section 1 6), depression is inherent to the attachment system through the specific stages and emotions experienced upon separation from an attachment figure. This section will review a second mechanism, through which depression is inherent within the attachment system. The regulation of emotions (affect) is a primary process of the attachment system (Hazan, Gur-Yaish, & Campa, 2004). This is because securing proximity to an attachment figure in times of need serves the purpose of alleviating distress. Emotions occupy a central place in survival. Bowlby argued that infants who felt positive emotions in the presence of their attachment figure, and negative emotions in their absence, were more likely to

maintain proximity. Bowlby (1969) argued that proximity was a primary attachment strategy directed towards protecting an individual from both physical and psychological threats. These psychological threats included the negative emotional consequences of separation from the attachment figure. In infancy, the attachment figure is responsible for regulating the emotions of the infant This is achieved by consistently responding to the infant in times of need. The proximal function of attachment is therefore to moderate an individual's emotions, and reactions to the environment, in order to stabilise anxiety and increase their felt security. The availability and responsiveness of the attachment figure is therefore an important aspect of emotional regulation Echoes of this can be found in Bowlby's (1951) earliest work where he theorised that the mother acted as the child's ego and superego until the child was able to self regulate their behaviour. As outlined above, working models are formed from the interactions between the infant and their attachment figure. Therefore, the response of the attachment figure is internalised and used to guide future behaviour and expectations. In this way, the infant learns that when they are distressed, they can attract their attachment figure in order to alleviate their emotional state.

Following arousal of distress in an infant, the sequence of events may take a normal, or a pathological route (Mikulincer, Shaver, & Pereg, 2003). Each route results in the activation of different attachment behaviour, repeated activation of that route leads to the development of a concordant attachment strategy, which is activated in times of distress. Therefore, repeated activation of a pathological route will result in the development of a pathological attachment strategy.

2.1.2.1 Non Pathological Affect Regulation

The non pathological regulation of affect takes place in the following way during infancy. Initially, the infant perceives threat or experiences an actual threat. This threat could take many forms. For example, an unfamiliar environment, physical discomfort, a frightening thought, the presence of an unknown adult, or unsatisfactory proximity would all be considered threatening The emotional appraisal of this threat results in the arousal of distress in the infant, and the attachment behaviours are activated. The infant is motivated to seek proximity from their attachment figure, in order to alleviate their distress. Therefore, the infant may call out, cry, or if possible, approach their attachment figure. In this situation, the role of the attachment figure is to provide a safe haven, and to alleviate the distress of the infant. At the point where the proximity is sufficient to alleviate distress, the infant should return to a secure state in which their attachment figure can operate as the secure base from which the infant can continue exploring the environment.

In this example, the three functions of the attachment system (proximity, safe haven, and secure base) are functioning optimally, and normally. This describes a secure attachment style The attachment figure guides the regulation of emotions by calming the infant down in times of distress and providing them with safety. As a result, the infant learns that distress is manageable, and feels that they have control over the outcome of a distressing situation Through recurring and emotionally relevant exchanges with their attachment figure, the infant develops, or reinforces their positive representations of self and other and develops a secure strategy for the regulation of affect following distress. The development of affect regulation provides protection against depression when stressful events arise (Cassidy, 1994) as it promotes mental health in times of distress (Mikulincer *et al.*, 2003). Confidence in the availability and responsiveness of the attachment figure informs the development

of positive working models, a secure attachment style, and affect regulation (Kobak, 1999).

In support, Ainsworth *et al* (1978) found that the mothers of securely attached infants were the most responsive to infant's attachment behaviours, they also found evidence of more emotional expression, of flexibility in caring style, and more positive behaviours (such as accepting and co-operating) and fewer negative behaviours (such as rejecting). Early evidence for affect regulation was presented by Bell and Ainsworth (1972), who concluded that consistently responding to a child when they called or signalled need aided the child in developing confidence in their ability to control outcomes in their own life.

The cognitive representations held by the infant, and their learned responses to distress are determined by how the attachment figure responds to the emotional arousal of the infant. In turn these cognitive representations go on to influence emotional judgements, and experiences of the individual Secure individuals will have more frequent and intense positive emotions and less frequent, less intense negative emotions than insecurely attached individuals (Feeney, 1995; 1999; Simpson, 1990). Secure individuals make more positive interpretations of facial expressions (Magai, Hunziker, Mesias, & Culver, 2000), endorse more positive interpretations of relationship scenarios (Collins, 1996), and make more positive attributions towards the behaviour of others (Lakey, McCabe, Fisicaro, & Drew, 1996). The emotional regulation learned by securely attached individuals during their exchanges with attachment figures therefore informs their emotional appraisals.

Attachment figure responses may be consistent, or inconsistent, caring, or insensitive. In the case of secure attachment, presented above, the responses of the attachment figure are consistently caring. This response allows the child to develop

confidence in the availability of their attachment figure for the regulation of distress, and to engage in exploring their environment in safety Alternatively, the attachment figure could give inconsistent responses to the child's emotional arousal, or be consistently rejecting of the child when they are emotionally aroused. As a result, the child would not gain confidence in the availability of their attachment figure and would engage in a pathological affect regulation strategy.

2.1.2.2 Pathological Affect Regulation

When the attachment figure does not provide sufficient proximity to alleviate distress, the infant will call upon secondary attachment strategies to attempt to alleviate their distress. Through consulting their experiences, stored in the working models, the infant will decide whether further proximity seeking will help them at all in alleviating their distress Two pathways may be taken: the infant may engage proximity seeking, or disengage it This decision is made based upon internalised representations of prior experiences, and leads to individual differences in insecure attachment style whereby one or the other of the working models maintains a negative representation There are two maladaptive strategies: hyperactivating strategies (associated with anxious attachment and the model of self) and deactivating strategies (associated with avoidant attachment and the model of other). Both of these strategies give rise to the maladaptive regulation of affect. Whereas a secure attachment style protects an individual against depression in times of stress, it is thought that these maladaptive, insecure strategies promote depression at these vulnerable times (Cassidy, 1994; Mikulincer *et al.*, 2003) The developmental pathways of the two maladaptive strategies will now be outlined.

An infant may seek proximity from their attachment figure in times of distress, even if the care has been inconsistent This is because there is a small probability that the

attachment figure will respond to their distress. As the responses are received inconsistently, the infant will tend to begin expressing distress at elevated levels, with the aim of increasing the probability of a response. In the event of no response, the attachment systems will become *hyperactivated* This results in an increase in intensity in attachment behaviours, cries for help, and proximity seeking. This is accompanied by increased vigilance to threat and an increased sensitivity towards the absence of their attachment figure, both of which act as further triggers for the activation of the attachment system The activation of this system could be successful in engaging an attachment figure and alleviating distress. Alternatively, the outcome could be the chronic activation of the attachment system, psychological pain regarding the unavailability of the attachment figure, and a low sense of self worth, resulting from the inability to enlist the attentions of the attachment figure. Thus the model of self is negative, resulting in an anxious attachment style, which overlaps somewhat with Ainsworth's categorisation of resistant/ambivalent attachment.

Such an individual would grow to depend upon others for their affect regulation and would show a desire for proximity and emotional intimacy, and a fear of rejection. They would not learn to self-regulate their emotions. These individuals would also overreact to distressing events in order to ensure or increase the chances of a response from their attachment figure (Shaver & Mikulincer, 2002). In support, Ainsworth *et al.* (1978) found inconsistency in response in mothers of ambivalent infants. This may be because the mothers were less sensitive to the attachment behaviours of the infant, and demonstrated less affection and less physical contact than did the mothers of secure infants. Schwarz and Zuroff (1979) developed a model to predict depression in female college students based upon their childhood experiences. They found that inconsistency of love from both parents as a child significantly added to the prediction of depression in later life.

Where an attachment figure consistently rejects the individual, the child will downplay recognition, importance and the behavioural manifestation of emotions. In this case, internalised representations would lead the infant to perceive that the attachment figure as unavailable, and they will adopt *deactivating strategies* when faced with distress. This strategy is accompanied by denial, and avoidance, the infant is compulsively determined to handle their stress alone, which Bowlby (1980) called compulsive self-reliance. This strategy results in the dismissal of threats and suppression of cues to attachment behaviour. The infant attempts to self regulate their emotions without the support of their attachment figure. As a result, the individual will decrease in their dependence on others, and this will result in a negative cognitive representation of others and develops into an avoidant attachment style. This style overlaps with what Ainsworth and her colleagues (1978) categorised as avoidant attachment. The avoidant attachment style is characterised by insecurity in others intentions, by a preference for both physical and emotional distance, by self-reliance for affect regulation, and by vulnerability to depression in later life

In contrast to the hyperactivating strategy, the deactivating strategy involves suppression of negative feelings, and maximisation of distance from others. It is thought that this is to avoid the frustration of being rejected by others (Shaver & Mikulincer, 2002). Ainsworth *et al.* (1978) described the mothers of such infants as rejecting, both physically and emotionally. They did not respond quickly to the attachment behaviours of infants, and lacked the emotional expression and flexibility of the secure mothers. Additionally, the mothers of avoidant infants were easily angered and irritated by their child.

It has been argued (Mikulincer *et al* , 2003) that the disorganised attachment style may emerge where the attachment figure is frightened or is frightening (to the child).

In this situation, the behaviour of the child is mixed between approaching and avoiding their attachment figure. The impact of this style on affect regulation has not yet been explored. Although it is thought that disorganised attachment is characterised by having no set strategy (Ainsworth *et al.*, 1978). Infants with disorganised attachment are more likely to be maltreated or have a depressed mother (Lyons-Ruth, 1996)

Table 2.1 shows how adulthood and childhood attachment styles overlap (Beech & Mitchell, 2005; Hesse, 1999), and summarises the affect regulation strategy and consequent vulnerability to depression associated with each style. Experiences with one's attachment figure during childhood determine the strategy that will be engaged when an individual encounters stressors in life that lead to negative affect. Adverse childhood attachment experiences, such as being neglected or inconsistently cared for, lead to the development of maladaptive strategies for regulating affect, and so to an individual being more vulnerable towards depression in later life. Evidence supports the presence of deactivating and hyperactivating strategies in adulthood (e g., Mikulincer, 1998; *et al.*, 2003).

2.1.2.3 An Alternative Regulation Model

Whilst the present study will focus upon the hyperactivating and deactivating strategies associated with the working models of the attachment system, two alternative affect regulation processes have been linked to the working models. Pietromonaco and Feldman-Barrett (2000) proposed that the working model of self comprised a process they labelled emotional reactivity, whereas the working model of others was labelled reliance upon others. It is acknowledged that this approach is grounded in object relations theory, whereas the hyperactivating and deactivating strategies are more ethological. However, the processes described by the two models are similar. For example, reliance on others is defined as "the frequency with

Table 2.1. The Relationship between Infant Attachment, Adult Attachment, Working Models, Dimensions, and Affect Regulation Strategies.

Infant Attachment Style (Ainsworth *et al.*, 1978)	Adulthood Attachment Style (Bartholomew & Horowitz, 1991)	Working models & Dimensions of attachment	Affect Regulation Strategy	Vulnerability to Depression
SECURE Explores environment and shows that parent is missed upon separation. Greets parent actively upon reunion.	**SECURE** Easily becomes close to others Comfortable with being dependent upon others, and them being dependent. Not preoccupied with being alone, or being accepted by others	Positive working models of self and other Low avoidance and low anxiety.	Non-pathological affect regulation	Close relationships in childhood allow for development of non-pathological affect regulation strategy. Close relationships in adulthood act as a buffer against depression in times of stress.
AVOIDANT Focus throughout is upon exploring environment. Does not cry upon separation Avoids parent upon reunion	**DISMISSING** Comfortable in the absence of close relationships Feeling independent is important	Positive working model of self and negative working model of other. High avoidance and low anxiety	Deactivated affect regulation	Close relationships in childhood are uncaring, thus leading to a deactivated affect regulation strategy. In adulthood, the individual will seek to be independent in times of stress
AMBIVALENT Generally wary. Preoccupied with their parent. Does not take comfort in parent's presence or explore environment in presence of parent.	**PREOCCUPIED** Seeks to be completely emotionally intimate with others. Preoccupied and worried about being alone, and not being accepted	Negative working model of self and positive working model of other Low avoidance and high anxiety	Hyperactivated affect regulation	Close relationships in childhood provide inconsistent care, thus leading to a hyperactivated affect regulation strategy. In adulthood, the individual will turn to others in times of stress
DISORGANISED Behaviour is suggestive of a lapse in behavioural strategy. Example behaviours are freezing in a trance, huddling on the floor, clinging, and crying	**FEARFUL** Uncomfortable with being close to others. Desires close relationships but is mistrusting and fears being hurt or being dependent.	Negative working models of self and other. High avoidance and high anxiety.	Does not map onto an affect regulation strategy	This attachment style does not map onto an affect regulation strategy. Close relationships in childhood were inconsistent and uncaring. In adulthood, this style is most vulnerable to depression as they will neither turn to others for support, nor seek to be independent

which individuals use others in the service of affect regulation" (pp 164), which is congruent with the deactivation strategy. Emotional reactivity is defined as "the frequency with which the need for felt security is activated" (pp 164) which relates to the degree of hyperactivation of the attachment system. The concept of hyperactivating and deactivating strategies was therefore retained for the present study as the description of the strategies was more intuitive and more importantly related to childhood and adulthood attachment, whereas Pietromonaco and Feldman-Barrett (2000) had proposed their model in relation to adult attachment only.

2.1.3 Empirical Evidence for the Association between Childhood Attachment Experiences and Depression

The majority of research exploring a link between childhood attachment and depression has not been conducted within the attachment theory framework. There is not currently a retrospective self report measure of childhood attachment that is suitable for use with an adult population. The research exploring the association between childhood attachment and later depression has been explored using Parental Bonding Instrument as a measure of childhood experiences. Early studies using the Parental Bonding Instrument, found that risk for depression and other affective disorders was increased in individuals with low care and high control (Parker, 1990)

In line with the above theory, recalled better parenting is associated with lower levels of depression. In a sample of medical students, reports of better parenting, as defined by high care and low overprotection on the Parental Bonding Instrument, was associated with lower levels of depression (Brewin, Firth-Cozens, Furnham, & McManus, 1992) In a sample of first year medical students, Lloyd and Miller (1997) found a significant association between current depressed mood and parental care;

less reported care was associated with higher levels of depression. Lloyd and Miller (1997) employed an American University sample, and a Scottish University sample. In the Scottish university only, paternal overprotection was also significantly positively associated with depression In an adolescent sample, Pedersen (1994) found that a higher score for depression was associated with negative experiences with parents Gerlsma, Emmelkamp and Arrindel (1990) concluded from their meta-analytic review that although findings were mixed, less "affection" and more "control" from parents was associated with depression in adulthood.

Carnelley *et al.* (1994) used a measure which was aggregated from the Parental Bonding Instrument and a number of items designed specifically for the study. Within a female undergraduate sample, depression was related to fewer reported positive experiences with the mother and father and a more controlling mother and father (Carnelley *et al.*, 1994, study one). When the study was repeated (Carnelley *et al* , 1994, study two) with women with depression, no association was observed for maternal "control" but the other associations were reproduced.

The Parental Bonding Instrument care subscale is also associated with caseness for depression. In an American sample, sixteen medical students (out of 123 participants) were identified with "case depression" using a cut-point of 16 or higher on the Centre for Epidemiological Studies- Depression Scale (CES-D; Radloff, 1977). Low parental care significantly differentiated the cases from the non-cases. Similarly, a group of patients with depression reported less caring mothers than a group of patients with obsessive-compulsive disorder (Myhr, Sookman, & Pinard, 2004).

Although the above research has demonstrated an association between early parental experiences and depression, it has not explicitly studied the effect of childhood attachment In order to validate the above findings, the present study

sought to explore the association between the constructs measured by the Parental Bonding Instrument and childhood attachment.

As outlined earlier, the responses of the attachment figure to an infant's distress can result in three different attachment strategies. Secure attachment is characterised by positive working models, effective affect regulation, and a decreased risk for depression. Avoidant attachment is associated with a negative model of other, an aversion towards turning to others in times of need, and vulnerability towards depression. Anxious attachment is characterised by a negative model of self, which serves to increase the risk of depression, as they are unable to engage effective regulation strategies on their own. A significant association was therefore expected between the extent to which childhood attachment is avoidant, or anxious, and depression.

2.2 The Relationship between Adult Attachment and Depression

The application of the attachment system to adulthood was an important turning point in attachment theory, as it allowed childhood and adulthood relationships to be understood within the same theoretical framework. Subsequently, it has been demonstrated that attachment classifications can be applied to both infants and adults (Hazan & Shaver, 1987), that an individual's attachment style might remain continuous into adulthood (Waters, Merrick, Treboux, Crowell & Albersheim, 2000), and that attachment experiences as a child have an influence upon attachment experiences as an adult (Carnelley *et al*, 1994). Of relevance to the present study, developments in adult attachment theory have allowed for an exploration of the attachment styles that are associated with psychopathology, in particular, depression.

Integrating the literature on the relationship between depression and adult attachment is hampered by the use of a wide variety of methods for the measurement of adult attachment. Whilst some have used dimensional measures that are in line with Bowlby's (1969, 1973, 1980) theory (e g., compulsive self reliance used by Harris & Bifulco, 1991), some have used Hazan and Shaver's (1987) measure which draws on Ainsworth's (*et al.*, 1978) three infant attachment patterns (e g , Priel & Shamai, 1995), whilst others have used Bartholomew's two dimensional (four attachment styles) model. The literature will be reviewed firstly in terms of studies that have explored the correlations between depression and dimensions of attachment, and secondly with regard to studies that have compared attachment in depressed and non-depressed individuals.

2.2.1 The Association between Dimensions of Attachment and Depression

Harris and Bifulco (1991) combined a number of measures derived from interview data, to form indicators of attachment dimensions. These three dimensions were anxious or ambivalent, compulsive care giving, and compulsive self reliance (Bowlby, 1980). Compulsive self reliance, an avoidant strategy, was defined in three groupings Of these depression was associated with a "poor ability to form relationships", and "independence/hostility" but not with "detached". Compulsive care giving, an element of anxious attachment, was indicated by a high score on dependency, combined with a high score on nurturance Nurturance reflected "a respondent's concern to relate to others in a protective or altruistic way" (pp 243). Harris and Bifulco (1991) found an interaction between high dependency and high nurturing was more highly associated with depression, than were either of the two variables alone. However, these measures do not accurately capture a sense of

compulsive care giving as Bowlby described individuals of this attachment style as "nervous, overdependent, clinging, or temperamental" (Bowlby, 1980, pp 202) No pattern of association was observed between depression and ambivalent attachment.

Pettem, West, Mahoney and Keller (1993) explored the correlations between attachment and depression in a patient sample, using the Reciprocal Attachment Questionnaire (RAQ; West, Sheldon, & Reiffer, 1987) and the Millon Clinical Multiaxial Inventory (Millon, 1983). The attachment figure was carefully defined as an individual who was not in the patient's family of origin, and with whom a special relationship had existed for six months, usually a sexual relationship. The RAQ measures eleven components and patterns of attachment of which depression was correlated with five; secure base, feared loss; proximity seeking, compulsive care seeking, and angry withdrawal. Depression was not correlated with separation protest, availability, responsiveness and use of attachment figure, compulsive self reliance or compulsive care giving. The authors interpreted this as a demonstration that individuals with depression exhibit the signs of anxious attachment as identified by Bowlby (1973) However, the association between depression and angry withdrawal indicates an association with avoidant attachment also.

In a similar study, with a female sample, West, Rose, Spreng, Verhoef, and Bergman (1999) explored the relationship between the RAQ (West *et al.,* 1987) subscales and depression as measured by the CES-D (Radloff, 1977) It was concluded that depression was only predicted by subscales that represented anxious attachment. These included fear of loss, proximity seeking, and low use of attachment figure. The low use of the attachment figure is not consistent with an anxious attachment style however. An anxious attachment style is associated with clinging in children for example (Ainsworth *et al* , 1978). It appears therefore, that this research supports

the earlier study in demonstrating that depression is related to both avoidant and anxious attachment.

Strodl and Noller (2003) used a different dimensional self report measure of attachment, the Attachment Style Questionnaire (Feeney, Noller & Hanrahan, 1994) which measures five dimensions of adult attachment. Participants were inpatients with depression, individuals with agoraphobia (as assessed by the Structured Clinical Interview for DSM-IV; SCID, First, Spitzer, Gibbon & Williams, 1995), and non-clinical participants who were recruited through newspaper advertisements. Depression, as measured by the Beck Depression Inventory (BDI, Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) was significantly predicted by "relationships as secondary", "need for approval", and "preoccupation with relationships". The "relationships as secondary" dimension refers to a preference towards basing self worth on achievements rather than upon relationships. Preoccupation with relationships and need for approval are suggestive of anxious attachment, whereas the relationships as secondary, with its emphasis on self worth is reflective of an avoidant attachment style. Again both dimensions of attachment were related to depression. The patients were administered this questionnaire shortly after their admission to a mental health ward. Thus being recently separated from their attachment figure and family could be a confounding factor on the measurement of attachment.

Carnelley *et al.* (1994) found that depression was significantly correlated with each of avoidance and preoccupation within a sample of female undergraduates. However, the measurement of depression and attachment in this study was non-conventional, and in particular, the measure of attachment would be difficult to replicate. Using the Adapted Attachment Scale (Collins & Read,1990, Griffin & Bartholomew, 1994), Murphy and Bates (1997) found that depression (as measured by the BDI) was highly correlated with preoccupied attachment, secure attachment (inverse) and

fearful attachment, but not dismissive attachment. Similar correlations were found by Haaga *et al.* (2002) using the four-category measure of adult attachment style (Bartholomew & Horowitz, 1991), and the BDI. Participants were asked to indicate on a seven point Likert scale, the extent to which each of the four attachment styles represented them. Four scores were derived which represented the participants propensity towards each attachment style. These were correlated with a continuous score for the BDI Secure attachment was inversely correlated with depression, the highest correlation was observed between preoccupied attachment and depression. Bifulco, Moran, Ball, and Bernazzani (2002) and Bifulco, Moran, Ball, and Lillie (2003) used a new interview measure to classify individuals into one of four attachment styles. Individuals with marked insecurity had the highest rates of depression, and secure individuals the lowest. Depressed mood was significantly predicted by anxious, fearful, and angry-dismissive insecure attachment, but not by withdrawn avoidance

Moving away from exploring correlations between working models (or proxy measures of working models) and depression, Priel and Shamai (1995) classified student participants according to their attachment style using the attachment styles questionnaire (Hazan & Shaver, 1987). They then explored the differences in depression between the adult attachment styles. Priel and Shamai (1995) found ambivalent style had the highest depression score. The ambivalent attachment style is characterised by anxiety, a low threshold for the onset of attachment behaviours, and a negative working model of self. The secure group was significantly less depressed than were either of the insecure groups. Adult attachment also accounted for a significant percentage of the variance in depression, although this was only a low figure (8%) which was probably due to the use of a categorical measure of attachment. These findings have since been replicated in an adolescent sample (Muris, Meesters, van Melick, & Zwambag, 2001).

2.2.2 A Comparison of "Depressed" and Non-Depressed Individuals

Comparative studies have been conducted on the differences in attachment between depressed (clinically, or assigned based on a screening measure) and non-depressed individuals. The security of adult attachment style has been shown to differentiate between depressed and non-depressed individuals (Bifulco, Moran, Ball, & Bernazzani, 2002, Carnelley *et al*, 1994; Pettem *et al*, 1993; Priel & Shamai, 1995).

Carnelley *et al.* (1994) found that mildly depressed women were characterised by a more insecure attachment style; having both greater avoidance and greater preoccupation than do their non-depressed counterparts. Pettem *et al.* (1993) compared depressed mental health patients with non-depressed mental health patients. They found significant differences on the following subscales of the RAQ; secure base, feared loss, proximity seeking, compulsive care seeking, and angry withdrawal Harris and Bifulco (1991) found that 65 women were classified as having a "vulnerable" (insecure) attachment style, 21 (32%) of which were classified as having depression. In comparison, 159 women were categorised as having a secure attachment style attachment, of which only 14 (9%) were classified as depressed. A higher rate of depression was found in women who were categorised as having an insecure attachment style.

Murphy and Bates (1997) employed The Attachment Styles measure (Bartholomew & Horowitz, 1991) in a sample of psychology students and community volunteers. Participants scoring 16 and above on the BDI were classified as "depressed". Within the depressed group, 48% were classified as fearfully attached, 22% as securely attached, 16% as dismissive attached, and 14% as preoccupied attached. In the

non-depressed group, there was a greater percentage classified as secure (75%), and lower percentages classified as fearful (6%) or preoccupied (5%), and a roughly equal proportion classified as dismissive (15%) The equal proportion on dismissing attachment was probably due to the retention of self worth observed in the dismissing attachment style, which is at odds with the feelings of worthlessness that characterise depression In addition, the affect regulation strategy employed by an avoidantly-attached individual is to deny any distress, the lack of difference between groups could also be due to this.

Whiffen *et al.* (2001) compared a sample of 52 depressed women (according to DSM-III-R criteria) with a control sample of 60 non depressed women. Women with depression were most often categorised as fearfully attached (45%), 26% were categorised as securely attached, 20% as anxious (preoccupied) attached and the least (8%) as dismissing attached. In the non depressed female sample, again there was a greater proportion of individuals classified as having secure attachment (57%), and fewer were classified as fearful (20%), the least reported being dismissing (6%), and only a few (17%) reported being anxious. One criticism of this study is that they did not control for prior depression in the control sample, therefore they may have been remitted depressed, rather than a non-depressed sample.

For two of the above studies, both patients with depression, and individuals categorised as depressed using a self report measure were most likely to be categorised as fearfully attached. This is consistent with the hyperactivating-deactivating hypothesis. It has been suggested that individuals with a fearful attachment style have either confused, or no well defined strategy for regulating their emotions. Consequently, they are more vulnerable to depression than are those who have a well defined strategy, even though the strategy is maladaptive if employed over a prolonged period. It was expected that adult attachment would be significantly

related to depression; and that those with insecure attachment would report more severe depression than would those with secure attachment. It was further expected that the dimensions of avoidance and anxiety would be significantly and positively associated with depressed mood.

2.3 Summary

Depression is consistently correlated with anxious attachment, and childhood experiences, however the correlations between avoidant attachment and depression are varied This finding is in line with other reviews (e g., Simpson & Rholes, 2004). In terms of the studies that report categorical scores, the association between insecure attachment and depression is consistent. However, individuals with depression are not characterised by one definitive insecure attachment style. Both of preoccupied and fearful attachment styles are associated with depression The presence of individual differences in adult attachment style within individuals with depression further suggests that the relationship between attachment and depression is complex and offers a number of different pathways to depression, depending on the attachment style of the individual. These pathways are the focus of the next chapter.

Chapter 3

Literature Review (Part 3)

Pathways from Attachment to Depression

This chapter is concerned with outlining pathways between childhood attachment and depression. The role of the working models of attachment in forming a pathway from childhood attachment to depression will first be examined. Alternative pathways between adult attachment and depression will next be reviewed. A further three problems will be highlighted with respect to the role of attachment as a vulnerability factor towards depression. The review will close with suggested solutions to these problems, which were the focus of the present study

3.1 Pathway 1: The Attachment Pathway

The Dimensions of Attachment as Mediators of the Association between Childhood Attachment and Depression

Both adult and childhood attachment experiences are implicated in affect regulation (McCarthy, Moller, & Fouladi, 2001; Rholes *et al*, 1999; Simpson *et al*, 1992) and have been demonstrated to predict current depressed mood (Collins & Read, 1990; Gotlib, Mount, Cordy, & Whiffen, 1988; Lloyd and Miller, 1997; Parker, 1990; Rodgers, 1996). According to attachment theory, childhood experiences have an influence on attachment and on depression in later life through the working models of the attachment system. As the working models develop during childhood, based upon experiences with the primary attachment figure, and they are hypothesised to be continuous throughout life, they provide a cognitive mediator between childhood experiences and depression in adulthood. A mediating variable is influenced by one variable (a), has an effect on another variable (b), and can explain the relationship between these two variables (a and b) in part or in full. Therefore, applied to the attachment pathway; adulthood attachment is affected by childhood attachment, adulthood attachment has an effect on depression, and adulthood attachment explains the association between childhood attachment and depression

As discussed in chapter one, the continuity between childhood attachment and adulthood attachment is not guaranteed to be stable. The present study therefore explored the stability of attachment and whether the dimensions of attachment (measured in adulthood) mediated the association between childhood attachment and depression. Three studies have explored the mediation between childhood attachment and depression, using the Parental Bonding Instrument as a measure of childhood experiences. However, the results are not consistent, it is expected that

this is because the Parental Bonding Instrument is not a true measure of childhood attachment

It has been suggested that self esteem might mediate the association between childhood experiences with one's parents and later depression (Lloyd & Miller, 1997; Oakley-Browne, Joyce, Wells, Bushness, & Hornblow, 1995). Self esteem is parallel with the working model of self. For example, Carnelley *et al.* (1994) referred to the working model of self as "esteem for self" (pp 128) Lloyd and Miller (1997) conducted two studies using samples of medical students in Scotland and the USA. They concluded that their findings partially supported a mediational role of self-esteem on the relationship between parental bonding and depression. However, this effect only occurred in the male sample. Self-esteem mediated the pathway between paternal care and depression, and between maternal care and depression in the American sample only. Independent pathways were retained between maternal care and depression (Scottish males) and maternal overprotection and depression (American males). Therefore, overall, there were as many independent pathways retained as there were mediated pathways. The only consistency between the two studies (Scotland and USA) was the mediated pathway between paternal care and depression in males.

The consistency on the paternal care subscale may be attributed to the care subscale being more reliable and valid, and being composed of a more homogenous collection of experiences than the overprotection subscale (Parker *et al* , 1979). However, the maternal care subscale did not find consistent results between males and females, or between the two studies. It is therefore likely that an alternative to self esteem would account for the pathway between childhood experiences with one's parents and depression as an adult.

Consistency between the two studies conducted by Lloyd and Miller (1997) may have been improved if the measures were true to attachment theory. The items on the Parental Bonding Instrument refer only to the behaviour of parents. With reference to Bowlby's (1969) working models of attachment, it is therefore hypothesised that the Parental Bonding Instrument is biased towards measurement of the working model of other (this hypothesis is discussed in detail below). The relationship between childhood experiences and depression may therefore be better accounted for by a measure that includes both the working model of other and the working model of self. These results were further constrained by using self esteem as the mediator. As stated above only the model of self is represented by self esteem. Lloyd and Miller (1997) study explored the extent to which the working model of self (self esteem) mediated the relationship between the childhood working model of other (Parental Bonding Instrument) and depression. A more successful approach would be to explore congruent cognitive representations. For example, the extent to which avoidance (model of other) mediated the relationship between the Parental Bonding Instrument subscales (model of other) and depression. The present study sought to test this.

Within the attachment framework, these findings demonstrated that a male's working model of self (self esteem) in adulthood mediated part of the childhood working model of other that related to paternal care. This may be explained by the internalisation of the paternal care by the males to inform their working model of self, in terms of their sex-role development (Mikulincer *et al* , 2003). However, a similar finding should have prevailed for the female sample with regard to maternal care. It is argued that this female sample (American sample) is atypical, as parental bonding was not found to be associated with depression, contrary to other research (e g., Difilippo & Overholser, 2002; Gittleman *et al.*, 1998) Support for this argument is found in prior research which has demonstrated female medical students to have

personality traits and ways of relating to parents that are particular to them, and are uncommon in the general female population (Tangri, 1972, cited in Lloyd & Miller, 1997). In support, McMahon, Barnett, Kowalenko, and Tennant (2005) found that "anxiety over relationships", a working model of self variable, (as measured by the Attachment Style Questionnaire, Feeney *et al.*, 1994) significantly mediated the relationship between maternal care and depression in a sample of pregnant women. The women in this sample had internalised aspects of maternal care into their working model of self, and hence the mediating effect occurred.

Further research has retained the Parental Bonding Instrument as a measure of childhood experiences, but has explored the role of adult attachment as a mediator of the association between childhood experiences and depression. The findings are mixed. Gittleman *et al.* (1998) found, in a female community sample, the relationship between maternal care and depression was significantly mediated by a dummy variable describing adult attachment security, however, paternal care retained an independent association with depression. As a dichotomous mediating variable (secure versus insecure attachment) was used, this did not allow for an examination of whether the relationship between the childhood variables and depression was mediated by the working model of self, or the working model of other. The low variability in the mediating variable may account for the mediating effect being incomplete, and not observed in the males.

In an adolescent sample, and using continuous measures of dimensions of attachment Strahan (1995) found that the degree of comfort with closeness (an indicator of avoidant attachment) mediated the association between maternal care and depression Using continuous measures of working models of self and other Difilippo and Overholser (2002) found that the working model of other (as measured by the avoidant attachment scale of the Experiences in Close Relationships scale;

Brennan *et al.*, 1998) mediated the relationship between depressive symptoms and childhood care from the opposite sex parent in a sample of mental health patients with major depression. The working model of self did not mediate the link between perceived parental care from the opposite sex parent and current depressive symptoms. Were experiences with same sex parents used, there may have been some overlap with the Parental Bonding Instrument and the model of self due to sex role development. By using only the opposite sex parent, Difilippo and Overholser (2002) eliminated all variables related to the childhood model of self. These findings (Difilippo & Overholser, 2002; Strahan, 1995) suggest that when congruent measures are employed that reflect common cognitive representations (i.e of self or other) a mediating effect is observed. Therefore a measure of the model of self in childhood should be mediated by the anxiety (working model of self) subscale of the Experiences in Close Relationships scale. However, this has not yet been subject to analysis, as no suitable self report methods are available to measure this cognitive construct retrospectively (this is discussed in detail below).

A criticism of Difilippo and Overholser (2002) is that all participants were interviewed and requested to complete their questionnaire packs within the first five days of hospitalisation. This measure is taken to minimise the effects hospitalisation may have on the variables. However, the participants will have left their families, and partners- their attachment figures- when they were admitted to the hospital. As such, the recent separation may be a confounding variable for the measurement of current adult attachment in an already vulnerable group of individuals.

The relationship between depression and changes in attachment has also been explored. Pearson, Cohn, Cowan, and Cowan, (1994) used the Adult Attachment Interview (Main & Goldwyn, 1994) to identify individuals with "Earned Security". "Earned security" is a category derived from the Adult Attachment Interview (AAI,

Main & Goldwyn, 1994) scoring schedule and refers to individuals who had an insecure childhood attachment but currently have a secure adulthood attachment. A comparison of individuals with earned security and continuous security (i.e , no change in attachment) demonstrated that those with earned security were more like continuously insecure individuals in terms of their reported severity of depressive symptoms. Individuals with earned security reported significantly higher levels of depression than did individuals with continuous security. The present study sought to contribute to this line of research. Firstly, as Pearson *et al* (1994) employed a small sample, the present study sought to replicate their findings within a larger sample. Secondly, Pearson *et al.* (1994) omitted to explore a fourth group of individuals, those who change towards insecurity. In addition, Pearson *et al* , (1994) found that insecure attachment in childhood had a negative influence on depressed mood in later life, despite a change towards secure adult attachment. It was therefore of interest to examine the alternative; whether secure attachment during childhood offered protection, or buffered against depression in later life, despite a change towards insecure adult attachment. Finally, it was proposed that the present study would use self-report measures of childhood and adulthood attachment to determine change. Pearson *et al.* (1994) used the AAI (Main & Goldwyn, 1994). Due to time, and financial constraints, using the AAI was not an option for the present study. "Earned security" is a category derived from the AAI scoring schedule, therefore trying to replicate this category using two self-report measures may not capture the same variable. However, it is informative to explore whether findings with the AAI can be replicated with self-report measures.

Importantly, as Pearson *et al* (1994) observed that individuals with insecure childhood attachment reported high levels of depression even if they were classified as having secure adult attachment The strong association between childhood attachment experiences and depression is an indication that childhood attachment

experiences influence later depression through mechanisms, other than the working models of the adult attachment system, in circumstances when attachment is not stable over time.

3.1.1 Criticism of the Parental Bonding Instrument

It was earlier stated that there were four problems associated with the literature exploring the role of attachment as a vulnerability factor towards depression. The use of the Parental Bonding Instrument as an indicator of childhood attachment is the second of these issues which the present study sought to address. Although the findings using the Parental Bonding Instrument are a good indicator that childhood attachment is a vulnerability factor towards depression, they cannot be used as evidence of this association. The content of the Parental Bonding Instrument does not accurately reflect childhood attachment as conceptualised by attachment theory (Ainsworth *et al.*, 1978; Bartholomew, 1990, Bowlby, 1969; 1973; 1980) The Parental Bonding Instrument items (see appendix B for a copy) are descriptive of parents' behaviours as the participant remembers them during childhood. The items do not refer to the key aspects of attachment, such as participant's cognitive processes as a child, about how they related to, and interacted with their parents, and about how they appraised their parents' behaviours. In order to represent the attachment system with the two working models as described by Ainsworth *et al.* (1978), Bowlby (1980), and more recently, by Bartholomew (1990; Bartholomew and Horowitz, 1991), a measure of attachment requires items exploring an individuals mental representations of both self and other (e.g , the Experiences in Close Relationships scale, Brennan *et al.*, 1998) The items in the Parental Bonding Instrument are biased towards the working model of other. In support, Parker *et al.* (1979) stated that the instrument was designed "to examine the parental contribution to a parent child bond" (pp 1). Furthermore, it was found that the care subscale of

the Parental Bonding Instrument correlated only with the adult working model of other and not with the working model of self (Difilippo & Overholser, 2002) It was therefore hypothesised that the Parental Bonding Instrument is biased towards measurement of the working model of other.

It is argued that the reason why the dimensions of attachment have not consistently been found to mediate the association between childhood experiences and depression (e g., Difilippo & Overholser, 2002; Gittleman *et al.*, 1998; Lloyd & Miller, 1997; McMahon *et al.*, 2005) is because the studies are limited by the use of the Parental Bonding Instrument, which does not fully represent childhood attachment experiences. The present study aimed to extend upon this research by developing a measure of childhood attachment which accounted for the models of self and other and by employing continuous measures of working models of self and other as the mediator variables.

The scope of the items in the Parental Bonding Instrument has further confounding implications for the valid and reliable measurement of childhood experiences. The Parental Bonding Instrument is limited to items referring to overt behaviour of the parent. Therefore, when a parent has less opportunity to express this behaviour, for example if they are absent for prolonged periods of time (e g , in the armed forces), or do not have a lot of face to face contact with the child, the Parental Bonding Instrument may not be accurately reflecting the bonding between the parent and the child (Phares & Renk, 1998). This combination of faults implies that scores from the Parental Bonding Instrument are likely to represent how the participant perceives parental behaviour rather than the nature of their relationship.

Discounting the research conducted using the Parental Bonding Instrument, there is a paucity of research exploring the association between childhood attachment and

depression One aim of the present study was therefore to design a measure of childhood attachment that is true to the working models of self and other, and to explore the association between childhood attachment and depression using this measure. It was proposed that the new measure would be congruous with both working models of the self, and of the other. It was expected that the anxiety subscale of the new Childhood Attachment Measure would be more highly correlated with the anxiety subscale of the adulthood attachment measure (The Experiences in Close Relationships Scale; Brennan *et al*, 1998) than with the avoidance subscale of the Experiences in Close Relationships scale. Similarly, it was expected that the avoidance subscale of the Childhood Attachment Measure would be more highly correlated with the avoidance subscale of the Experiences in Close Relationships scale than with the anxiety subscale. It was proposed that the new measure would be used to explore whether the relationship between childhood attachment and depression is mediated by adult attachment. No attempt has before been made to try to measure the working model of self using a retrospective self report method. Therefore, the reliability and validity of the new measure were rigorously explored using measures of adult attachment, and the Parental Bonding Instrument to validate the constructs being measured.

3.1.2 Criticism of Retrospective Measures

Whether reporting childhood experiences is influenced by current depression is particularly pertinent to the current study (Gerlsma *et al.*, 1990). Beck (1967) suggested that an episode of depression led to a negatively distorted perception of the self, other, and environment. In support, negative mood has been found to facilitate the recall of negatively toned information (Gotlib, 1981; 1983). In order to investigate the influence of current mood upon retrospective reports, Gotlib, Mount, Cordy, and Whiffen (1988) conducted a longitudinal study. A community sample was

identified as either depressed or non-depressed by scoring the BDI with a cut point of ten, at this time they also completed the Parental Bonding Instrument for their mother only. This was repeated three to four years later. The mean scores obtained on the Parental Bonding Instrument demonstrated that perceptions of early parenting experiences by both depressed and non-depressed individuals remain stable over time. More importantly, no change in scores on the care or overprotection scales was observed in those participants who were depressed at time one but remitted at time two This provided strong evidence that the retrospective collection of data pertaining to one's childhood is not related to current depressed mood, and is stable over time. More recently, a longitudinal study found that the Parental Bonding Instrument care subscale was stable over 20 years, even in individuals who had depression at some point during the study. However, scores on overprotection decreased over the twenty year lag (Wilhelm, Parker, and Brownhill, 2002). Further research has demonstrated that Parental Bonding Instrument ratings remain stable over a 90-month lag in patients with depression, despite fluctuations in the severity of their depression over that time (Lizardi & Klein, 2005). Resulting from a review of the literature, Brewin, Andrews, and Gotlib (1993) have argued that there is "little support for the claim that recall of childhood experiences is distorted by depressed mood" (pp 91).

3.2 Pathway 2: The Temporal Association between Adult Attachment and Depression

No firm conclusions can be made from cross-sectional studies outlined in chapter two regarding the temporal relationship between adult attachment and depression. Importantly, for attachment to have a role as a vulnerability factor towards depression, attachment should predict depression over time. Experiencing depression has an impact on social relationships, which may mean that any observed associations between depression and attachment may be a product of this

impact. Depression may precede the onset or change towards insecurity of adult attachment rather than being predicted by adult attachment. This is the third problem with the role of attachment as a vulnerability factor for depression which the present study sought to address.

Experiencing an episode of depression may alter social exchanges between an individual with depression and their social network, making both parties more avoidant. For example, Wahl, (1999) found that 31% of mental health service users increased avoidance of social contact because of the stigma associated with being depressed. In addition, depressed individuals will avoid social contact, as they are aware of the impact their mood can have on others (Segrin & Abramson, 1994). In return, others ostracise individuals with depression in order to protect their own mental health (Gilbert, 2000). This concurs with Coyne's (1976a, 1976b) interpersonal model of depression, which illustrated that when non-depressed individuals interact with depressed individuals they experience declines in mood and therefore, desire to avoid depressed individuals. In support, a survey of Mental Health Service users (Wahl, 1999), found that 60% reported being avoided socially. Recent evidence suggests that the public still desire social distance from individuals with depression, despite increased education regarding depression (Angermayer & Matschinger, 2004). Remitted individuals with depression have been found to report lower social self confidence, high emotional dependency (Hirschfield, Klerman, Clayton and Keller, 1983) and high interpersonal sensitivity (Sakado *et al.*, 1999) which are all features of insecure, particularly anxious, attachment.

The risk of recurrence increases with each successive episode of depression an individual experiences, this is termed the 'scar hypothesis' (Lewinsohn *et al*, 2003; Solomon *et al.*, 2001). This means that those individuals at the greatest level of susceptibility to developing depression are those individuals who have prior

experience of a depressive episode (Bos *et al.,* 2005; Coyne *et al* , 1999). When the human body comes into contact with illness, it strengthens its defences. However, even following successful treatment, the risk of recurrence for an individual who has had depression, is still high (Osgrodniczuk, Piper, & Joyce, 2004). As a vulnerability factor towards depression, attachment theory should be able to explain recurrence of depression.

For past depression to be a major predictor of future depression, there are two possible explanations. There may be a stable and enduring vulnerability factor at the root of the depressive episodes. Alternatively, depression may fundamentally change an individual, which predisposes them to future episodes of depression. The case for the former is strengthened on the basis that childhood attachment is hypothesised to be a lifelong contributory factor towards depression, although evidence is mixed. There are therefore two possibilities regarding the relationship between depression and adulthood attachment. (i) An insecure attachment style is a stable and enduring vulnerability factor towards depression. (ii) Depression changes an attachment style towards insecurity. Few studies explicitly explore the temporal relationship between attachment and depression. Therefore, to begin with, the second possibility will be reviewed using research that has explored whether individuals who have experienced depression are different in their attachment styles to those who have never had such an experience.

3.2.1 Cross Sectional Studies on Individuals with Prior Depression

It has been found that individuals with prior depression are significantly different in their attachment styles to those with no such history. Bifulco, Moran, Ball and Lillie (2002) found that prior depression as a teenager was significantly related to insecure attachment as an adult. Of those with prior depression, 68% were rated as

insecurely attached, whereas only 41% of the never depressed group were insecure Even individuals who have successfully responded to treatment for depression, demonstrate residual symptoms which are related to interpersonal dysfunction (Osgrodniczuk *et al.*, 2004).

One study has come closer to demonstrating a causal effect by controlling for current depressed mood when examining the relationship between prior depression and attachment style. Haaga *et al.* (2002, study two) explored the possibility that attachment style was a product of low mood by comparing recovered-depressed and never-depressed individuals on their adult attachment scale. All participants were required to score nine or below on the BDI to indicate that they were currently symptom free. It was noted that the recovered depression groups scored significantly higher on the BDI than did the never depressed group. This indicated the presence of residual symptoms. With regard to attachment style, the recovered depressed were significantly less secure, more preoccupied, and more fearful than were the never depressed group. No differences were observed for dismissing attachment Haaga *et al.* (2002) controlled for current depressed mood, and the result was consistent. This demonstrated that the difference in attachment was not due to current depressive symptoms, therefore demonstrating that the differences in attachment style were specific to prior depression. However, further analyses demonstrated that attachment styles were not correlated with the number, or severity of prior episodes. Therefore, these findings are mixed, attachment styles appear to result from prior depression but are not associated with severity of prior episodes of depression.

Depression is known for its high rates of recurrence (e.g., Brown, 2001), making it likely that an individual with depression has experienced prior episodes Individuals with prior depression demonstrate a tendency towards insecure attachment styles

and show residual symptoms of depression (Carnelley *et al.*, 1994), as indicated by the relationship between prior depression and current elevated levels of symptoms (compared to control groups). In contradiction of the role of attachment as a vulnerability factor towards depression, these findings suggest the opposite, that prior depression has an influence on attachment style. With this in mind, the inclusion of questions to ask participants about their prior experiences of depression is crucial in research exploring the relationship between attachment and depression, in order to ascertain whether the observed attachment style results from prior depression. One criticism with research on the relationship between adult attachment and depression is the inconsistency with which prior depression is considered an influential factor on current attachment style. This thesis aims to contribute to the existing literature by exploring the effects of prior depression on adult attachment.

Alternatively, individuals with prior depression may not have experienced a *change* in attachment style because of depression. Instead, the presence of insecure attachment in individuals who have recovered from depression could indicate that these attachment styles are stable and enduring vulnerability factors which *preceded* the onset of depression and prevailed during and after the depressive episode. Unfortunately, as the above studies did not include premorbid indicators of the attachment styles of their participants, no firm conclusions can be made regarding whether insecure attachment is a cause of depression, or a residual symptom of depression. In order to determine whether an individual is changed by an episode of depression, or whether there is a continuous underlying trait, a prospective study may be used.

3.2.2 Prospective Studies

Prospective studies (Buist-Bouwman, Ormel, de Graaf, & Volleburgh, 2004; Lewinsohn, Steinmetz, Larson, & Franklin, 1981; Rohde, Lewinsohn & Seeley, 1990; Rohde *et al*, 1994; Lewinsohn, Rohde, Klein, & Seeley, 1999; Lewinsohn, Rohde, Seeley, Klein & Gotlib, 2000; 2003) have explored the variables preceding, and following an episode of depression in longitudinal research. Few studies have explored attachment and depression prospectively; therefore studies pertaining to behaviours and cognitive components that are associated with attachment (e g., negative model of self, dependency, quality of relationship with friends and family, and social functioning) are presented as tentative evidence towards the temporal relationship between attachment and depression. The focus for this review is on exploring whether experience of depression changes an individual toward an insecure attachment style, or whether an insecure attachment style is a stable and enduring vulnerability factor that predicts depressive mood.

Lewinsohn *et al.* (1981) examined depression in a community sample over a one year period. Those individuals who became depressed during the course of the study were not characterised at the baseline by irrational beliefs or negative thoughts. At the conclusion of the study, individuals with a history of depression did not differ from never depressed individuals on any of the cognitive measures. Lewinsohn *et al.* concluded that depression related cognitions (locus of control, and irrational beliefs) occurred when depression developed, and residual symptoms were not permanent. However, depression may have still an influence on interpersonal factors, such as attachment, something of which this early study neglected to take account.

In a large scale longitudinal study, Lewinsohn *et al.* (1999; 2000; 2003) followed the occurrences of depression in a population of adolescents through to early adulthood. Data were collected at ages 19, 20, and 24 years. The psychiatric consequences of experiencing an episode of depression during adolescence were found to be an increased risk of depression between the ages of 19 and 24, and increased risk of non-mood disorders (Lewinsohn *et al* , 1999). Of those who had developed depression during adolescence, 45% experienced a recurrence between 19 and 24 years of age, compared with 18 5% of those who had no reported disorder as adolescents. Certain factors from adolescence were found to predict significantly the presence or absence of depression in early adulthood (Lewinsohn *et al.*, 2000). These factors included (amongst others) excessive emotional reliance, and low social competence, and in terms of the first depressive episode, longer duration, multiple episodes, increased severity and parasuicide. In terms of the temporal relationship between attachment and depression, this finding indicated that the working model of self (as measured by emotional reliance) of the attachment system predicted recurrence of depression.

One criticism of the series of studies conducted by Lewinsohn *et al.* (1999, 2000; 2003) is that no baseline measure was taken to establish whether changes were present before the participants experienced an episode of depression. Studies that have tracked participants before a depressive episode, during, and in remission have afforded the unique opportunity to compare a group of individuals with depression with those who have never had depression, before the episode, during the episode, and in remission. For example, Rohde *et al.* (1990) examined a wide range of cognitive, interpersonal, and demographic variables and asked whether these variables were changed by an episode of depression. Participants were 1008 individuals over the age of 50. The study took place over 29 months, within this time a subsample of 49 participants developed their first onset of a depressive episode

and remitted. The advantage of this study, was that Rohde *et al.* (1990) went on to examine whether the between groups differences were evident *prior* to the onset of the depressive episode. This would demonstrate whether the differences were a product of the depressive episode (a scar) or whether they occurred prior to the depressive episode, in which case they may be considered a stable and enduring vulnerability factor. It was found that those who were identified as new cases were significantly more emotionally reliant and less healthy than were never depressed individuals *before* their depressive episode (i.e. at time one). No between groups differences were observed at time one for social skills, however following the depressive episode, the new cases had a significantly poorer score for social skills.

The limitation of this study was that it was conducted only with adults at the age of 50 or over. Depression usually onsets at a mean age of 25 therefore, the onsets observed in this study were not typical of the general population, and may have different characteristics. In terms of attachment, it is more likely that these older adults have different attachment relationships, for example, they are more likely to be parents, to have experienced a long-term relationship, and to have experienced a greater number of bereavements. In terms of the application of this study to exploring the temporal relationship between attachment and depression, the limitations are that the indicator of "attachment" (emotional reliance) did not take account of the working model of other; however, it is initial evidence that attachment is a predictor of depression over time.

The above study found that whereas emotional reliance was stable and present before and after a depressive episode, impairment in social skills was only evident following the depressive episode, suggesting that it was a "scar". These findings may relate to attachment theory as follows. Emotional reliance is analogous to anxious attachment, or the internal working models of self. This remains a stable

vulnerability factor before, during, and after the depressive episode. However, the social skills represent the attachment behaviours which are transient and are engaged by the stable cognitive working models. Therefore behavioural expression (social skills) of the attachment system changed, as would be expected during a stressful situation such as an episode of depression, but the cognitive component was stable and enduring. In support, it has been demonstrated in longitudinal studies that psychosocial functioning fluctuates alongside depressed mood. In particular, asymptomatic stages during the course of depression were marked by normal levels of psychosocial functioning (Judd *et al.*, 2000; Judd & Akiskal, 2000, Ormel, Von Korff, Van den Brink, Katon, Brilman, & Oldehinkel, 1993). However, one criticism is that these studies took no premorbid measure of functioning with which to compare the asymptomatic findings. Given that the study (Rohde *et al* , 1990) only spanned 29 months, the diminished social skills observed at time two could have co-occurred with the depression and with the residual symptoms that were demonstrated. A study that spanned a greater length of time may have detected an eventual return to a normal level of social functioning. For example, Buist-Bowman *et al.* (2004, Ormel, Oldehinkel, Nolen, and Vollebergh, 2004) conducted a study that spanned four years in which social functioning was found to return to normal levels following the onset and remission of a depressive episode. It is of note that Buist-Bouwman *et al.* (2004) also found that an episode of depression did not result in any long term change, or limitation in social functioning. This weakens the argument for depression producing a change in attachment

However, it is of note that in a later study, with adolescents (the mean age was 16.6 years), Rohde *et al* (1994) found that emotional reliance was a scar of a depressive episode. Heightened emotional reliance was observed to occur after a depressive episode, but not before. They concluded that early experiences of depression have a

more severe impact, which strengthens the case for the influence of prior depression on attachment.

With the exception of Rohde *et al.* (1994) findings imply that indicators of insecure attachment are stable and enduring vulnerability factors for depression which would be expected to predict depression over time. They demonstrate a stable and enduring vulnerability factor which is associated with attachment, which predicts the onset of depression, and which is present before and after depression. Furthermore, they have found that prior depression does not predict later social functioning. The findings from these prospective studies provide support for the hypothesis that attachment predicts depression over time, and that attachment is a stable and enduring vulnerability factor which is present before and after an episode of depression and weaken the hypothesis that insecure attachment is a residual symptom of depression.

The prospective studies, presented above, provide some initial support for the role of attachment as a stable and enduring vulnerability factor. However as stated above, these longitudinal studies have not explicitly measured attachment. In addition, there are a number of limitations associated with the above studies. Four were conducted outside of the mean age for onset of depression (Lewinsohn *et al.*,1999; 2000; 2003; Rohde *et al.*, 1990; Rohde *et al* , 1994) and another did not control for prior depression or life events (Buist-Bouwman *et al.*, 2004). The final series of studies to be discussed with regard to the temporal association between attachment and depression are panel studies which have explored the relationship between depression and attachment over time.

3.2.3 Panel Studies

Whiffen *et al.* (2001, study three) followed a sample of 52 depressed women (according to DSM-III-R criteria) for six months Contrary to the findings presented above, when controlling for severity of depression at time one, attachment style at time one did not predict depression at time two. This study disputes the possibility that attachment predicts depression over time, however, Whiffen *et al* (2001) did not analyse whether depression predicted attachment. A further limitation to this research is that the measure of attachment used was not a continuous measure of working model dimensions, rather it was a Likert rating of the four attachment styles as measured by the Relationships Questionnaire (Bartholomew and Horowitz, 1991). It is proposed that a continuous dimensional measure of attachment (e.g., The Experiences in Close Relationships Scale, Brennan *et al.*, 1998) may be more effective in exploring panel data, and that categorical measurement of attachment is better suited to analyses where one is interested in exploring individual differences between attachment style groups (Crowell *et al* , 1999)

Roberts, Gotlib, and Kassel (1996) presented panel data describing the relationship between attachment and depression over a six (study three) and an eight (study two) week interval Attachment was measured using a Likert rating of Hazan and Shaver's (1987) attachment prototypes Unlike the above study, Roberts *et al.* (1996) employed a non-depressed student population In line with the findings of Whiffen *et al.* (2001), attachment security at time one failed to make a significant and direct contribution to the prediction of depression at time two. The reason for this finding may be that again, a measure was employed which does not represent working models of attachment as closely as does the Experiences in Close Relationships Scale (Brennan *et al*, 1998). Alternatively, these findings may be due to the lack of variability in depression as the data were gathered from a specifically

non-depressed student population. The small interval of time used in this study would also leave little room for variability and therefore less opportunity for a temporal relationship between attachment and depression to be observed. Again, data were not analysed concerning whether depression predicted attachment over time. Furthermore, both Whiffen *et al.* (2001) and Roberts *et al.* (1996) analysed their data using a series of multiple regression analyses, whereas Linear Structural Relationship Analysis (LISREL) would have provided a more accurate method of analysing panel data (Cramer, 2003), and would have provided data regarding the prediction of attachment from depression. Analysing panel data using LISREL offers two main advantages when compared to using regression analysis. These are, the ability to directly compare and contrast different models using indices of fit, and the ability to compare path co-efficients without the bias of measurement error. These will be outlined in detail in chapter eight.

These panel studies indicate that there is no temporal relationship between attachment and depression. There have been limited studies conducted to explore the relationship between attachment and depression over time, and none, to date that have explored whether depression is a possible predictor of attachment. It is clear that an insecure attachment style co-occurs with low mood, clinical depression, or remitted depression. Additionally, it has been demonstrated that variables that are related to insecure attachment are present prior to the onset of depression. One aim of the present study was therefore to contribute to the existing literature by exploring the temporal relationship between attachment and depression, using a continuous measure of attachment that reflected the dimensional working models, and spanning a time of greater than eight weeks. Based upon the findings from prospective studies, it was hypothesised that attachment would predict depression over time. Specifically, it was expected that the association between attachment style at stage

one and depression at stage two would be stronger than the association between depression at time one and attachment at time two.

3.3 Pathway 3: Adult Attachment as a Moderator of the association between a Stressor and Depression

From the literature reviewed thus far, it is apparent that insecure adult attachment is associated with depression, although the causal pathway between these two variables is unclear. A number of studies have sought to identify whether the association between attachment and depression is mediated by a third variable (e.g., Abela et al., 2005; Lopez, Mitchell, & Gormley, 2002; Roberts *et al.*, 1996; Strodl & Noller, 2003; Wei, Vogel, Ku, & Zakalik, 2005) However, several general criticisms can be drawn on these studies. The authors sought the mechanism through which attachment acted upon depression. However, the proposed mediators were, by their nature, measures of attachment. The authors have taken a component of the attachment system and confirmed that that it is associated with the working models of attachment and depression. For example, Roberts *et al.* (1996) demonstrated that self esteem (an indicator of working model of self) mediated the association between attachment and depression Furthermore, Wei *et al.* (2005) demonstrated that affect regulation (strategy in the attachment system) mediated the association between attachment and depression.

A line of research that is more informative is that which is directed towards exploring whether attachment moderates the effect of a third variable on depression. A moderator is a variable whereby the relationship between two other variables is observed to differ for different values of the moderator. As outlined earlier, it has been hypothesised (e.g., Cassidy, 1994) that whereas insecure attachment may promote depression, a secure attachment style will buffer an individual against

depression, through the affect regulation strategies that are employed. The mediating models above, do not specify attachment styles, therefore they cannot show how a secure attachment style could act in a buffering or preventative role against depression. Investigating the role of secure attachment as a buffer against depression is important as it may help to explain how depression may be subverted or treated. This may be explored within a moderator model.

Roberts *et al* (1996) speculated that attachment has a moderating effect on the relationship between adverse life events and depression. In further support, results of cross sectional studies, presented above (e.g., Murphy & Bates, 1997) indicated that individuals with depression were not typified by one type of attachment style. If insecure attachment were related to depression in a systematic way, it might be expected that all individuals with depression would share a common insecure attachment style. Instead, it has been observed that maladaptive levels of avoidant and anxious attachment are both endorsed by individuals with depression. This suggests that attachment offers more than one vulnerability pathway to depression. The affect regulation hypothesis suggests two maladaptive pathways, the hyperactivating, and the deactivating strategies that guide the way one copes with distress, particularly adverse life events. As such, it is likely that attachment moderates the relationship between the distress associated with adverse life events and depression through these strategies.

3.3.1 The Association between Life Events, Attachment and Depression

Evidence suggests that negative life events precede an episode of depression (Brown and Harris, 1978). For example, Bifulco *et al.* (1998) conducted a longitudinal study, over the course of 14 months, 48% of the women studied who

experienced a severe negative life event, went on to experience the onset of a depressive episode. Bebbington, Tennant, and Hurray (1981) suggested that depression in a community setting (i.e. in primary care patients) is more likely to be preceded by a severe life event, than is depression in psychiatric settings. Coyne, Thompson, and Pepper (2004) found some initial support for this hypothesis. As the sample for the current study was a community sample, it was expected that life events would make a significant and independent contribution to the explanation of depression at time two. Furthermore, it was expected that those individuals who experience one or more negative life events would have significantly higher depression at time two than at time one, compared to those who did not experience a life event, in whom depressed mood was hypothesised to be stable over time. Therefore, in analyses testing the temporal association between attachment and depression, the effect of life events on depression was controlled.

Stressors, or negative life events, that precede a depressive episode have in common the theme of loss. Life events such as bereavement, losing a job, separating from one's romantic partner, or failing an exam, all have in common loss, whether it is interpersonal loss, or loss of social rank. However, depression is not experienced in all who experience a negative life event (Gotlib & Hammen, 1992). Therefore, drawing upon the affect regulation functions of attachment, the effect of a stressor upon depression would be moderated by the security of attachment Specifically, the association between a stressor and depression would be non-significant in individuals with a secure attachment style. This is because secure attachment buffers an individual against experiencing depression in times of stress, through the provision of self worth gathered from the positive actions of others (working model of other) and positive self-esteem (working model of self). In comparison, a positive association between a stressor and depression would be observed for individuals with an insecure attachment style. This is because an

insecure attachment style would be expected to provoke depression in times of stress through the hyperactivation, or deactivation of the attachment system. Hyperactivation of the attachment system, observed for individuals with a negative working model of self would result in the presentation of more severe symptoms, with the aim of more successfully securing the attention of the other, and promotion of low self worth when others do not respond to one's need for protection Deactivation of the attachment system, observed for individuals with a negative model of other, would result in denial of distress, avoidance of the attachment figure and a compulsive determination to handle the stress alone.

In support of the moderator hypothesis, Hammen *et al.* (1995) found that depression was predicted by a cross sectional interaction between the anxiety dimension of the attachment system (as measured by the Revised Adult Attachment Scale; RAAS, Collins & Read, 1990) and interpersonal stress preceding the exacerbation of depressed mood. The RAAS includes three subscales, these are the close, depend, and anxiety. The anxiety subscale refers to the working model of self. Therefore, this analysis demonstrated that interpersonal life events interact with the model of self to predict depression, possibly through intensifying feelings of low self worth. At a one year follow up, the "depend" subscale interacted with the interpersonal life events to predict the severity of depression (as measured by the BDI and by the SCID). The "depend" subscale is a measure of the ability to count on others, it relates to the working model of other. Interpersonal life events may have interacted only with this scale (and not anxiety or close) because the model of other is the most likely to be affected by an interpersonal event. For example, an argument, bereavement, or other interpersonal event would result in the reconfiguration of the working model of other, to incorporate the new information regarding one's attachment figures. Hammen *et al.* (1995) concluded, "events occurring to more cognitively vulnerable women caused symptoms" of depression to elevate (pp 441).

In further support, attachment measures predicted depression independently of a baseline measure of depression. Therefore, attachment variables were not expressions of underlying depressive symptoms.

The impact of distressing life events upon depression is therefore moderated by the attachment system. However, it is unclear from Hammen *et al.* (1995) whether individuals who are securely attached differ in their response to life events when compared to those with an insecure attachment style. The present research aims to expand on these findings by exploring attachment *style*, according to Bartholomew's (1991) model, as a moderating variable between a source of distress (social comparison) and depression. This moderating model will be considered within an evolutionary framework, to be outlined below.

3.4 Alternative Pathways

It was earlier noted that attachment is not always continuous, and that as a result childhood attachment behaviours would not always influence later depression through the mechanisms of attachment (e g , Pearson *et al.*, 1994). It was hypothesised that an alternative mediator was therefore responsible for the association between childhood attachment and depression. Furthermore, evidence suggests that role of adult attachment is to moderate the association between a stressor and depression. The attachment system has evolved, therefore attachment strategies feature in evolutionary theories of depression. As mentioned above, one such theory "The Social Competition Hypothesis of Depression" (Price, Sloman, Gardner, Gilbert, & Rohde, 1994) gives both an alternative cognitive mediator for the association between childhood attachment and depression and a model in which adult attachment is a moderator. Before considering each of the pathways for

childhood and for adulthood attachment, it is useful to give an overview of the Social Competition Hypothesis of Depression (Price *et al.*, 1994)

3.4.1 The Social Competition Hypothesis of Depression

Modern evolutionary theory provides a framework in which abnormal behaviour, the mechanisms which regulate it, and the circumstances which cue its expression can be explored (Barkow, Cosmides, & Tooby, 1990, Baron-Cohen, 1997; Nesse, 1998) Buss (1995) proposed that numerous domain specific psychological mechanisms evolved to address specific adaptive problems. The three main problems were survival to reproductive age, mating and reproduction, and raising offspring. The evolved mechanisms are therefore hypothesised to be responsible for behaviours such as eliciting and seeking care, providing care, forming alliances, seeking a suitable mate, and social competition. Natural selection favours traits which offer a reproductive advantage. One challenge of evolutionary theory is therefore to understand how maladaptive mood disorders, which are present now, may have bestowed adaptive value to the human race at some point in evolutionary history, and therefore been retained, at high prevalence, in the population Evolutionary theory is concerned with exploring the evolutionary potentials rather than certainties, however, because of this, much of evolutionary theory remains to be empirically tested. Allan & Gilbert (1997) acknowledged that theorising has run ahead of the evidence in terms of the social competition hypothesis. The present study was partially motivated by this shortage.

The Social Competition Hypothesis draws upon the formation, evaluation, and breakdown of social alliances in explaining the behaviour present in depression (Gilbert, 2000, Gilbert & Allan, 1998; Sloman *et al.*, 2003). The Social Competition Hypothesis of depression stemmed from Price's (1967) observation that the

behaviour of an individual with depression was similar to that of an animal, who after losing status in a group, assumed a subordinate role within the group's social hierarchy. It was hypothesised that symptoms of depression evolved from the submissive strategies that were intended to prevent an individual from engaging in social competitions that they would be unlikely to gain from, or win Two elements of the social competition hypothesis are relevant to the present study; these are social comparison and the Involuntary Defeat Strategy. Social comparison was hypothesised as a trigger to submissive strategies (Gilbert, 2000). Defeat, on the other hand was hypothesised as one of many submissive strategies, which may be activated involuntarily as a consequence of comparing ones self negatively against others (Gilbert, 2000; Sloman, 2000a) Each of social comparison and defeat are considered below

3.4.1.1 Social Comparison

Social Comparison aids an individual in evaluating the probability of winning competitions, and therefore challenging those who are weaker, and submitting to those who are stronger. In this way, social comparison is an individual's perceived social rank for themselves. Although initially conceived of as a response to threat (Wills, 1981), it has since been found that social comparison is engaged in generally, and is not specific to a feeling of threat (Wood & Taylor, 1991). The basis of social comparisons is an estimate of "Resource Holding Potential" (Parker, 1974). Resource holding potential is an animal's knowledge of their own physical and (in humans) mental capacities which they can apply in a conflict situation. In order to select when to engage in a fight, and when to submit, the capacity evolved to compare one's own resource holding potential with that of a rival (Dixon, 1998; Price, 1988). By making an accurate comparison, an individual may avoid competing with a

more powerful other. This comparison process determines one's reaction to threat and conflict; that is whether to fight, or to flee

Ranking takes place amongst humans in order to provide a social infrastructure that allows one to evaluate the possible outcome of social competition. Dominance is not the goal of social competition; only access to resources is the goal. A dominant-subordinate relationship is established primarily through the submissive gestures of the subordinate party rather than by the aggression of the dominant party. Submissive displays are a form of communication occurring in social situations where rank is involved. The submissive displays may be triggered by facial signals, threats, criticism, or rejection Submissive behaviour displays include; eye gaze avoidance, turning the head away, angling the head to the side, dropping the shoulders, shifting weight, positioning to flee, fear grinning, crouching, and screaming (Dixon et al, 1989). It has been argued that these submissive behaviours can be observed in individuals with depression (Sloman & Gilbert, 2000b)

Competition by prestige has replaced competition by fighting (Price, 2000). Gilbert (1990) developed this idea to describe the emotional components of social competition. Gilbert (1990) argued that social attention holding potential accounted for the construction of dominance hierarchies in the present day. Price (2000) argued that this change occurred due to the evolution of pair bonding, affiliation, and parental behaviour in humans. The resource of interest to the individual shifted away from the acquisition of power and towards "concerns about how much others [were] prepared to invest" in one (Price, 2000, pp 168) This demonstrates a link between social rank and the evaluations involved in the formation of the working models of the attachment system. Social attention holding potential relates to the amount of attention others pay to an individual. The competition takes place for the attention of others. The individual differences in the attention bestowed create a social hierarchy

Those receiving more attention are higher in rank. As with a resource holding potential comparison, the result of comparing social attention holding potential is that an individual will adjust their social rank based on that comparison.

Gilbert (1992) argued that those receiving more attention perceive a rise in their status. Making a favourable comparison and perceiving ones self as higher in status will be accompanied by positive affect. When individuals make an unfavourable comparison, this serves as a trigger to submissive behaviours (such as those outlined above) and submissive strategies, such as defeat, and may precede an episode of depression. Using a measure of social comparison, Allan & Gilbert (1995) found that individuals with depression are more likely to make unfavourable social comparisons, that is, they see themselves negatively in comparison to others. They see themselves as weaker, less attractive, and as an outsider. These are like the negative cognitive distortions defined by Beck (1967). Making persistently unfavourable comparisons could be the result of Kindling (Post, Rubinow, and Ballenger, 1992; Post & Weiss, 1998; Segal, Williams, Teasdale, & Gemar, 1996); that is, one substantially negative event could have sensitised the individual, making them more likely to compare themselves negatively in the future.

The goal of social competition is to win resources which enhance survival and lead to ascension up the social ranks of ones group. The concept of social competition is tied to ranking as it results in winners and losers ascending and descending the social ranks. The winners benefit from competition as they ascend in their social rank, which confers survival advantage as it leads to greater access to resources (Cummins, 1999) Those adopting a losing strategy, subordinates, are at a disadvantage, as they have lost their opportunity to gain access to the coveted resources. In a physical fight, the costs of further competition would be high for the subordinate, possibly resulting in injury or death. Because the costs of such

competition are likely to outweigh the benefits, the subordinate needs to terminate their participation in further competition.

According to Gilbert and Allen (1998) there are four key factors in social rank theory which describe an individual who has lost in social competition. The individual will perceive them selves as being in an undesirable subordinate position. The individual will tend to act in subordinate ways and be submissive. The individual will hold the belief that they have been defeated, and would feel trapped in their submissive role, with a strong desire to escape. At this point, an evolved submissive strategy, such as the Involuntary Defeat Strategy (Price, 1967; Sloman, 2000a), may be employed.

3.4.1.2 The Involuntary Defeat Strategy

The Involuntary Defeat Strategy is described as a "genetically pre-programmed strategy, triggered by an individual's recognition that defeat in social competition is inevitable" (Sloman, 2000a, pp 50). A strategy is a species typical behaviour or response to a specific cue. The Involuntary Defeat Strategy is a mechanism which activates when defeat in social competition is inevitable and disengages an individual from their activities when their intended goal is unrealistic. It is a damage limitation strategy which prevents further loss or injury for the losing party by triggering submission and is employed with the aim of regulating the response to loss (of a goal, or a competition) and promoting a return to the regular affective state. 'Activation of involuntary subordinate strategies are most likely under conditions of social adversity and lack of control' (Gilbert, 2000, pp 25). Gilbert (2000) proposed that in depression "defeat arises from the loss of control over goals and interpersonal conflicts" (pp 25) It is of note that many human defeats are not aggressive, for example a thwarted, blocked or failed goal (be it in exams, relationships, or business for example).

The two main functions of the Involuntary Defeat Strategy are motivation and communication. In terms of motivation, the strategy motivates the subordinate individual to inhibit aggressive behaviour towards rivals and superiors (though not to dependents). This state of mind encourages an individual to accept their losses in the competition and to terminate the conflict, essentially to disengage from the pursuit of an unreachable goal. This is achieved through engaging subordinate behaviour, and increasing readiness to flee the confrontational situation. The subordinate behaviour has the secondary function of communicating with dominant individuals, sending the message that this individual is not a threat, and is out of action, ensuring that the subordinate individual is not pressured into competing, or challenged by a dominant individual. In non-pathological activation, once the conflict has been de-escalated, a third function of the Involuntary Defeat Strategy is to facilitate the acceptance of defeat and adjustment to the new status quo resulting from the perceived defeat. This may be experienced as disappointment. Acceptance of defeat leads to the cessation of Involuntary Defeat Strategy activity and it allows the individual to redirect their energies towards more achievable goals.

The Involuntary Defeat Strategy is therefore adaptive in its role of de-escalation and facilitating acceptance of defeat. Two dysfunctions of the Involuntary Defeat Strategy lead to depression; these are if the defeat is engaged over an abnormally prolonged period and if the Involuntary Defeat Strategy is triggered repeatedly, due to the individual holding a lower threshold for the perception of defeat.

The defeat strategy may be engaged over a prolonged period, if, for example, an individual is reluctant to submit to defeat to their need to achieve or win, or their anger regarding the initial defeat. Where an individual is compelled to continue pursuing a goal, or conflict following defeat, there are three possible outcomes. They

may succeed and eventually win. Alternatively, they may continue to lose, eventually leading to an acceptance of defeat according to the adaptive pathway outlined above. The third outcome is negative affect, this is caused when Involuntary Defeat Strategy is triggered, but the individual is prevented from acting upon their desire to flee or give up, either fuelled by their own resentment, or by the persistent refusal of the other party to acknowledge the submission. At this stage, the conflict will not de-escalate, nor would a goal change, so the Involuntary Defeat Strategy would be further triggered and cause associated negative affect to be intensified. The adaptive mechanisms of preparing the body for flight or submission would therefore become maladaptive, as the individual is unable to act upon these mechanisms. If the Involuntary Defeat Strategy continued to be engaged over a prolonged period, tension would mount and the Involuntary Defeat Strategy would become over activated. The individual will become involuntarily trapped in defeat. Their state is involuntary in two respects (Gilbert, 2000). First, the individual is in a social situation which they feel unable to control, and thereby in a social role, or social position (subordinate), that they do not want to occupy. Second, the individual may feel they have no control over their psychological state, as it is dependent upon the action of the other party. Perceiving one's inability to act upon the increasing negative affect culminates in the presentation of a depressive disorder. The involuntary state is distinctive from a conscious decision to disengage in a competition or give up on an unrealistic goal (Price & Sloman, 1987).

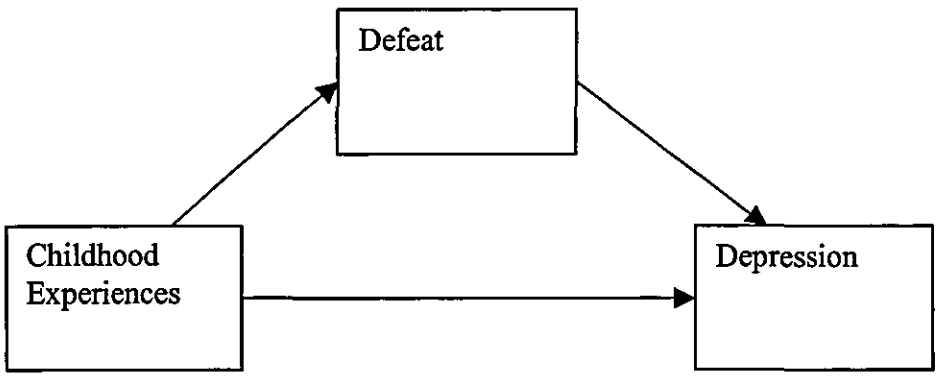
Depression may also be caused by the persistent stimulation of the Involuntary Defeat Strategy through Kindling (Post *et al*, 1992; Post & Weiss, 1998; Segal *et al.*, 1996). This refers to a predisposition towards defeat following a period of over activation. A minor event would be sufficient, in this case, to produce as strong a reaction as the initial defeat. This hypothesis is consistent with the observation that depressive reactions become increasingly generalised, and that serial reoccurrences

of depression emerge in reaction to life events that decrease in their significance (Ezquiaga, Gutierrez, & Lopez., 1987).

3.4.2 The Involuntary Defeat Strategy as a Mediator of the Association between Childhood Attachment and Depression.

For some individuals to experience a non-pathological activation of the Involuntary Defeat Strategy, and yet others to experience a depressive reaction to defeat implies individual differences in the functioning of the Involuntary Defeat Strategy. Although the Involuntary Defeat Strategy is construed as a "genetically preprogrammed strategy" (Sloman, 2000a, pp 50), it has been hypothesised that the Involuntary Defeat Strategy may be shaped by individual differences in developmental experiences In particular, "premature triggering of the Involuntary Defeat Strategy may be attributed to a history of having autocratic and punitive parents" (Sloman, 2000a, pp 58). Although Sloman (2000a) did not elaborate this pathway, it was hypothesised the individual threshold level at which Involuntary Defeat Strategy is evoked in conflict situations is calibrated by childhood experiences. In particular, Sloman (2000a) stated that a weak passive parenting style could result in the child becoming submissive as the belief that their parent would not be able to tolerate aggression may result in the child avoiding confrontational and aggressive behaviour. In this way the Involuntary Defeat Strategy is a cognitive mediator, a pathway, through which childhood experiences impact upon depressed mood in adulthood. It was therefore hypothesised that defeat would mediate the relationship between childhood experiences with one's parents and current depressed mood In line with this hypothesis, it was expected that childhood experiences would significantly predict defeat. This model is shown in figure 3 1

Figure 3.1. The Mediating Role of Defeat on the Relationship between Childhood Experiences and Depression.



The cycle of behaviours following a loss in competition is comparable to the protest-despair behaviours following an attachment loss. Both involve protest against the loss, and a period of readjustment An individual gains their sense of social rank from their close relationships with others. "Our attachment relationship are the first place we learn about our attractiveness to others, the preparedness of others to invest resources in us, and regulate our emotional states" (Sloman *et al* , 2003, pp 116). Attachment, social rank, and vulnerability to depression are therefore associated from early infancy.

The Social Competition Hypothesis places depression as a functional mechanism that terminates the activity of the Involuntary Defeat Strategy. There are three key symptoms of depression which demonstrate how depression functions in social competition. Incapacity in depression mimics an injured loser, demonstrates that the individual has shut down their resources, and shows that they are not available for further competitive exchanges. Cognitive distortions experienced by individuals with depression include a negative view of self, others, and one's future, termed the cognitive triad (Beck, 1967). These represent de-escalation strategies and show a

distorted perception of one's self, rank, and future Finally, individuals with depression have a limited experience of pleasure and interest in activities, this is termed anhedonia. In social competition, individuals are more likely to fight and compete for something in which they are interested. By limiting interest, the likelihood of fighting and losing is decreased as there would be little worth fighting for. Social competition therefore offers a comprehensive theory of depression which accounts for the social behaviour, the social consequences, and the cognitive processes involved.

3.4.3 The Interaction between Adult Attachment and Social Rank

It was above hypothesised that adult attachment moderated the relationship between a stressor and depression. Securely attached adults, having well adapted mechanisms for regulating and coping with stressors, would not develop depression as a response to stressors. Conversely, individuals with insecure attachment would engage maladaptive affective regulation strategies (hyperactivating or deactivating) in response to a stressor and this would have a negative influence on depressed mood. A recent development of the Social Competition Hypothesis of Depression has made a similar claim (Sloman *et al.*, 2003), and placed defeat as the stressor in this moderating model. Therefore, the present study sought to contribute to the development of this theory by testing this new hypothesis.

The factors which contribute to the development of a secure attachment also enable an individual to manage effectively conflict and challenge. In support, it has been found that children who are insecurely attached are more likely to become bullies, or the victim of bullying (Troy & Sroufe, 1987). This demonstrates that individuals with insecure attachment have difficulty in determining appropriate behaviour in competitive situations, and resort to extremes; either dominating (bullying) others, or

becoming subordinate (victims). It is argued that the hyperactivating and deactivating strategies used by the attachment system to regulate distress overlap with social rank strategies (Sloman & Atkinson, 2000). Hyperactivation of the attachment system engages subordinate behaviours, whereas deactivation engages dominant behaviours. Therefore, the social rank and attachment systems are linked in their response to stressors. Below is a detailed account of the links between the hyperactivating and deactivating strategies for the social rank and attachment systems.

According to attachment theory, the response to a stressor in an avoidant individual is characterised by the deactivation of the attachment system, compulsive self-reliance, and a denial of the distress (e.g., Bartholomew, 1990; Bowlby, 1969; 1973; 1980; Cassidy, 1994; Mikulincer *et al.*, 2003). This is a dominant strategy as it manifests as independence and an urge to succeed alone (Sloman *et al.*, 2003). Avoidant individuals have a positive model of themselves (Bartholomew, 1990), but it is fragile and based on an idealisation that was formed because they cannot tolerate admitting to any personal flaws (Mikulincer, 1998). In order to maintain their positive view of themselves they seek to maintain a dominant role.

Hyperactivation of the attachment system is observed in individuals with an anxious attachment style, in response to a stressor (e g , Bartholomew, 1990; Bowlby, 1969; 1973; 1980; Cassidy, 1994; Mikulincer *et al* , 2003). Anxious attachment is characterised by a negative model of self (Bartholomew, 1990). Individuals with a negative model of self see themselves as unworthy of the attention of others, unloved, and unsuccessful in their attempts to secure the attention of others (Bowlby, 1969; Bartholomew, 1990). The hyperactivation of the attachment system is therefore a subordinate reaction (Sloman *et al.*, 2003).

Based upon the overlapping features between the activation of the attachment system and social rank system, Sloman *et al.* (2003) proposed a moderating model to predict depression. According to the model, when a sense of social defeat is perceived a secure attachment style should buffer the individual against episodes of depression through bolstering self-worth and reducing distress. Alternatively, those with insecure attachment engage maladaptive strategies for the regulation of their distress. This results in the prolonged activation of the attachment system either through reluctance to submit (avoidant/deactivating/dominant strategy) or through the persistent failed attempts to elicit care or attention from an attachment figure (anxious/hyperactivating/subordinate strategy). As a result, this positions the insecurely attached individual as more vulnerable to depressive episodes than are those with secure attachment. At present, this theory has not been subject to testing; evidence is needed in order to develop this theory. One such aim of the present study is to test this model of the relationship between defeat, attachment, and depression using moderator analysis.

The moderating model (Sloman *et al.,* 2003) introduces two problems. Firstly, and of primary interest to the present study, Sloman *et al.* (2003) do not state whether childhood or adulthood attachment is the moderator in the above model. Based on the findings of Hammen *et al.* (1995), it is hypothesised that adulthood attachment will be more effective as a moderator of stressors than will childhood attachment. Secondly, the Involuntary Defeat Strategy is a cognitive mechanism that regulates affect, therefore it is unclear why it would be moderated by the attachment system, which is a further affect regulating strategy It is instead hypothesised that adult attachment would moderate the association between depression and the component of the social rank system that is responsible for the *process* of social competition, and for triggering defeat, that is social comparison.

It was therefore hypothesised that the association between social comparison and depression would be moderated by adult attachment. In order for the model to be significant, it was expected that the association between social comparison and depression should vary according to adult attachment style. Specifically, it was expected that social comparison and depression would not be significantly associated for individuals with a secure attachment style, whereas for individuals with an insecure attachment style, the association would be significant and positive.

3.5 The Present Study

The central aim of the present study was to explore the role of attachment as a vulnerability factor towards depression. In support of previous research outlined in chapter two (e g , Carnelley *et al.*, 1994; Difilippo & Overholser, 2002; Lloyd & Miller, 1997; Murphy & Bates, 1997; Pettem *et al.*, 1993), *it was hypothesised that there would be a positive association between current depressed mood and each of childhood and adulthood attachment (hypothesis one).* Specifically, a higher score on depression would be associated with more anxious and avoidant attachment in both childhood and adulthood This was explored in chapter seven using Pearson's correlations. To support the hypothesis, a positive correlation was expected between depression and each of childhood avoidance and anxiety, and adulthood avoidance and anxiety

Four outstanding problems have been presented which need to be addressed in order to understand the role of attachment as a vulnerability factor towards depression and to examine whether attachment adequately fulfils this role. A further five hypotheses were proposed in line with these problems.

3.5.1 Problem One

As argued in section 3 1.1, there is a lack of a valid and reliable retrospective measure of childhood attachment to one's parents This presented the first problem. Presently the Parental Bonding Instrument is used as a measure of childhood attachment (e g., Difilippo & Overholser, 2002). However, it was argued that the Parental Bonding Instrument does not measure the working model of self, and is biased towards the working model of other due to its reference to parental behaviour. As such, it was suggested that the Parental Bonding Instrument was not a valid measure of childhood attachment *It was therefore hypothesised that the Parental Bonding Instrument was biased towards measurement of the working model of other (hypothesis two)* This hypothesis was tested by exploring Pearson's correlations between the two continuous subscales of the Parental Bonding Instrument and the continuous subscales measuring anxiety (model of self) and avoidance (model of other) in childhood. In order to demonstrate that the Parental Bonding Instrument is biased towards the measurement of the model of other, it was expected that the association between the two Parental Bonding Instrument subscales and measures of avoidance would be stronger than the associations between the two Parental Bonding Instrument subscales and measures of anxiety. These correlations are presented in chapter six

To address this first problem, the second aim of the present study was to design a measure of childhood attachment to one's parents The development of the measure is described and explored in chapter six. It was expected that this measure would be congruent with both working models of self and other. Pearson's correlations were examined between the continuous subscales of the adulthood attachment measure (the Experiences in Close Relationships scale, Brennan *et al.*, 1998) and the continuous subscales of the new childhood attachment measure to explore the

congruency between the two measures. In order to demonstrate that the Childhood Attachment Measure was measuring concordant dimensions of the attachment system as the Experiences in Close Relationships scale, it was expected that the Childhood Attachment Measure anxiety subscale would be more highly correlated with the Experiences in Close Relationships scale anxiety subscale than with the avoidance subscale. Similarly, it was expected that the Childhood Attachment Measure avoidance subscale would be more highly correlated with the Experiences in Close Relationships scale avoidance subscale than with the anxiety subscale. The childhood attachment subscales of avoidance and anxiety were then used to classify individuals into four attachment styles, in line with Bartholomew's (1990) conceptualisation of attachment. In order to support the construct validity of the classifications, it was expected that individuals with a secure attachment style would report the most optimal parental bonding experiences, compared to those classified as one of the three insecure attachment styles.

3.5.2 Problem Two

The second problem concerned the attachment pathway (Pathway 1) The attachment pathway implements the dimensions of the attachment system as cognitive mediators of the association between childhood attachment and depression It assumes continuity within the dimensions of the attachment system between childhood and adulthood. In section 1.9.4 it was argued that the discontinuity of attachment in response to life events weakened the case for the working models of the attachment system as cognitive mediators of the association between childhood attachment and depression (this was tested and is discussed further below). The third aim of the present study was therefore to test whether childhood attachment was associated with depression through a separate cognitive mediator, other than the attachment system Using the Social Competition

Hypothesis of Depression (Price *et al.*, 1994) as a framework, the Involuntary Defeat Strategy was proposed as a cognitive mediator of the association between childhood attachment and depression (section 3 4.1). *It was hypothesised that childhood attachment was associated with depression through a cognitive mediator outside of the attachment system, and that the Involuntary Defeat Strategy fulfilled this role as a cognitive mediator (hypothesis three).* This hypothesis is tested in chapter seven A mediator analysis explored the extent to which the association between childhood attachment (measured using the continuous subscales of the new childhood attachment measure) and depression was mediated by defeat. A mediating effect is demonstrated by attenuation in the association between childhood attachment and depression when defeat is entered into the regression model. It is acknowledged that the association between childhood and adulthood attachment may indicate that the Involuntary Defeat Strategy should also mediate the association between adult attachment and depression. However, it was expected that this mechanism would be specific to childhood attachment because the Involuntary Defeat Strategy is shaped during a critical period in childhood and thereafter stable (Sloman, 2000a). It is not therefore expected that the Involuntary Defeat Strategy would mediate the association between adulthood attachment and depression. In order to test this, a further analysis was conducted to explore whether the mediating effect of the Involuntary Defeat Strategy was also true for adulthood attachment.

In order to support the mediator analysis, a further analysis was conducted to examine the temporal ordering of defeat and depression. It is assumed (Baron & Kenny, 1986) that a criterion variable, depression in this case, does not cause a mediator variable (defeat). Data were collected regarding depression and defeat at two points in time and the temporal ordering of these variables was examined using Linear Structural Relations Analysis. To support the mediator analysis, *it was hypothesised that defeat would not be predicted by depression (hypothesis four).*

This would be demonstrated by the pathway between depression at time one and defeat at time two being non-significant. This analysis is presented in chapter eight.

It was also of interest in the present study to explore the plausibility of the attachment pathway (pathway one) Therefore, in chapter nine, the stability of attachment styles was explored, and the extent to which attachment was affected by life events was tested. The stability of attachment style across the lifespan from childhood to adulthood was explored by cross tabulating attachment classifications between childhood and adulthood. The stability of adulthood attachment was also explored by cross tabulating adult attachment style between data collected at two points in time (with a five month lag). This analysis was exploratory. The percentage of concordance between attachment classifications over time indicated the degree of continuity for this analysis.

The effect of life events on attachment was explored to examine whether attachment styles were more likely to change after experiencing a life event. Change in attachment style across the five month study period was explored in those who experienced a life event, and compared to those who did not. An association between life events and change in attachment would be demonstrated by a high proportion of individuals who experienced a life event also experiencing a change in attachment style. A Chi-Square test was conducted to examine the significance of the association of stability in attachment with life events.

To test the effect that changes in attachment had on current depression, participants were grouped according to whether their attachment style was stable (continuously secure, continuously insecure) or changed (change to secure, change to insecure). Group differences were explored with regard to depression using a one-way ANOVA. The aim of this analysis was to explore whether stability and change in attachment

style had more bearing on depression than the security of attachment style. As discussed in chapter one, there are mixed findings regarding both continuity of attachment, and the effects of life events on attachment, therefore these analyses were exploratory.

With regard to the attachment pathway, it was argued in section 3.1.1. that the inconsistent findings could have resulted from using the Parental Bonding Instrument as a measure of childhood attachment (e g., Difilippo & Overholser, 2002; Gittleman *et al*, 1998, Lloyd & Miller, 1997). This was because the Parental Bonding Instrument was biased towards the working model of other, and was therefore incongruent with measures of adulthood attachment, which included measurement of the working model of self. The fourth aim of the present study was therefore to explore the mediating role of the adult attachment dimensions on the association between childhood attachment and depression, using the new measure of childhood attachment rather than the Parental Bonding Instrument. Findings with the newly developed measure had the potential to clarify the role of the attachment working models as mediators of the association between childhood attachment and depression. This is because the new scale incorporated measurement of the working model of self and was therefore congruent with adulthood attachment, and with attachment theory (e g , Bartholomew, 1990; 1994; Bowlby, 1969; 1973; 1980). In this respect, the new scale was intended to be an improved measure of childhood attachment compared to the Parental Bonding Instrument, which refers only to the working model of other. A mediator analysis explored the extent to which adulthood attachment dimensions (measured by the continuous Experiences in Close Relationships scale subscales, avoidance and anxiety) mediated the association between childhood attachment (measured by the continuous subscales of the childhood attachment measure) and depression. These analyses are presented in chapter nine. In order to demonstrate the mediating effect, the association between

childhood attachment and depression should be attenuated when adulthood attachment is entered into the model. Due to the inconsistent findings in previous research, this analysis was exploratory.

3.5.3 Problem Three

As presented in section 3 2, the temporal ordering of adulthood attachment and depression (Pathway 2) is unclear. The present study identified this as a third problem. The fifth aim of the present study was therefore to explore the temporal ordering of adulthood attachment and depression; that is whether attachment is a stronger predictor of depression than depression is of attachment. This was explored by gathering data at two points in time, then using Linear Structural Relationships Analyses to explore the temporal association between the continuous dimensions of adulthood attachment and depression. As previous research has not defined the temporal ordering of attachment and depression, this analysis was exploratory. If attachment predicted depression over time, the parameter between attachment at time one and depression at time two would be stronger than the parameter between depression at time one and attachment at time two. This analysis is presented in chapter eight.

In line with the above analysis, the association between prior depression and current attachment was explored using a one-way MANOVA Scores on the two continuous subscales of the adulthood attachment measure were compared between those who had experiences of prior depression, and those who had not. *It was hypothesised that those who had prior experiences of depression would be more insecure (i.e. a higher score on anxiety and a higher score on avoidance) than would those with no such experiences (hypothesis five).* To support this hypothesis, it was expected that those who did not report experiencing prior depression would have a significantly

lower score on both the avoidance and the anxiety continuous dimensions of the measure of adulthood attachment . This analysis is presented in chapter eight.

3.5.4 Problem Four

The final problem was outlined with regard to the role of adulthood attachment (Pathway 3). It was argued in section 3 3 that attachment was a cognitive mechanism responsible for moderating the effect of stressors upon depression. *It was therefore hypothesised that adult attachment moderated the associationbetween a stressor and depression (hypothesis six).* The Social Competition Hypothesis of Depression (Price *et al.*, 1994) was used as a framework in which to test this hypothesis. According to the Social Competition Hypothesis, disagreement between the perceived social rank and social comparison would be a source of stress, if social comparison reveals that one is lower in social rank than originally perceived. Therefore, it was expected that adult attachment would moderate the association between social comparison and depression. The sixth aim of the present study was to test the role of attachment as a moderator of the association between stressors and depression. As explained in section 3 4 3 it was expected that the effect of attachment, in this instance, was proximal to the stressor and therefore that the moderating role would be specific to adulthood attachment and that childhood attachment would not fulfil this role.

For this analysis, the four attachment styles of adulthood attachment were used to represent attachment. This method of conceptualising attachment was selected to allow the association between social comparison and depression to be explored within each attachment style. A moderator analysis was conducted. To test the hypothesis, it was expected that the interaction between attachment style and social comparison would predict a significant proportion of the variance in depression. In

addition, it was expected that the association between social comparison and depression would be different for secure and insecure attachment styles. Specifically, it was expected that the association between social comparison and depression would be non-significant in individuals with a secure attachment style. This is because secure attachment buffers an individual against experiencing depression in times of stress, through the provision of self worth gathered from the positive actions of others (working model of other) and positive self-esteem (working model of self). In comparison, it was expected that a positive association between social comparison and depression would be observed for individuals with an insecure attachment style. This is because an insecure attachment style provoked depression in response to a stressor by exacerbating the presentation of symptoms (hyperactivating strategy) or through a defensive denial of the stressor (deactivating strategy). With regard to the three types of insecure attachment (preoccupied, fearful, and dismissing) the analyses were exploratory as it is unknown how these three styles are individually implicated in the aetiology of depression, or the reaction to a stressor. Therefore, the present study sought also to contribute a greater understanding of the different roles of the three insecure attachment styles in the vulnerability towards depression by representing all four attachment styles in the moderator analysis. This analysis is reported in chapter seven.

Chapter 4

Methodological Issues

Four methodological issues for the present study will be discussed in this chapter. These are issues surrounding the measurement of each of depression, and adult attachment, sampling issues, and using the internet for data collection

4.1 Issues Associated with the Measurement of Depression

4.1.1 Current Depression

The measurement of depression, for research, may be undertaken using structured clinical interviews, or using self report scales. It has been suggested that the structured clinical interview is superior as it allows a researcher to probe their participant's responses, and to determine the origin of the episode of depression (Tennen, Eberhardt, &Affleck, 1999) However, interview measures were not a practical choice in the present study. Testing the hypotheses for the present study required a large number of participants (e g., to conduct LISREL analyses) Additionally, it was proposed that the data be collected over two periods. The combination of these requirements alone meant that interviewing each participant according to a diagnostic, or symptom orientated interview schedule would have been outside of the scope of the present study, with respect to the time allowed. Furthermore, reliable interview based measures of depression such as the Schedule for Affective Disorders and Schizophrenia (Endicott & Spitzer,1978), or the Structured Clinical Interview for DSM-III-R (First *et al.,* 1995), require clinical training, which again was outside the scope of the current study. The Diagnostic Interview Schedule (Robins, Helzer, Croughan, and Ratcliff, 1981) can be used by lay persons due to its highly structured nature. However, Coyne (1994) was critical of this highly structured interview on the basis that it is akin to an orally guided self-report inventory. One disadvantage of interview based measures of depression is that they tend to focus upon a diagnosis (e g , The Diagnostic Interview Schedule; Robins *et al.*, 1981) The focus, for the present study is on the measurement of severity of depression, upon a continuous scale. Therefore, a measure which gives rise to continuous scoring in this manner is preferable to one that dichotomises, or otherwise classifies participants in terms of a diagnosis of depression. One interview which may give rise to continuous scores in terms of severity is the Hamilton Rating

Scale for Depression (Hamilton, 1960), which it is claimed, measures severity However, Santor and Coyne (2001) argued that a number of the items on this interview did not serve as indictors of severity, and therefore the measure should be revised. A self report measure of depression was used for the present study

Self report measures readily access the participants' perspective (Derogatis, 1983). Such measures are used in research as they provide a numerical marker to indicate the severity of depression; these markers can be arranged on a continuum, which is useful in correlational studies. In addition, self-report scales are brief to administer, and can be compared to prior research with regard to reliability and validity

There are two issues associated with the use of self report measures. Firstly, Coyne (1994) argued that a flaw with self report measurement of depression was that participants could be designated as depressed, or scoring highly on depression without endorsing key items pertaining to sad mood, or anhedonia. However, it was found by Weary, Edwards, and Jacobson (1995) that participants who were categorised as depressed, according to a self report scale, seldom failed to check sad mood, or loss of interest. In support of the use of self report measurement of depression, Tennen *et al* (1999) stated that "the thoughtful use of self-report depression instruments can provide unique information regarding the prevalence, correlates and social and health consequences of depressive symptoms" (pp 138)

Secondly, Coyne (1994) argued that self report scales which claim to measure depression, are more likely to measure distress. Coyne (1994) highlighted that 'diagnosable depression . is conceptually distinct from what is measured by self report questionnaires' (pp 29). In formulating this argument however, Coyne conflated the issue of whether to use self-report or interview measures of depression together with two other issues related to depression research methodologies, these

are the continuum model of depression and the use of undergraduates or college students as participants (Tennen *et al* , 1999). Coyne argued that use of self-report measures of distress within a student sample was not relevant to theoretical models of clinically significant episodes of depression. The use of undergraduates in depression research is discussed alongside the justification for the sample in the present study. The argument that self report measures only assess general distress reflects only that self report measures are not designed to diagnose individuals with depression, rather they are designed to indicate the severity of an individuals' experiences of depression along a continuum. Drawing on the continuum hypothesis of depression (outlined in chapter one), these experiences may be regarded as distress, an alternative however, is to regard them as experiences of low, or mild depressed mood. In support of the continuum hypothesis, it has been found that depressive symptoms demonstrate continuity (Flett *et al.*, 1997; Kessler *et al.*, 1997; Solomon *et al.*, 2001) and that research on low mood can be extrapolated onto explaining clinical episodes of depression. For example, Judd, Akiskal, & Paulus, (1997) demonstrated that studying subsyndromal depression was worthy of study in its own right as it predicted lifetime service use for mental health and welfare, and suicidal ideation, and suicide attempts across an individual's lifetime (Judd, 2000). The continuum model of depression is a contentious issue, however, for the purposes of the present study, continuity of the severity of depression between community and clinical populations will be assumed.

In order to select an appropriate measure for the present study, several criteria were proposed.

- The measure should elicit continuous scores from participants in line with the continuum hypothesis of depression
- The measure should be self report and self administered

- The target population for the measure should be adults
- The measure should be appropriate for use with a clinical, and with a community population, in line with the continuum hypothesis.
- The measure should incorporate symptoms of depression as defined by the DSM-IV (APA, 1994)
- The measure should be homogenous, and not comprise of a series of subscales
- The measure should be reasonably short and easy for participants to complete

Several measures were considered for inclusion in the present study, these were; the Major Depression Inventory (WHO, 2003), the Beck Depression Inventory (BDI, Beck, Ward, Mendelsohn, Mock & Erbaugh, 1961), The Centre for Epidemiological Studies Measure for Depression (CES-D; Radloff, 1977); the Zung Self-Rating Depression Scale (Zung, 1965), and the Symptom Checklist-90 Depression Subscale (Derogatis, Lipman, & Covi, 1973).

The Symptom Checklist-90 Depression subscale met all the criteria for the present study. The Symptom Checklist-90 was "designed primarily to reflect the psychological symptom patterns of psychiatric and medical patients" (Derogatis, 1983, pp 2). The Symptom Checklist-90 takes approximately 15 minutes to complete and is designed to be used in both clinical and non-clinical populations. The Symptom Checklist-90 includes scales to assess nine primary symptom dimensions these are; depression, somatisation, obsessive compulsive, interpersonal sensitivity, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The depression subscale was used in the present study.

The depression subscale comprises of thirteen items, making it relatively short, when compared to the BDI, the CES-D and the Zung Self-Rating Depression Scale. Each item represents a symptom and is rated, by the patient according to the prevalence of that symptom over the past seven days. Items cover defining features of depression, as identified by the DSM-IV, this includes depressed mood, loss of interest or pleasure (anhedonia), somatic symptoms, such as sexual interest, restlessness; and fatigue; and psychological symptoms, such as feelings of worthlessness, guilt, thoughts of death and suicide, hopelessness, and worrying. A five point scale is used, from zero to four (0-4); zero being not at all, through to four being extremely. Unlike the CES-D, the Symptom Checklist-90 depression scale is homogenous; participants' responses to each item may be added and therefore scored continuously. This measure has been used and validated as a self report scale in both clinical (e.g., Aben, Verhey, Lousberg, Lodder, & Honig, 2002; Morgan, Wiederman, & Magnus, 1998; Steer, Ball, Ranieri, and Beck, 1997) and community samples (e g., Allan & Gilbert, 1995).

In support of the reliability and validity of the Symptom Checklist-90 Depression subscale Weissman, Slobetz, Prusoff, Meznitz, and Howard (1976) demonstrated the that it was sensitive to the presence and alteration of depressive disorders. In a further study, Weissman *et al.* (1977) demonstrated differential severity of depressive symptoms in primary and secondary depression using the Symptom Checklist-90 Depression subscale. Weissman *et al.* (1977) found correlations with the CES-D and Hamilton's (1960) depression rating scale in a general population. A study of individuals with alcohol misuse, Weissman, Prusoff, Thompson, Harding, and Meyers (1978) found the Symptom Checklist-90 Depression subscale to correlate with the Hamilton (1960) depression rating scale and the CES-D (Radloff, 1977). Test-retest reliability has been found over a one-week period (Derogatis *et al,* 1973).

Although the BDI (Beck *et al.,* 1961) is a widely used measure of depression, it is more complicated to complete than the regular Likert Scale employed in the Symptom Checklist-90 depression subscale. In an evaluative study of the cognitive complexity of self-administered depression measures, Shumway, Sentell, Unick, and Bamberg (2004) rated the BDI as among the four most complex measures. To respond to the BDI, participants are required to read, in all, 84 statements in order to make their selection of the one that matches their experience from each set of four. Often participants find this choice difficult, and time consuming. It has been shown that individuals with depression have difficulty with cognitive tasks which engage working memory and decision-making (Airaksinen *et al.*, 2004; Den Hartog *et al.*, 2003). The cognitive task of choosing between four statements could therefore make the BDI comparatively more difficult for an individual with symptoms of depression to complete, than it would be for an individual with no such symptoms. Recently, Steer *et al.* (1997) found that the Symptom Checklist-90 Depression subscale was highly correlated with the BDI in a sample of mental health outpatients ($r= 89$; $p<.001$). This high correlation demonstrates that despite being simpler and shorter, the Symptom Checklist-90 depression subscale is congruent with the BDI in measuring the severity of depression. Evidence of the simplicity of the Symptom Checklist-90 Depression subscale is found as patients who had recently had a stroke found it easier to complete than the BDI, as indicated by the higher number of participants who managed to complete it (Aben *et al.*, 2002). The Symptom Checklist-90 Depression subscale depression subscale is also preferable as it has been validated as a self administered scale, whereas the BDI and the Major Depression Inventory (WHO, 2003) are formatted for an interviewer lead completion. The Symptom Checklist-90 Depression subscale subscale therefore met all of the criteria for inclusion in the present study.

4.1.2 Prior Depression

There is evidence to suggest that prior experiences of depression can adversely affect current mood (e g , Coyne *et al.*, 1999, Haaga *et al.*, 2002; Maciejewski *et al.*, 2000), and may alter attachment style or security (Bifulco, Moran, Ball, & Lillie, 2002; Carnelley *et al.*, 1994). The observed effects may be due to prior depression, rather than current depressed mood. The present study sought to explore the association between prior depression and the primary variables.

A number of studies have sought to take account of prior episodes of depression. However the measures used to ascertain prior depression are varied. Ezquiaga *et al.* (1987) combined the use of the "Life Events and Difficulties Schedule" (LEDS, Brown & Harris 1978) and medical case notes to ascertain the number of prior episodes of depression participants had experienced. This method requires training on the LEDS, and access to participants' medical records making it one of the least employable methods for the present research given the available resources. Kendler *et al.* (2001) used an interview measure of history of depression, the SCID (First *et al.*, 1995). This measure is focussed upon the Diagnostic and Statistical Manual (APA, 1994) criteria for depression and requires training before it can be administered. Sakado *et al* (1999) employed the 'Inventory to Diagnose Depression – Lifetime Version' (Zimmerman and Coryell, 1987). This takes the form of a self-report measure containing 22 items which enquire about symptoms experienced by the participant when they felt sad or depressed and the length of time for which these symptoms were experienced. However, this measure was too lengthy for use in the present study.

Reporting experiences of prior depression may be confounded by number and recency of prior episodes, (Coyne *et al.*, 2001; Kendler, Neale, Kessler, & Heath,

1993, Kendler, Thornton, & Prescott, 2001). Therefore, information regarding history of depression, the number of episodes, the recency of symptom presentation, the duration of the longest episode, and the severity of the worst episode was needed. A short inventory of prior depressive experiences was therefore designed for use in the current research; this can be found in appendix B. A scale was devised on which participants could mark the severity of their worst prior episode. It has been found that the most accurate report of prior depression is found when participants are asked about experiences of treatment (Coyne, *et al.*, 2001). Therefore, the majority of the points on the scale referred to increasingly involved levels of treatment (e g., visiting the GP, through to long-term hospitalisation). The findings from this inventory are reported in chapter five.

4.2 Issues Associated with the Measurement of Adult Attachment

There are a "bewildering" (Brennan *et al.*, 1998) number of attachment measures available. These measures may differ along three lines. These are; the the outcome of the measure (as discussed in section 1.8.1), whether it categorises individuals into attachment styles, gives a score on a dimension (e g , models of self and other), or denotes the degree of security. With respect to the outcome of the measure, it was earlier concluded (section 1.8.1) that the present study would employ both dimensional and categorical measurement of attachment.

4.2.1 The Target

Secondly, measures may differ according to the target, whether the measure is asking the participants to respond regarding their family, their romantic partner, their childhood, or peers for example. The extension of attachment theory to adult attachment, and the measurement of adult attachment began in the 1980s. Three

approaches developed towards the measurement of attachment in adults. A discussion-based assessment of attachment in adults was developed by George *et al.* (1984/ 1985/1996) The Adult Attachment Interview (AAI) captures an individual's general state of mind in terms of their attachment, rather than in association with a specific relationship The interview is based around the individual's perception of their parents, how individuals talk about their attachment experiences, and how early experiences have impinged on adult relationships and on their parenting. In a separate move, research was conducted on the measurement of the attachment between adolescents and their parents (e g., the Inventory of parent and peer attachment; Armsden & Greenburg, 1987). A third research effort, which is of central interest to the present study, developed to examine the nature of attachment in romantic relationships (Hazan & Shaver, 1987). The present study sought to measure romantic attachment in adulthood, as this is the most commonly found, and primary form of attachment in adulthood (Hazan *et al.*, 1991). A discussion of measurement of childhood attachment to one's parents follows in chapter six.

4.2.2 Self Report versus Interview Measurement of Adult Attachment

Finally, measures may differ according to the method of administration, typically interview or self report are used in adults, observation is common in infants. Originally, the measurement of attachment was conducted using observational methods and interviews (e g., Ainsworth, 1963; 1967; *et al.*, 1978, Robertson, & Bowlby, 1952). It was not until Hazan and Shaver (1987) adapted Ainsworth's three categories of childhood attachment for use in adult romantic attachment that a self report measure of attachment was developed; The Relationships Questionnaire A number of interview measures of adult attachment have also emerged (e g., The Current Relationship Interview, Crowell & Owens, 1996). It has been argued that

interview methodologies are superior in their capacities to reveal new insights and research ideas Relying on self report measures does not allow access to what participants have to say about their relationships, which may contradict theory, or provide a new direction for research. However, it is also accepted that interview measures can be "impractical for most researchers" (Brennan *et al* , 1998, pp 47), costly and inconvenient to implement in research. Bifulco, Moran, Ball, and Bernazzani (2002) found that the prevalence of individuals with secure attachment, as achieved with an interview based measure was the same as was achieved using self report scales in a similar sample. Therefore, a self-report measure of romantic attachment was sought for the present study.

Self report measures of attachment have been criticised on the basis that certain aspects of the attachment system are not available to conscious processing, but are automatic, and unconscious. It has been argued, that in this sense, an interview measure is more appropriate to categorise, and measure attachment style (e.g., Crowell & Treboux, 1995). However, interview measures of attachment rely upon the subjective judgement of the researcher who is coding the interview (e g., the AAI). This argument assumes that an unconscious process can be assessed by a third party, without being available to the individual expressing it. As conscious and unconscious processes need to operate in the same direction to achieve a goal (Jacoby, Toth, Lindsay, & Debner, 1992), it is argued that self report measures can provide an accurate indication of attachment Furthermore, Crowell *et al.* (1999) argue in favour of self report measures They argue that an adult is "able to provide valuable information about their emotional experiences and behaviour" (pp 453) and have " sufficient experience in close relationships to recount how they behave in such relationships" (pp 453). Therefore, the notion that true attachment is only available for measurement through interview measures is disputed.

There is debate concerning whether interviews and self-report methods converge onto the same dimensions (Bartholomew & Shaver, 1998). However, when self-report instruments do not converge with interview measures confounding variables may explain the difference (Bartholomew & Shaver,1998; Crowell et al , 1999; Fraley & Shaver, 1999). These variables include method variance, the varied targets of measures (e.g , parents, peers, or romantic partner), and outcome variables (e g., the AAI attachment patterns are different to the patterns detected by the Relationships Questionnaire). Convergence between measures is greatest when the methodologies and the target are the same (Bartholomew & Shaver, 1998)

4.2.3 Measurement of Attachment in the Present Study

The recommendation of Crowell *et al.* (1999) is that researchers should adopt assessment methodologies that best suit the research question For the present study, there was an interest in exploring the stability of attachment over time. Therefore, a categorical measure was used as it could indicate whether changes between a secure and insecure attachment style had occurred. To explore moderating effect of attachment on the relationship between social comparison and depression, a measure of attachment type was needed to explore the association between social comparison and depression within each attachment type. There was also a need to explore whether the working models of adult attachment mediated the association between childhood attachment and depression. It was expected that within this model the working model of self in childhood would be mediated by the working model of self in adulthood and that the working model of other in childhood would be mediated by the working model of other in adulthood. Therefore, to test this hypothesis, dimensional measures that refer to the working models of self and other would be needed

There were a number of criteria to be met by a measure of adult attachment in this study, in order to test the proposed hypotheses.

- The measure should be self-report and self-administered.
- The target population for the measure should be adults, and the participants' referent target for the completion of the measure should be a romantic partner.
- Participants should be allocated an adult attachment style, in order to test for the moderating effect of adult attachment on the relationship between social rank and depression.
- To examine the whether the dimensions of attachment mediated the association between childhood attachment and depression, it was also required that a measure of the working models of self and other in adulthood should be sought.
- To test the temporal relationship between depression and attachment, data were collected over two stages Because of this, a measure of adulthood attachment with demonstrable reliability over a five month period was required.
- The measure should be true to Bartholomew's (1990) conceptualisation of a two dimensional model of attachment, as this is the most recently developed, most encompassing, and widely used framework in which to study adult attachment. The measure should be widely used in the depression literature, to allow comparisons to be drawn between the current research and prior research.

The four measures considered for the current research include; the Relationships Questionnaire (Hazan & Shaver, 1987), The Revised Relationships Questionnaire;

the Adult Attachment Scale (Collins & Read, 1990), and the Experiences in Close Relationships scale (Brennan *et al*, 1998).

The most recently developed measure of adult attachment has evolved from a review of the existing measures by Brennan *et al.* (1998). Inconsistency in the measurement of adult romantic attachment meant that findings could not be compared, and that the measures used were not always aligned with the theory being tested (e g., Klohnen & Bera, 1998) or were difficult to replicate (e.g., Carnelley *et al*, 1994). In answer to these criticisms, Brennan *et al.* (1998) designed and validated a new measure of adult attachment, the Experiences in Close Relationships scale. Brennan *et al.* (1998) documented and reviewed a comprehensive set of models and measures of adulthood attachment. Their aim was to identify an optimal dimensional system for measuring adulthood attachment, to allow future research to be comparable, to promote consistency in research findings, and therefore to advance understanding of adulthood attachment. A strength of the Experiences in Close Relationships scale over the Adult Attachment Scale (Collins & Read, 1990) is the robust development process.

Brennan *et al.* (1998) administered, to an undergraduate sample of 1086, over 320 questionnaire items taken from a wide source of existing adult attachment measures The Adult Attachment Scale (Collins & Read, 1990), was included in the pool of items used to develop the Experiences in Close Relationships scale, therefore the Experiences in Close Relationships scale is the preferable measure Factor analyses revealed two underlying dimensions of avoidance and anxiety, which map onto the dimensions of infant attachment used by Ainsworth and colleagues (e g , Ainsworth *et al.*, 1978), the two dimensional model of attachment proposed by Bartholomew (1990; Bartholomew & Horowitz, 1991), and the working models of attachment, originally hypothesised by Bowlby (1969, 1973; 1980) The proposed

measure was therefore congruent with previous theoretical frameworks, and the factor analysis further supported the communalities between these theoretical frameworks. Their proposed measure comprises two 18-item subscales, one to measure avoidance, and one to measure anxiety, each with an alpha coefficient of .9 or more (Brennan *et al.*, 1998; Difilippo & Overholser, 2002). Using the two subscales, participants can be allocated a continuous score according to the two dimensions of anxiety and avoidance. These two subscales can also be combined to allocate participants to a specific attachment style, according to the dimensional model hypothesised by Bartholomew (1990). The Experiences in Close Relationships scale is therefore soundly based empirically, theoretically, and psychometrically.

Importantly, the development of the Experiences in Close Relationships scale demonstrated that all measures of adult attachment, whether conceived dimensionally, in terms of working models of self and other, or typologically in terms of Ainsworth's categories, loaded onto two dimensions These two dimensions represent the model of self/anxiety and the model of other/avoidance, and the measure is concordant with Bartholomew's two-dimensional model of attachment

The resulting measure has since been used frequently, and with success in a variety of samples. For example, it has been translated and used with French-Canadians (Lafontaine & Lussier, 2003). Brennan *et al.* (1998) found that the Experiences in Close Relationships scale produced stronger results than the previous measure by Bartholomew and Horowitz (1991). More recently, the Experiences in Close Relationships scale has been revised (see Fraley *et al.*, 2000; Sibley & Liu, 2004), however, the revision is not yet widely employed and would therefore limit comparability with prior research were it used for the present study. The

Experiences in Close Relationships scale was selected for use in the present study as this measure met all seven criteria.

4.3 Justification for Sampling Method

To explore the temporal association between attachment and depression, data were collected in two stages. There was therefore a need to contact participants at two points in time to participate in both stages of the data collection. It was also desirable that participants were selected from a wide demographic base, and approximately equal males and females It was hoped that the use of a wide demographic base and equal males and females would contribute to the literature as prior research is predominated by female student samples. It was further hoped that employing a wider age range in participants would allow variability in attachment between childhood and adulthood to be properly examined. There is the possibility within student samples, that students are still attached to their parents and that a retrospective measure of childhood attachment actually represents their current relationships to their parents (McCarthy *et al.*, 2001). Finally, the present study sought to represent the continuum model of depression by employing a community sample, within which a wide variation in severity of depressive symptoms should exist.

In depression research, the use of student samples, to the exclusion of community samples, could limit the generalisations that can be made. According to the continuum model of depression, subsyndromal levels of depression can still be informative (e g., Judd *et al.*, 1997). However, there are aspects of student samples which make them unique, and may limit the generalisation of findings, even to the general community. One such example is the alcohol consumption of the student population. For example, in an adolescent sample, Lewinsohn, Rohde, and Seeley

(1996) found that 17% of the sample abused alcohol or illegal substances. In addition, life as a traditional student has varied stressors, such as financial pressures, leaving the parental home, exams, deadlines, finding accommodation, and moving house regularly. Therefore, were depression detected in a student sample it may be related to one or more stressors that are specific to the student experience, thus confounding the generalisability of findings. One advantage of using a student sample is that major depressive episodes are most likely to have onset in the late teens or early twenties, therefore a traditional student sample would be ideal if non-pathological or first onset participants were required. With regard to attachment style, Bartholomew and Horowitz (1991) did not advocate the use of first year students on the grounds that they may not have made close friends in the time they have been at 'college'. The transitions that take place whilst an individual is a student makes this an ideal time to study the formation and breakdown of attachment relationships, however, when attempting to study the stability of attachment over a five month lag, this could be a confounding variable were a student sample used. In answer to the recommendations of Coyne (1994) and of Tennent *et al.* (1999), the present study did not seek a student sample, however data regarding student status was collected in order to explore whether students differed from a community sample regarding their self reported depression

Although Tennent *et al.* (1999) advocated the use of non-student samples in depression research, they did not offer alternative suggestions regarding the attributes that would constitute an ideal sample. Possible alternatives include a community sample, and a clinical sample. A clinical sample would not meet the aims of the present study. Mental health service users often move between treatment centres and wards, and can be difficult to contact at follow up. This would impose a constraint on examining the relationship between depression and attachment over time. Furthermore, in the time given, a clinical sample would not yield a sample large

enough to allow for the planned statistical analyses. One further problem with a clinical sample is that by their nature, they are often in residential care (e.g., mental health wards). As such they may be living separately to their attachment figure (e g , a romantic partner or parent), which may confound measurement of attachment style.

Drawing on the continuum model of depression, it is argued that the use of a community sample would be informative for the present study. Mild depressive mood in a community sample is hypothesised to represent the lower end of a severity continuum. Importantly, the continuity hypothesis specifies that those with clinically significant depression will have quantitatively different experiences, but not qualitatively different. That is, they experience the same symptoms, but at an increased level of severity. Internet mediated research methods were selected for the recruitment of participants and for the collection of data. The procedure is outlined further in chapter five. It has been argued that an internet sample offers a number of advantages over a purely student sample. This argument is outlined below alongside other issues associated with Internet Mediated Research.

4.4 Internet Mediated Research

Data, for the present study, were collected using internet mediated methods. As these methods have recently developed in psychology, and are not commonly used in attachment research, a justification will now be presented. In the mid-nineties, the invention of "forms" for use on the world wide web permitted interaction between the server and the user of web pages (Birnbaum, 2004; Musch & Reips, 2000). Since then, types of internet research have expanded to include internet based experiments (e.g., Reips, 2001), surveys, questionnaires, and even interviewing and observational studies (e.g , Kendall, 1999). The present study was based on self-report measures of psychological constructs. Therefore, an online form or a

"cybersurvey" (Mathy, Shillace, Coleman, & Berquist, 2002) was chosen as the method for data collection.

A web page form has the advantage that it can be formatted to match the paper copy of the self-report questionnaire. It is recommended that internet based research should be conducted using the most basic and widely available technology so that the number of participants able to access the research is maximised (Reips, 2002). The use of forms satisfies this recommendation. A web form makes use of radio buttons, drop down lists and typed information. The appropriate response format can be selected for each item in a questionnaire For example, when asked to respond on a five-point Likert scale, radio buttons labelled one to seven can be presented, as shown in figure 4.1. The participant indicates their response by clicking on the appropriate radio button. This can be designed so that only one response can be selected. A drop down list may be given where participants are asked to indicate their response from a longer list, as shown in figure 4.2. For example, when participants were asked their day of birth, a drop down list of numbers from one to thirty-one was presented. Participants were required to type information where a list could not easily be compiled, or where the response was individual. These responses were used for the mother's maiden name and degree subject For an example, see figure 4.3. Other elements of the design of the web pages are detailed in chapter five See appendix B for the full version of the questionnaire.

Figure 4.1. Example of a Likert Scale Item Using Radio Buttons

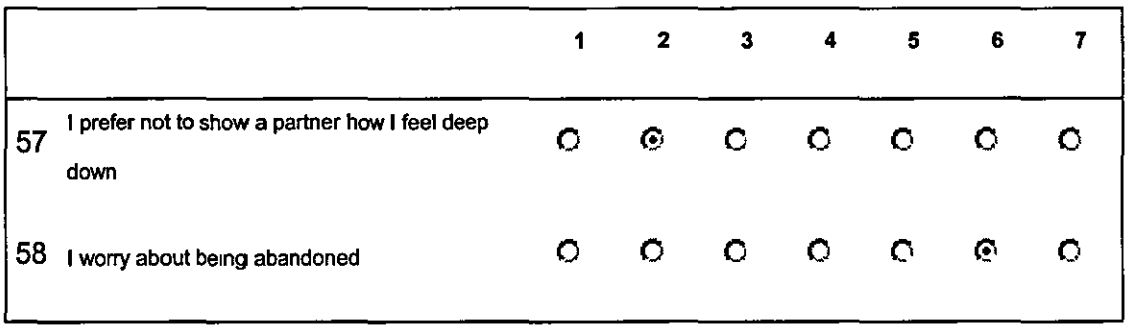


Figure 4.2. Example of a Drop Down List

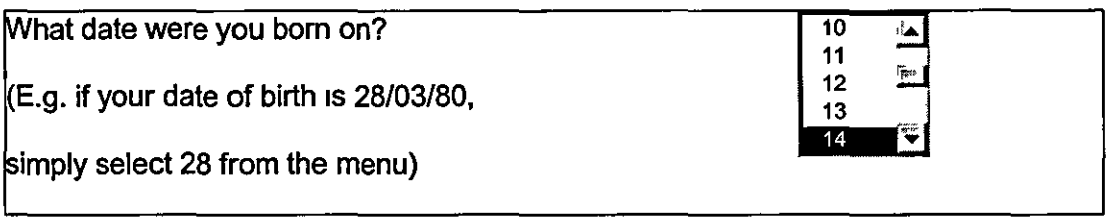
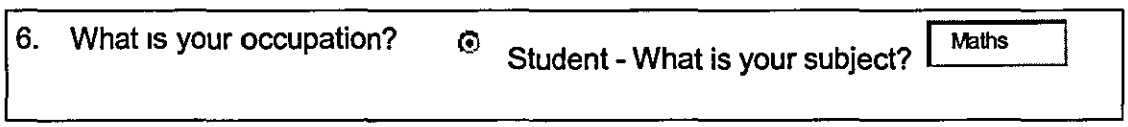


Figure 4.3. Example of Typed Information in a Text Box



4.4.1 Advantages of Internet Mediated Research

One advantage of gathering data for the present study using internet mediated research method is that internet use has been associated with depression. Online participants tend to report higher levels of negative affect than those taking part in a paper and pencil questionnaire (Davis, 1999). It has also been found that elevated levels of depression are related to pathological internet use (i.e., Internet Addiction; Young & Rogers, 1998). Using this methodology should therefore provide more variance in experiences of depression than a student, or community sample. The present study recruited a subsample of participants to use the paper and pencil

methods. These were used as a comparison group to test for group differences on the main variables of interest (this is presented in chapter five).

One advantage for the internet researcher is that the responses can be gathered quickly once the data collection web page is running, because many participants can complete the questionnaire at any one time. This is one advantage over a traditional paper and pencil questionnaire, which may have been restricted by lab space. However, the initial training, administration, design, and set up involved in internet based questionnaires is more time consuming than a traditional paper and pencil questionnaire. An advantage to the present study is that internet mediated research methodology facilitates the collection of data over two time periods. By placing the questionnaire online, participants can be emailed the link as and when needed. This eliminates the need to post and store paper versions of questionnaires.

The experimenter effects and demand characteristics associated with internet mediated research are minimal as the participant may never come into face to face contact with the researcher. An advantage for the participants is total anonymity. It has been found that the increased anonymity reduces social anxiety and social desirability (Joinson, 1999). In traditional research, a potential participant may be initially approached and interviewed face to face, and thus feel pressured to take part in research. There are fewer constraints of this nature on the decision to participate in internet-mediated research (Nosek, Banaji, & Greenwald, 2002) as it is "highly voluntary" (Reips, 2002, pp 245). In addition, it is more convenient for the participant to take part at a time, and location, suitable to them, rather than asking them to attend a lab session. The effects of an unfamiliar environment can be discounted as participants complete the questionnaires in their own home, or work, which adds greater ecological validity (Reips, 2002). Because of these factors, it has been argued that participants are more candid in internet research, and that this leads to a

more authentic response which can be more easily generalised (Reips, 2002). Evidence of increased candour in internet-based research is shown as participants disclose more information about themselves and tend to complete questionnaires in a less socially desirable manner (Davis, 1999; Joinson & Buchanan, 2001; Wallace, 1999). In contrast to this finding, it has also been suggested that individuals are more likely to behave out of the ordinary when online, to take on a different identity. However, were this the case, data derived from internet research would be markedly, and continuously different to that gathered through paper and pencil methods. Research tends to support consistency between internet and paper and pencil findings (Krantz & Dalal, 2000).

4.4.2 Issues Associated with IMR

The issues associated with internet based research include technical constraints, validity of measures, sampling (accessibility and generalisability), and sample biases. Special ethical issues are discussed in chapter five, within the general ethical considerations.

4.4.2.1 Technical Constraints

The reliance on technology for the collection of data introduces a number of confounding variables. These include the end users computer specifications such as their screen resolution, the web browser through which they access the internet (e.g , Internet Explorer, or Netscape), their personal settings (e.g., text size), and their internet connection speed (Fox, Murray, & Warm, 2003; Reips, 2002). All of which may effect the appearance of the webpage, and the speed at which they can complete the questionnaire. Several measures were taken to decrease the variability with which the questionnaire would be presented to participants. The web pages for

the current study were tested to satisfaction on a number of different computers, before the data collection commenced. The questionnaires were formatted using tables to prevent the content from being distorted at download. It has been found that a high download time increases dropout in a study (Schwarz & Reips, 2001). Therefore, to minimise the download time, the use of features such as counters (to count the number of participants) and timers (to time how long it takes participants to complete the questionnaire) were avoided. In addition, the questionnaire was designed as one long questionnaire, rather than several pages which would require several separate downloads, as recommended by Fox *et al.* (2003).

4.4.2.2 Validity of Measures

In contrast to Krantz and Dalal (2000), Buchanan (2000) argued that data collected via the internet can vary to that collected by paper and pencil, and that the assumption cannot be made that internet questionnaires are the equivalent of paper and pencil measures especially in terms of reliability and difficulty (Buchanan & Smith, 1999). Buchanan and Smith (1999) found a greater variability in the data from internet-based questionnaires when compared to that found in paper and pencil scales. As such, Buchanan (2000; Buchanan & Smith, 1999) recommended that measures be systematically validated for use in an online population. Already a number of studies have demonstrated the validity of personality tests in an online sample, and a close match between the results of the paper and pencil, and the online formats of the test (Woolhouse & Myers, 1999). Stanton (1998) conducted a comparison of data collected via the internet, and that collected via paper and pencil methods. There were fewer missing values in the internet derived data and the resulting data yielded similar structures in terms of variability, emerging factors, and correlations between scales. This research therefore disputed Buchanan's (2000)

suggestion that the variability of data would disagree between different methodologies.

The lack of face-to-face contact may provide more opportunities for the participant to be deceptive (Nosek *et al.*, 2002, Mathy, Kerr, & Haydin, 2003). The main two problems are multiple responses and untruthful, or random responses. However, as Mathy *et al.* (2003) note, untruthful responses are not a problem specific to internet mediated research. For the present study, accidental multiple responses were eliminated by checking the identifying information provided by participants (day of birth, and mother's maiden name), participants were also asked to participate only once at each time. In addition, it is recommended (Houston *et al.*, 2001) that checks are made for data quality in order to check for random responses. For example, one check made in the present study was to analyse whether a known sex difference was found in the data, this is explored in section 5.7.1.

4.4.2.3 Sampling

Once the webpage is uploaded and data collection can commence, the website needs to be advertised in order to recruit participants There are three types of accessibility to online data collection tools; these are open, specific and invited (Nosek *et al.*, 2002). Invited accessibility is used when specific qualities are needed in participants, so, for example, they may be pre-screened to assess their suitability. Specific accessibility refers to contacting a target population and inviting them to take part. The present study used open accessibility; this means that the questionnaire was open for anyone to participate. This carries the advantage of accessing the greatest number and widest range of participants. Although, the disadvantage of this method is that the sample becomes non random and heterogeneous For recruitment, Nosek *et al.* (2002) suggest the use of an electronic snowball sample.

Birnbaum (2004) made the point that recruitment strategies cannot be completely controlled by the researcher as a link to the research could be placed anywhere on the internet, by anyone, thereby influencing the traffic that the research website will receive.

In a large online study, Mathy and Cooper (2003) found that only 18 6% of their convenience sample (total n = 28685) were female. An advantage of collecting data over the internet is that it balances the number of male and female participants as there is a female bias in traditional research and a male bias in data collected over the internet (Hewson, Yule, Laurent, & Vogel, 2003; Morahan-Martin,1998).

4.4.2.4 Generalisability

Participants in internet-based studies are mostly self-selected This can interfere with the generalisability of the findings, as it has been demonstrated that individuals who volunteer to participate in research may differ in certain characteristics to those who do not volunteer (Birnbaum, 2004). When the online sample is compared to an undergraduate sample, which is often employed in psychological research, key differences may be observed in the motivation of the participant, in the age and in the educational level (Birnbaum, 2004). In a similar way, Reips (2002) argued that web data are better than student data because internet users usually participate out of interest, whereas student samples may participate as part of a scheme for course credit. It has been argued that the findings of internet research provide better generalisability to the population than do paper and pencil research findings, as a non-local sample is employed with a wider distribution of demographic characteristics (Reips, 2002). Mainly, students are homogenous, at least with regard to approximate age and level of formal education, this limits the generalisation of findings. Once a questionnaire is uploaded anyone in the world can participate in the research. The

employment of a wide sample is an advantage over sampling a homogenous student sample. Employing a wide sample allows the relationships between psychological variables and demographics to be fully explored, as sex and status are more evenly distributed and reported age is more continuous. Of specific interest to the current study, Birnbaum (2004) highlighted that the use of a wide sample had particular applications in Evolutionary Psychology where evolved behaviours and strategies are expected to be uniformly present across different cultures and nationalities.

4.4.2.5 Bias in Computer Literacy

One disadvantage of internet-mediated research is that it depends upon the computer literacy of the participant. Furthermore, it has been suggested that computer anxiety may affect participant's responses (Peters, Clark, & Carroll, 1998; Tseng, Tiplady, Macleod, & Wright, 1998). Participants also need access to a computer. As such, there are individuals who would be hampered in their attempts to complete the internet-based questionnaire. It has been suggested that research conducted in the virtual environment is limited in its sampling due to being subject to biases towards a younger, more affluent sample (Houston *et al.*, 2001; Mathy *et al.*, 2003). This may be problematic, as the sample may not be representative of the general population. The demographic and psychological characteristics that define an internet user have been of increasing interest over the past decade

By its nature, internet mediated research only samples internet users. According to the Office for National Statistics, 52% of households in the UK had access to the internet at the end of 2004 (ONS, 2005). Internet were more likely to be male (ONS, 2005) The highest usage is in the 16-25 age group, and the lowest is in those of 65 years and above (ONS, 2004). Similar studies in the USA show that nearly 60% of the US population can access the internet from home (Center for Communication

Policy, 2003). In terms of demographic differences in depression research, it has been found that internet participants were more likely to be younger and male than were paper and pencil participants (Andersson, Kaldo-Sandstrom, Strom, & Stromgren, 2003).

4.4.2.6 Bias in Social Skills and Mental Health

A number of psychological variables have been related to internet users, which have been suggested to bias the findings of internet mediated research. For example, it has been suggested that participants at computers will likely be subject to self-actualisation in their communications (Bargh, McKenna, & Fitzsimons, 2002; Joinson, 2001). Frequency of internet use (measured by hours online per week) has been related to past use of psychiatric medication, past use of psychotherapy, suicidal ideation in the past, and suicide attempts (Mathy & Cooper, 2003). However, these findings may be related to an increased level of candour, as described above.

4.4.2.7 The Online Measurement of Sensitive Data

A practical and ethical issue specific to the present study is whether sensitive data pertaining to depression can be successfully collected via the internet. A number of studies have collected data about depression over the internet; in addition, screening for depression has also taken place over the internet. Andersson *et al.*, (2003) administered the Hospital Anxiety and Depression Scale (HADS) online to a sample of tinnitus patients. Over an eight to ten week lag, they found a test-retest correlation of .71 ($n=48$; $p< 001$) for depression. They concluded that the internet administration of the HADS had provided meaningful and valid data. However, no comment was made with regard to whether the participants were comfortable with providing such data online. Lipsitz, Fyer, Paterniti and Klein (2001) studied emetophobia using an internet based questionnaire. This is one example of the collection of sensitive data

over the internet. The questionnaire asked participants about depression amongst other psychological experiences such as compulsions, childhood separation, anxiety disorder, panic disorder, agoraphobia, distressing experiences of vomiting, and personal and family history of mental ill health. Forty-six percent of participants reported having depression in this study. Fox *et al.* (2003) conducted an internet-mediated study on self-harm. In order to counter any aversive effects that completing the questionnaire may have had, Fox *et al.* (2003) ensured that participants were well informed before they accessed the questionnaire, that opportunity was given for any queries to be answered, and that participants had the option of dropping out of the research, or missing items when they wanted to.

Individuals may also complete a measure of depression online as part of a screening campaign (e g , Houston *et al.*, 2001). Houston *et al.* (2001) sought to determine whether an internet based depression screening test would be useful in detecting individuals with depression in the general population. Similarly, Ogles, France, Lunnen, Bell, and Goldfarb (1998) adapted the CES-D as a computerised screening test. Participants reported that they preferred the computerised screening tool, and found it less threatening than the equivalent paper and pencil tool. These studies indicate that depression has been measured with success in an online environment, and that participants are comfortable with using the internet to provide such data.

Chapter 5

Method

5. 1 Design

The research was non-experimental. Variables measured were depression, attachment (adult attachment and childhood attachment), defeat, social comparison, and prior depression The Parental Bonding Instrument was used in order to aid validation of the 'childhood attachment' measure. Data were collected from participants on two occasions, with an interval of approximately five months between each completion, this allowed an exploration of the direction of the relationship between attachment and depression. The data collection took place over two phases; the data were collected in the periods November/December 2003 and May/June 2004.

5.2 Participants

There were 259 participants in stage one. Of the paper questionnaires, two were spoilt, of the internet questionnaires, ten were spoilt; 247 participants remained (mean age = 23.78; *SD* = 7 37). Of those participants 202 were female (mean age = 23 98, *SD* = 7.77) and 45 were male (mean age = 23.0; *SD* = 5 24), none failing to report their sex. Other demographic information asked of participants included age, relationship status, nationality, and student status In addition, participants were asked about any prior episodes of depression they had experienced. Details of these demographics are given in section 5.6.

5.3 Measures

Participants were issued with a pack of questionnaires (appendix B), or accessed a webpage containing all questionnaires (appendix C). The questionnaires were presented in the same order as described below. The time taken to complete the set of questionnaires was approximately 20 minutes.

5.3.1 Demographic Sheet

In the first section of the questionnaire, participants were asked their sex, age, status (single, going out, co-habiting), and nationality. Data were also collected regarding the student status of participants. If they were a current full time student, participants were asked to note the subject they were reading. Participants were asked about their prior experiences of depression, how many episodes they had experienced, the severity of their worst case, the length of the episode in time, and the duration since their most recent episode Participants were asked for their mother's maiden name, and were asked to note the day of the month on which they were born These data was then used to match responses from times one and two.

5.3.2 The Childhood Attachment Measure

This measure was designed for use in the present study. The design, and analyses relating the reliability, validity, and factor structure of this measure are detailed in chapter six.

5.3.3 The Parental Bonding Instrument

The Parental Bonding Instrument is a 25-item self-report scale developed by Parker *et al* (1979) to assess adult recollections of parental behaviours, for example 'my mother/father could make me feel better when I was upset' and 'my mother/father seemed emotionally cold to me'. Participants respond on a four-point Likert scale, the anchors are 'very like'; 'moderately like'; moderately unlike', and 'very unlike'. Thirteen of the items were reverse scored. The two factors, care (12 items), and overprotection (13 items), are inversely correlated. Parker *et al.* (1979) found the

overprotection subscale more difficult to conceptualise and not so "readily definable" (pp 2). The Parental Bonding Instrument was administered once for each parent.

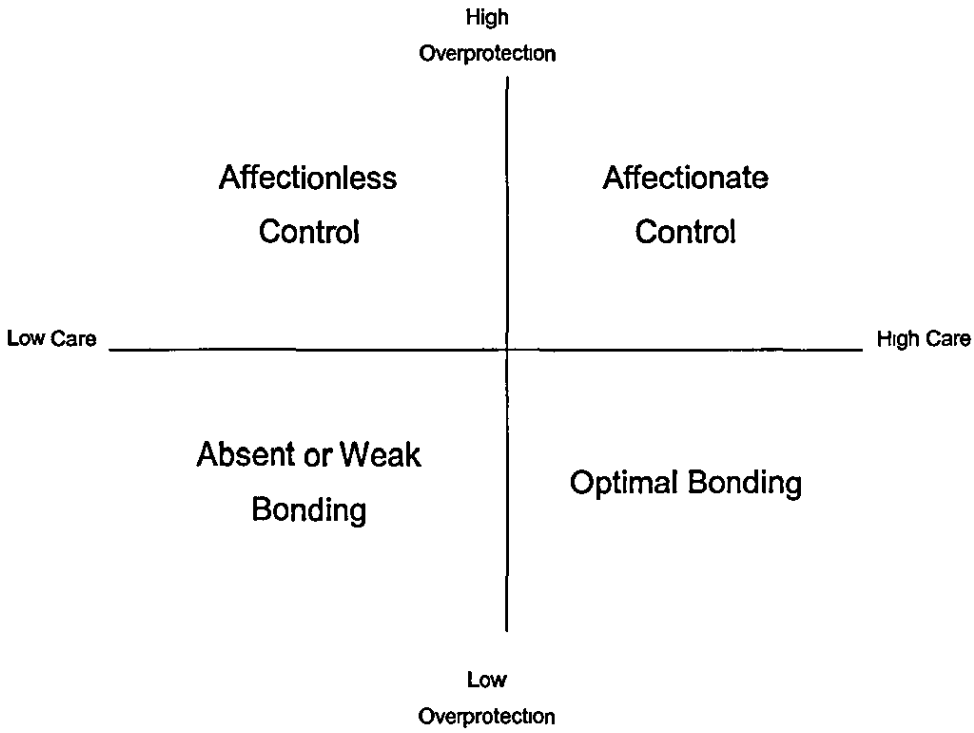
Listwise correlations between the four subscales were explored. The maternal scores for each of the overprotection and care subscales were highly correlated with the concordant paternal scores (overprotection $r = .59$, $n = 218$, $p < .001$; Care $r = .591$, $n = 218$, $p < 001$). Therefore, maternal and paternal data were merged. Consequently, there were two subscales for the Parental Bonding Instrument. These were parental care and parental overprotection. A summative score was used. The possible range of scores on the care subscale is 24-96. A high score on the care subscale indicates a perception of the parent as more caring, and therefore a more favourable childhood experience. The possible range of scores on the overprotection subscale is 26-104. A high score on the overprotection subscale indicates a perception of the parent as more controlling and therefore a more adverse childhood experience.

At time one, the Cronbach alpha was .88 for the overprotection subscale (26 items), and .94 for the care subscale (24 items). At time two, the Cronbach alpha was .92 for the overprotection subscale (26 items), and .96 for the care subscale (24 items). The correlations between times one and two were .81 ($n = 61$, $p < .001$) for the overprotection subscale and .88 ($n = 61$, $p < .001$) for the care subscale. The differences in participant numbers represent missing data where the participant grew up with a single parent.

Scores on the two Parental Bonding Instrument subscales can be combined to describe four bonding styles as follows (Parker *et al.*, 1979). A high score on the overprotection subscale combined with a low care score is classified as "Affectionless control", high overprotection combined with a high care score is

classified as "Affectionate control". Low overprotection, and low care is classified as "Absent or Weak Bonding" and a low score on overprotection, coupled with a high care score is classified as "Optimal Bonding". They can be represented in two-dimensional space, as shown in figure 5.1.

Figure 5.1. Bonding Styles Derived from Parental Bonding Instrument Subscales



The Parental Bonding Instrument was employed as a comparative measure with which to test the reliability and validity of the Childhood Attachment Measure and to enable findings to be compared to previous research that has used this measure.

5.3.4 The Experiences in Close Relationships Scale (Brennan, Clark, & Shaver, 1998)

The Experiences in Close Relationships scale consists of 36 items; 18 of which relate to the avoidance dimension, 18 of which relate to the anxiety dimension of the attachment system. The items are arranged alternatively throughout the

questionnaire, odd numbered items refer to the avoidance subscale The Experiences in Close Relationships scale covers key facets of avoidance and anxiety in close relationships for example separation anxiety, self-reliance, discomfort with closeness, desire to merge and fear of abandonment For example "I worry about being abandoned" (anxiety subscale), and "I prefer not to be too close to romantic partners" (avoidance subscale). There are nine reverse scored items in the avoidance subscale, and one reverse scored item in the anxiety subscale. Participants are asked to think about how they generally experience close relationships and are asked to indicate how much they agree with each statement on a scale of one to seven. On this likert scale, one is labelled as "disagree strongly", four as "mixed or neutral", and seven as "agree strongly". Scores on each subscale are summative. The possible range of scores is therefore 18-126 on each subscale. On the anxiety subscale, a higher score indicates anxious attachment and a more negative model of self. On the avoidance subscales, a higher score indicates avoidant attachment and a more negative model of other.

The Cronbach alpha for this scale was .825 for the whole scale, .886 for the anxiety subscale, and .936 for the avoidance subscale (n=244) . The correlation for the anxiety subscale between stages one and two was .807 (n=70; p<.001) and for the avoidance subscale, this correlation was .704 (n=70; p<.001). The two subscales did not correlate significantly (r=.11, n=244, *ns*).

The two subscales on the Experiences in Close Relationships scale can be combined to describe the four attachment styles as described by Bartholomew (1990; see figure 1 1). The categorical variable is coded using Fisher's exact co-efficient and syntax provided by the authors of the scale (Brennan *et al* , 1998, pp 72). A negative model of self and other refers to a fearful attachment style. A positive model of self and other refers to a secure attachment style. Those who reported a

negative model of self, but a positive model of other are classified as preoccupied. Those who reported a negative model of other, but a positive model of self are classified as dismissing The factor structure of the Experiences in Close Relationships scale was explored A forced two-factor solution was used to check whether items from the two subscales grouped correctly. The two extracted factors had Eigenvalues greater than one and accounted for 47.1% of the variance. Assumptions of Sphericity (χ^2 =5056 8; p<.001) and sampling adequacy (90) were met. The two factors extracted were congruent with the factors proposed by the authors of the questionnaire; these were avoidance and anxiety. The subscales that were originally proposed by the authors of the questionnaire were retained for analyses in the current research. This allowed for a comparison with previous research, and for participants' attachment style to be categorised by combining the two dimensions.

5.3.5 The Social Comparison Scale (Allan and Gilbert, 1995)

The Social Comparison scale (Allan and Gilbert, 1995) was used to measure participant's rating of their relative social rank. Perceiving one's self as low in rank is a source of stress; therefore, the social comparison scale was also used as an indicator of a stressor. Participants are required to make a global social comparison of themselves in relation to others with eleven bipolar constructs rated 1-10. The scale asks "in relation to others I generally feel " followed by the list of bipolar constructs such as "inferior-superior", "weaker-stronger", and "outsider-insider". The possible range of scores is 11- 110. Participants score on this scale is summative, there are no reverse scored items and a higher score indicates a more favourable comparison of the self. The Cronbach alpha for the entire scale in the sample at stage one was .89 (n=244). The correlation between social comparison across stage one and two was .74 (p<.001; n=70).

Allan and Gilbert (1995) identified three subscales with in this measure; these were "Rank", "Group Fit" and "Social Attractiveness". However, an initial principal components analysis with varimax rotation (orthogonal) yielded two factors with Eigenvalues greater than one which accounted for 61 8% of the variance. Assumptions of sphericity (χ^2 =1339 7; p<.001) and sampling adequacy (.87) were met. For the present study, general social comparison was of interest, regardless of whether it related to group fit, rank, or attractiveness. Therefore, participants' ratings of the eleven constructs were summed to give a total score for this scale. The possible range of scores was consequently 11-110. This method of scoring the social comparison scale has been used in previous studies (e g., Gilbert & Allen, 1998; Irons & Gilbert, 2005- using the revised version for adolescents).

5.3.6 The Defeat Scale (Gilbert & Allan, 1998)

The Defeat Scale (Gilbert & Allan, 1998) is a unidimensional measure that was "designed to capture a sense of failed struggle and losing rank" (pp 589). For the present study, it was used as an indicator of the Involuntary Defeat Strategy. There are 16 items, for example, "I feel that I have sunk to the bottom of the ladder". Participants are asked to read each statement, and mark on the scale how they have felt in the last seven days. The response is on a five point Likert scale as follows; 0-never, 1-rarely, 2-sometimes, 3-mostly (a lot), and 4–always. There are three reverse scored items Principal components analysis with varimax rotation (orthogonal) yielded two factors, with Eigenvalues greater than one, which accounted for 64.1% of the variance. Assumptions of sphericity (χ^2 = 2716 5, p<.001) and sampling adequacy (.95) were met. All but three items converged highly onto factor one The three items that loaded most highly onto factor two were all reverse scored Therefore, this factor structure represented the scoring system, rather than the

thematic content of the items. This supported the findings of Gilbert and Allan (1998). The unidimensional scoring of this scale was therefore preserved. The 16 items of the defeat scale were summed to give a possible range of scores 0-48. A higher score represents a perception of being more defeated. The Cronbach alpha for the stage one sample was .95 (n=244). The correlation between defeat at stage one and defeat at stage two was 68 (p<.001; n=70).

5.3.7 The Symptom Check List – 90 Depression Subscale (Derogatis, *et al*, 1973)

For this study, the depression subscale of the Symptom Checklist-90 Depression subscale was used for reasons as outlined in chapter four. The 13 items reflect symptoms associated depression, for example, hopelessness is measured by the item "Feeling hopeless about the future" Participants are asked to select one of the five descriptors (not at all, a little bit, moderately, quite a bit, extremely) which best describes how much discomfort that problem has caused them in the past seven days. There are no reverse scored items. Principal components analysis with varimax rotation (orthogonal) yielded two factors, with Eigenvalues greater than one, which accounted for 60.1% of the variance. Assumptions of sphericity (χ^2 = 1772.2, p<.001) and sampling adequacy (93) were met. Items one, two, and nine loaded most highly onto the second factor, these relate to the somatic and anxiety symptoms associated with depression (interest in sex, energy and, anxiety respectively). In addition, there were seven secondary loadings onto factor two, some of which also related to somatic symptoms (e g , feeling everything is an effort, feeling no interest in things). The high number of secondary loadings indicated that the measure was homogenous. That item one (interest in sex) did not load onto factor one may reflect the use of a community sample, in which the severity of depressive symptoms may not have progressed sufficiently to overlap with somatic symptoms. In support it has been found that, in a mixed sample, the factors that emerge from the Symptom

Checklist-90 Depression subscale may be more poorly defined than might be expected in a clinical sample of individuals with depression (Morgan *et al*, 1998). Interest in sex is a core symptom of depression according to the DSM-IV (APA, 1994) and is included in most, self report measures of depression. The depression scale was therefore treated as a homogenous scale, and item one was retained. Participants' scores on the scale are summative Consequently, the possible range of scores is 13- 65. A higher score indicates the presentation of symptoms at a higher level of severity. The Cronbach alpha for the data set at time one (n=244) was .92.

5.4 Procedure

5.4.1 Pilot of the Questionnaire and Design of the Web Page.

It was anticipated that data would be collected using the internet. Reips (2002) recommended that internet mediated research should first be piloted to ensure problems with understanding the material and completing the questionnaires can be solved early on. An initial sample of 36 was therefore used to trial the questionnaire pack using a paper version. This sample consisted of second year social psychology students. There were five males (mean age=19.2; *sd*= 45) and 31 females (mean age =19.5; *sd*= 63). The pilot study had two aims; to establish whether any questions needed to be clarified, and to check whether participants were upset by any of the questions. None of the participants raised any issues about the wording of the questions, and none were upset by the questionnaire content Once this check had been completed, the paper version of the questionnaire was formatted for the web using Microsoft Front Page (appendix C). In addition to the web page, a response page (appendix D), and an information sheet (appendix E) were designed

The web page was designed to involve the most basic and widely available technology (Reips, 2002). The web page was designed such that participants could not access the questionnaire without first reading the information sheet. The link provided to potential participants lead to an online information sheet where details of the research were given. Participants could then click on a button to access the questionnaire. At stage two, participants were given the option of completing the first questionnaire if they were a new participant, or the second questionnaire if they were a returning participant. Participants were presented with one continuous page of questions. Data quality has been found to be better and responses more likely to be complete when demographics are placed at the start of an online questionnaire (Frick, Bachtiger, & Reips, 2001). Participants were therefore asked about their age, sex, status, and nationality in the opening section of the questionnaire. The responses required from participants varied between typed information (e.g. degree subject), tick boxes (e g. yes, no answers), and radio buttons (for the Likert scale questions). In accordance with the recommendations of Reips (2002) the questionnaire response boxes appeared blank to participants, responses were not pre-checked with an intermediate answer or otherwise, to avoid biasing the responses. Once participants were happy with their responses, they could click on 'submit' at the very bottom of the page Once 'submit' was clicked, a response page was displayed on the screen. This page confirmed that the participant's data had been sent, provided debriefing information and relevant links, and thanked the participants for their time The data were then sent to a secure email account from which they were accessed.

5.4.2 Initial Recruitment

Once the web page had been set up and tested several times by the researcher and departmental technicians, the study was advertised through three main sources as

recommended by Reips (2002). Firstly, a standardised email was sent to all potential participants who were known to the researcher. An electronic snowball sample was created by encouraging these participants to forward the link to their colleagues and friends. Secondly, the link was placed on a web site which is designed to advertise psychological research on the internet This website is monitored and run by the American Psychological Association (APA). In return, a reciprocal link to the APA website was placed on the response page. Thirdly, an article was written to advertise the research and published in a magazine for members of a US counselling organisation It is not known how many participants were obtained by each method. Future research could add a variable asking where participants found the link or saw the study advertised. This would help identify the more successful recruitment strategies and to determine whether the recruitment strategy had any bearing on the findings.

5.4.3 Recruitment for Stage Two

At stage one, participants were asked whether they would take part in the second stage of the research. It was anticipated that the second stage of the research would take place entirely online. For this reason, participants were asked to send their email address to the researcher if they were interested in taking part in the second stage. This was not in any way connected with their response. The email addresses were securely stored and labelled according to the date when they were received. It was assumed that most participants would send in their email address shortly after they participated in the research at stage one. At stage two therefore, the invitation to participate in the second stage of the research was sent out in eight waves at one-week intervals which were concordant with when the data were received. Therefore all the email addresses received in week one of stage one, were emailed an invitation to complete the second questionnaire in week one of stage two, and so on.

This was done in order to minimise the variance between participants in the intervening time between stage one and stage two. During the second stage, a reminder email was sent to participants one week after their initial invitation. At both stages one and stage two the emails were standardised (see appendix F).

5.4.4 Response Rate

Reips (2002) made several recommendations to avoid the 'dropout' of online participants. In accordance with these recommendations, the questionnaire was kept as brief as possible, and personal questions (e.g., about current depression) were avoided at the start of the questionnaire. Of the responses received, those that were only partly completed were not included in the sample. Twelve questionnaires were received which were only partially completed and would not have been sufficient for inclusion in the research, these twelve responses were counted as 'spoilt'. Of the 247 participants in stage one, 67 did not volunteer to take part in the second stage. The remaining 180 participants were emailed at stage two. Of the 180 email addresses, eight emails were returned with the error "unknown user", three participants had suspended their email accounts, four email accounts were inactive and three were returned for miscellaneous errors; a total of 17 emails were rejected. This left 163 potential participants. A total of 79 responses were returned at stage two, three of which were spoiled. Of the complete responses, six were new participants and 70 were returning participants. The response rate for stage two was therefore 42.7% (i.e. 70 of the possible 163 participants).

5.4.5 Changes to the Questionnaire between Stages One and Two

It is recognised that negative life events may precipitate the onset of a depressive episode (Lloyd, 1980a; 1980b). Brown and Harris (1978; Brown, Harris, & Hepworth, 1995) reported that 80% of initial episodes of depression, in women, are preceded by

a severe life event. Control questions were added at stage two to control for negative life events that occurred between times one and two. The criteria for the inclusion of such a measure were that it had to be reasonably short, it had to give some indication of the nature of the event(s), it had to give the impact this had on the person, and, importantly, detail whether or not the event had resulted in a feeling of depression for the participant.

The Traumatic Life Events Questionnaires (TLEQ, Kubany *et al.*, 2000) assesses exposure to a broad range of potentially traumatic events. However, it was considered too lengthy for inclusion. In addition, the TLEQ includes questions pertaining to childhood trauma and abuse which was deemed to be ethically inappropriate for online participants to complete. Maciejewski *et al.* (2000) used a simple tally of life events occurring within the 12 months preceding participation. The events which they asked about related to death of a close relative or friend, divorce, moving house, loss of a job, serious financial problems, physical attack, and life threatening illness or injury. These events have been found to be those predictive of the onset of depression (Brown & Harris, 1978). However, this measure gives no indication of the level of stress and emotional discomfort caused by the event. Adding these questions to the inventory would have significantly increased the length of the questionnaire and so increased drop out (Reips, 2002). A brief inventory was therefore designed to meet the needs of this study. This inventory asked the participant to describe briefly any depressing events that had occurred since their participation in the first stage. They were asked how many negative events they had experienced, and how depressed they were by these events at the current point in time.

Participants were not asked their sex, or their family as a child at time two. The questions pertaining to history of depression were exchanged for a section of

questions on depression over the months since the first stage of data collection. It was originally intended that some scales would be omitted or shortened at stage two, dependent on factor analyses. However, the decision was made to retain all of the original items for the purposes of assessing the reliability of the measures over time.

5.5 Ethical Considerations

As there is a lack of clear and widely accepted guidelines outlining ethical considerations for conducting primary research on the internet, the recommendations of Hewson *et al.* (2003) were used. This research adhered to the British Psychological Society (2000) ethical principles for conducting research with human participants.

5.5.1 Informed Consent

Informed consent was obtained from all participants. Participants each were provided with a statement (appendices E and G) which outlined the central aim of the research (to look at the connections between depression and relationships), the time commitment involved, the topics covered by the questions, and the age restriction for this study. Complex language was avoided to aid participant's understanding. By providing information about the topics, and time commitment involved in the research, participants were informed of anything which may have influenced their readiness to participate. Participants were not offered any incentives, financial or otherwise. Finally, participants were invited to ask any questions about the research (face to face, or via email) before they consented to take part. No participant took this option. Consent was obtained through a signed form in the case of the "paper and pencil" participants (appendix H) Participants were given a separate envelope in which to return their consent form and email address, therefore keeping any

identifying information separate from their responses. Online consent was obtained through the participant reading the 'information sheet' and then clicking a button to state that they agree to take part and are over the age of 18. Those participants who took part at stage one and stage two were required to give their informed consent on both occasions, as the lapse in time was great enough for them to have forgotten the details of the study.

5.5.2 Right to Withdraw

Participants were informed of their right to withdraw from the study at any time, including retrospectively. This information was given in the statement about the research, prior to informed consent, and again at the beginning and end of the questionnaire. Online participants were provided with a button, marked 'reset' and were advised that by clicking this button "all your data will be withdrawn from the study and none will be sent to me". One participant withdrew their data retrospectively from this study, they did not provide a reason.

5.5.3 Confidentiality and Anonymity

All data were confidential and responses were anonymous. Participants were required to answer questions relating to their own experience of depression. As this is quite a personal matter, participants were provided with an envelope to seal their completed questionnaires in. Responses were numbered after data collection; therefore, the researcher was not able to identify individual responses to the questionnaires. Online participants were told about the contents of the questionnaire at the start, should they have wanted to complete the questionnaire in private, they could then do so.

All participants were asked for their birth date and their mother's maiden name in order to match their responses at both times. Although these data were insufficient to identify participants, once the responses had been matched, the birth dates and mother's maiden names were deleted from the data files. The webpage was set up such that all emailed data were received from "nobody@lboro.ac uk" therefore participants were not required to identify themselves by revealing their personal email address.

At stage one, all participants were invited to participate in the second stage, and were asked to give their email address on their consent form (which already contained their name), or to email the researcher from their email address. This identifying information did not link in any way to participants' responses, and so did not compromise their anonymity.

5.5.4 Storage of Information

Paper responses were received directly to the researcher and were stored in a locked filing cabinet Online responses were received directly to the researcher's password protected email. The use of internet research methods did not compromise participant's anonymity, or the confidentiality of their information Online responses were transferred to a database and deleted from the "inbox". The database was saved on a password protected CD.

5.5.5 Deception and Debriefing

Participants were not deceived about the aims of the research, the content of the questionnaires, or commitment involved. At all possible stages participants were invited to ask questions. Three participants made queries by email.

At the end of their involvement of each stage of the research, participants were debriefed. A debriefing sheet was used to discuss and assess any issues arising for the "face to face" participants, and appropriate leaflets were made available. No participant reported being adversely affected. The issue of debriefing an online population is complex and has been widely discussed (Buchanan, 2002, Hewson *et al.*, 2003; Nosek *et al*, 2002). Hewson *et al.* (2003) recommend that online participants should be provided with a debriefing message on submission of their data, and contact details for the researcher. These recommendations were followed (appendix D). The giving of professional advice by the researcher could not be entered into due to the lack of appropriate qualifications. Therefore, permission was obtained from Depression Alliance and The Mental Health Foundation to refer participants to their websites, and help lines. It was also recommended that participants visit their general practitioner if they were concerned that they may have depression. Participants are more likely to follow a link on a website (with total anonymity), than to identify themselves by picking up a leaflet, or asking for help at the termination of a face-to-face study (Buchanan, 2002). Furthermore, before online data collection commenced, the questionnaire was first trialled using the paper and pencil method to gauge participants' reaction. Throughout the study, no participant reported being adversely affected by participating in the research As recommended by Nosek *et al.* (2002), to inform participants further, a "Frequently Asked Questions" sheet was provided at the onset of stage two, to outline what had happened to the data so far. This was emailed alongside the invitation to participate at stage two.

5.5.6 Protection of Participants

There was no obvious physical risk to participants of this study. They completed the questionnaire either in a computer lab in university, or at their personal computer. Other unwanted negative effects, such as low mood, may be induced by filling in

depression measures. Several measures were taken to prevent, or control this. The measures were first trialled in a face-to-face sample to gauge any negative reactions, information about the content of the questionnaires was provided at the outset of the study, and participants were directed to helpful outside agencies if they were worried about depression Finally, participants were reminded that they could omit parts of the questionnaire if they did not want to answer the question, or withdraw entirely at any stage.

5.6 Participant Characteristics

A large majority of the sample were female. Most participants were recruited online, and most were students. The total mean age was low, and reflected the high number of students who took part in this research. It is thought that such high numbers of students were obtained, as they may know about the American Psychological Association website, where the research was publicised, from their studies.

Table 5.1. Demographic Information for Participants at Stage One.

Variable	Female (n=202)		Male (n=45)		Total (n=247)	
Age	$\bar{x}$=23 98	SD=7.77	$\bar{x}$=23.0	SD=5.24	$\bar{x}$=23 78	SD=7.37
Frequencies	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Status						
Co-habiting	55	(27 23)	6	(13.33)	61	(24 70)
Going out	64	(31.68)	12	(26 67)	76	(30 77)
Single	83	(41.09)	27	(60.0)	110	(44 53)
Nationality						
British	111	(54.95)	31	(68 89)	142	(57.49)
Other European	4	(1 98)	5	(11.11)	9	(3 64)
American	55	(27.23)	5	(11.11)	60	(24 29)
Other	19	(9 41)	3	(6.67)	22	(8 91)
(missing)	(13)	(6 43)	(1)	(2 22)	(14)	(5 67)
Student status						
Student	152	(75 25)	28	(62 22)	180	(72 87)
Non student	50	(24 75)	17	(37 78)	67	(27.13)
Sample						
Paper	37	(18.32)	5	(11.11)	42	(17 0)
Internet	165	(81.68)	40	(88.89)	205	(83 0)

5.6.1 Prior Depression

Data concerning prior depression were collected as previous research has found that individuals with experiences of prior depression score differently on adult attachment measures than do individuals without such an experience (e.g., Bifulco, Moran, Ball, & Lillie, 2002) In response to the question, "Have you ever had depression?" 109 (44 12%) responded "yes" (female *n*=93, 46.5%; male *n*=16, 36.4%). This is around the same level of self-reported prior depression found by Coyne *et al* (2001). The mean age of those who had experienced an episode of depression was 25.99 (*SD*=8.44), slightly older than the sample who had not, which was 22.13 (*SD*=5 89), similar patterns were observed for males and females. This was in line with previous research which has found that the mean age for first onset of a depressive episode is around 25 years (Coyne *et al.*, 1999; Marcus *et al.*, 2005). Other demographic details are shown in table 5 2. Those participants with prior depression were more likely to be "going out" with a boyfriend or girlfriend than were those without any history of depression, they were equally as likely to be cohabiting, and less likely to be single. With regard to sex, and student status, the ratios were roughly equal in those with prior depression, and in those without. Males differed from the females only on status, of the 16 males who reported experiencing prior depression, 12 (75%) reported being single, whereas for the female sample, this figure was only 36 (38.7%). Due to small group sizes, it is difficult to speculate whether sex, prior depression, and status were meaningfully related.

Of the 109 participants who had experienced depression, the mean number of depressive episodes experienced was 4.88 (*SD*=4.998). The mean number of prior episodes was in line with research with individuals with chronic depression. Scott, Barker, and Eccleston (1988) found that individuals with chronic depression experienced a mean of 4.7 (*SD*=3.9) episodes of depression. The mean length of

participants' longest depressive episode was 1 91 years (*SD*=4 80; range = 01 – 40 years). The mean length of time elapsed since the most recent episode of depression was 2.11 years (*SD*=4.92), range = 0 – 40 years.

Table 5.2. Demographic details, Means, and Standard Deviations.

	Prior depression (*n*=109)		Never Depressed (*n*=135)	
Mean Age	25 99	(*SD*= 8 44)	22.13	(*SD*=5 896)
Frequencies	***n***	**(%)**	***n***	**(%)**
Sex Male	16	(14 67)	28	(20 74)
Female	93	(85 33)	107	(79 26)
Status				
Single	37	(33.94)	24	(17.78)
Going Out	24	(22 02)	51	(37 78)
Cohabiting	48	(44.04)	60	(44 44)
Student Status				
Student	77	(70.64)	100	(74 07)
Non Student	32	(29 36)	35	(25 93)

Participant's were asked to rate the overall severity of their depressive episodes on a nine point labelled scale. The responses are shown in table 5.3. Fifty-nine (54 87%) participants had visited their GP, or received treatment for their depression. Only nine (8.26%) had been hospitalised. These results would be expected in a non-clinical sample such as this one (Coyne *et al.*1999) Roughly, 50% of participants had sought help for their depression, which reflects research findings that thirty to fifty percent of cases of depression go undetected in primary care, and medical settings (Freeling, Rao, Paykel, Sireling, & Burton, 1985, Ronalds, Creed, Stone, Webb, & Tomenson, 1997; Rost *et al.*, 1998). Data is displayed separately for males and for females. The most notable sex difference was that females were more likely than males to get professional help for their depressive episode.

Table 5.3. Severity of Prior Episodes of Depression

Item	Males		Females		Total	
	n	(%)	*n*	(%)	*n*	(%
Feelings of unexplained sadness for less than two weeks	1	(6 25)	3	(3.23)	4	(3.67)
Severe sadness for less than two weeks	1	(6 25)	9	(9 68)	10	(9.17)
Severe sadness for longer than two weeks	5	(31.25)	17	(18 28)	22	(20 18)
Unable to feel happy or get any pleasure out of life	1	(6 25)	2	(2 15)	3	(2.75)
A visit to the GP (physician) was required	2	(12 5)	19	(20 43)	21	(19 27)
Therapy and/or medication was required	1	(6 25)	24	(25 80)	25	(22 94)
Therapy and/or medication was required on a long term basis	1	(6 25)	3	(3 23)	4	(3 67)
Hospitalisation was required	1	(6 25)	8	(8 60)	9	(8 26)
I have never recovered	0	-	0	-	0	0
Missing data	3	(18 75)	8	(8 60)	11	(10 09)
Total	16	(100)	93	(100)	109	100

In order to explore possible bias of current mood in the reporting of prior episodes of depression, Pearson's correlations between severity, duration, number, and recency of prior episodes of depression and current depression were analysed (see table 5 4) A longer episode of depression was significantly related to higher reported severity (r= 32, n=108, p=.001) and to recency of an episode (r= 59, n=109, p<.001). Longer reported episodes of depression were therefore reported as being more severe and a long time ago. Current depression was significantly related to severity (r= 25, n=108, p< 01), length of prior episodes (r= 27, n=109, p<.01), and number of prior episodes (r= 29, n=93, p<.01). More severe current depression was therefore associated with reporting more severe prior depression, longer episodes of prior depression, and a greater number of prior depressive episodes.

The findings suggest that current mood may have negatively biased participants reports of prior episodes. It has previously been hypothesised (Kendler *et al* , 2001) that this effect may be due to the influence of state dependent memory (Tulving, 1974). As expected, the duration of the prior episode was related to the severity of the prior episode However, the duration was also inversely related to recency.

These findings suggest that the recency of the episode negatively biased participant's perception of the length of the episode, so that those experiences that were long ago were perceived to be longer in duration. The recency of the latest depressive episode was not associated with the reporting of severity, or the number of episodes. Therefore, episodes that were more recent were not reported to be any more severe than were those experienced long ago.

Table 5.4. Correlations Between Prior and Current Depression.

	Severity	Length of Episode	Number of Episodes	Recency
Length of Episode	.32**			
Number of Episodes	.14	.13		
Recency	.13	.59**	-.01	
Current Depression	.25**	.27**	.29**	-.02

** Correlation is significant at the 0 01 level (2-tailed).

5.6.2 Family

Participants were asked who they grew up with as a child, to which 244 (of 247) participants responded. Of the 244 participants, 197 (80.74%) grew up with two parents (these included any participants with step families, or adopted parents), 33 (13.52%) grew up with a single parent, 2 (.82%) with their grandparents and 12 (4 92%) with a ward of state, or between foster carers. Because of the small group sizes, those with single parents, grandparents, and other caregivers were grouped and compared to those who grew up with two parents. No significant differences in depression were observed between groups (F [1, 24] = 2.68, *ns*).

5.6.3 Panel Data

The mean number of days lapsed between stage one and stage two was 154.3 days (*sd* = 14.1; *n* = 70). The complete demographic data from time one (*n* = 244) was compared with the complete demographic data at time two (*n*= 70), to explore the demographic trends of the the repeat participants. Of the 45 male participants initially recruited, 33 33% (*n* = 15) participated in stage two of the data collection. Of the 202 female participants initially recruited, 27 23% (55) participated in stage two of the data collection. With regard to relationship status, the proportion of individuals at time two who were single, going out, or cohabiting were roughly equivalent with the proportion at time one. There were fewer Americans in the time two sample. American participants represented 24.3% of the time one sample, whereas only 11.4% of the sample at time two were American. Of the 180 students who were initially recruited, 41 (22 78%) participated in stage two of the data collection. Of the 67 non-students who were initially recruited, 29 (43.28%) participated in stage two of the data collection. Those participants who were initially recruited using the "paper and pencil" method were present in the online sample at stage two. Of the 42 "paper and pencil" participants, 17 (40.48%) accessed the online questionnaire to be included in stage two of the data collection. Overall the return participants were more likely to be male, British, and non-students The demographic data for those with complete panel data at time two are reported in table 5.5.

Table 5.5. Demographics for Participants with Complete Data across the Two Waves (n=70).

Variable		Female (*n*=55)		Male (*n*=15)		Total (*n*=70)	
Age		$\bar{x}$=24 71	*SD*=8 56	$\bar{x}$=24 93	*SD*=6.31	$\bar{x}$=24.76	*SD*=8 09
Frequencies		***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Status							
	Co-habiting	17	(30 91)	3	(20 00)	20	(28 57)
	Going out	17	(30 91)	5	(33 33)	22	(31.43)
	Single	21	(38 18)	7	(46 67)	28	(40.00)
Nationality							
	British	41	(74 55)	13	(86 67)	54	(77.14)
	Other European	1	(1 82)	-	(0 00)	1	(1.43)
	American	7	(12 73)	1	(6 67)	8	(11 43)
	Other	4	(7 27)	1	(6 67)	5	(7.14)
	(missing)	(2)	(3 64)	-	(0 00)	(2)	(2 86)
Student status							
	Student	35	(63 64)	6	(40 00)	41	(58 57)
	Non student	20	(36.36)	9	(60 00)	29	(41 43)
History of Depression							
	Yes	21	(38 18)	5	(33 33)	26	(37 14)
	No	34	(61.82)	10	(66 67)	44	(62 86)
Family as a child							
	Two parents	49	(89 09)	12	(80 00)	61	(87.14)
	Single Parent	4	(7 27)	2	(13.33)	6	(8 57)
	Guardians	-	(0 00)	-	(0 00)	-	(0.00)
	Grandparents	-	(0 00)	-	(0 00)	-	(0.00)
	Other	2	(3 64)	1	(6 67)	3	(4 29)
Sample*							
	Paper	15	(27.27)	2	(13 33)	17	(24.29)
	Internet	40	(72.73)	13	(86.67)	53	(75 71)

* All wave two data were collected online; "sample" therefore refers to the initial mode of participation at time one.

Analyses were conducted on the complete data set from stage one to test whether there were any significant differences on the main variables (depression, attachment, defeat, and social comparison) between returning participants (*n*=70), and those participants who only took part in stage one (*n*=174). Results are reported in table

5.6. The return participants were significantly less depressed (t = 2.41, df = 242, p<.05), and more avoidant (t = 3 05, df = 242, p<.01). Avoidant individuals could have found the study intrusive (Slade, 1999) and decided against participating in the second stage. Likewise, those with higher levels of depression may have lacked the motivation, or concentration to participate if their symptoms were more severe at time two With regard to childhood experiences, return participants reported significantly less overprotection (t = 2.57, df = 242. p<.05) and more care (t = 2.09, df = 242, p < .05). As the pattern of correlations between the variables of interest (depression, adult attachment, parental bonding, childhood attachment, defeat, and social comparison) was similar at times one and two, these differences between the mean scores did not influence the main analyses

Table 5.6. Comparison of Returning Participants with Non-Returning participants.

Variable	Return Participants		Non- Return Participants		t	p
	Mean	(*SD*)	Mean	(*SD*)		
Depression	26.04	(10 69)	29.99	(11.90)	2.41	.017
ECR Anxiety	67.21	(21.76)	69.29	(22.52)	.657	.512
ECR Avoidance	50.44	(19.59)	60.33	(24.12)	3 05	.003
PBI Over protection*	48 54	(11.16)	53 69	(14.04)	2.57	.011
PBI Care*	79 85	(14.81)	74.97	(15.71)	2.09	.038
Social Comparison	64.13	(14.54)	67.42	(15 40)	1.53	.126
Defeat	16.61	(11.33)	19.26	(13.16)	1 48	.141

* Return participants n = 61, non-return participants n = 157.

5.7 Initial Analyses

All data were entered into SPSS for statistical analysis. The data were cleaned and screened for outliers. Three univariate outliers were detected and removed from the sample, consequently, $n = 244$. Syntax were written for the recoding of reverse score items, and for the calculation of subscales and totals. At stage two a further syntax file was written to manage the additional data. As errors were detected, the data file was updated to account for these. Data files were allocated version numbers and a log kept of the changes made in case this needed to be tracked at a later stage in the analysis. Participants' data were matched at both stages using their mother's maiden name and day of birth. Stage two data were entered into the same data file as the stage one data. The reliability and validity of the individual measures were analysed, as outlined above. Principle Components analyses, correlations between the stage one and stage two data, and Cronbach alpha were used. Preliminary analyses were made, to check for data quality and confounding variables.

5.7.1 Data Quality

Consistency checks were performed to assess the quality of the data collected. It is considered that the collection of online data may lead to false responses being given by participants (Reips, 2002). However, Voracek, Steiger and Gindl (2001) found that the rate of false responses was below 3% for reporting sex. In order to check for false responses, males and females were compared on the Symptom Checklist-90 Depression subscale item "Crying easily". Previous research, using depression measures, has found that crying is more often reported amongst females (Clark, Aneshensel, Frerichs & Morgan, 1981; Cole, Kawachi, Maller &Berkman, 2000) and that this can be used to assess the validity of data collected via the internet (Houston *et al.*, 2001). A significant difference (t= 4 271; df=243; p< 001) on "Crying easily" (item four) of the Symptom Checklist-90 Depression subscale was found between

males (n= 44; $\bar{x}$=1 43; sd=.925) and females (n= 201; $\bar{x}$= 2.27 ; sd= 1.233) in this study. If participants had checked this item arbitrarily, this pattern might not have been detected.

Participants were grouped into weekly cohorts and contacted between 150 and 157 days after their initial participation. The mean time lag shows that most participants were compliant at stage two and took part on the day requested, or shortly afterwards. 69.6% of participants completed the second questionnaire within 156 days of their initial participation.

An additional problem associated with internet-mediated research, is the inability of the researcher to identify "repeat participants" In previous research, unique demographic patterns were assessed to look for repeats in the data. Eighty-five per cent of responses had unique patterns (Houston *et al.,* 2001), and it was estimated that the number of repeat participants, in this case, was low. Given the length of the questionnaire in the present study, and the low number of participants, repeat participation is not considered an issue.

In order to assess the approximate response rate, a counter could be used on the webpage which would give the number of times the page had been accessed. This would give an approximation of the number of potential participants who had visited the website. However, people may have visited the website more than once. The inclusion of a counter would have added to the load time for the web page, and hindered access for whom their computer packages did not support the technology For these reasons, a counter was not used.

5.7.2 Internet Sample

Data were explored to identify whether the data collected over the internet was significantly different to that collected by paper and pencil (n = 244). The demographic characteristics of the "internet" group compared to the "paper and pencil" group are shown in table 5.7. A significant difference was found between groups on the measure of childhood avoidance (t = 3.97; df = 242; p< 001), childhood confidence[i] (t = 3.71; df = 69.22; p<.001), parental care (t = 4 24; df = 77.93 ; p<.001), defeat (t = -3 97; df = 79.45; p< 001), depression (t = 2 78; df = 72 68; p<.01), and age (t = 3.55; df = 97 66; p<.001). No significant differences were observed for the childhood anxiety subscale[i], the Parental Bonding Instrument overprotection subscales, adult attachment, or social comparison.

The internet group reported overall, more adverse experiences than those who complete the questionnaire by paper and pencil. There are two alternative explanations for these findings. Either the method of completing a questionnaire online produces different results to those obtained by paper and pencil, or the sample obtained online have different characteristics to those who completed the questionnaire by paper and pencil. The latter explanation supports previous findings (Davis, 1999; Young & Rogers, 1998). All participants at stage two completed the questionnaire online, 17 of whom had completed the questionnaire using paper and pencil at time one. These 17 participants provided a sample in which responses could be compared between paper and pencil, and internet mediated data collection methods.

Table 5.7. A Comparison of Demographic Characteristics, and Mean Scores between Internet Participants and Paper and Pencil Participants

Variable		Internet (*n*=202)		Paper (*n*=42)	
Frequencies		***n***	**(%)**	***n***	**%**
Status	Co-habiting	56	(27 72)	5	(11.90)
	Going out	60	(29.70)	15	(35.71)
	Single	86	(42 57)	22	(52.38)
% Of Students		140	(69 31)	37	(88.10)
% Of Females		163	(80 69)	37	(88.10)
% With Prior Depression		104	(51 49)	5	(11.90)
Continuous		**Mean**	***SD***	**Mean**	***SD***
Age		24.40	(7.74)	21 24	(4 56)**
Childhood Avoidance[1]		24.21	(8 38)	18 64	(7.67)**
Confidence[1]		36.80	(10.38)	42 36	(8.47)**
Childhood Anxiety[1]		18.51	(8.01)	17	(6.13)
PBI Care[†]		74 66	(15.94)	83 80	(11 34)**
PBI Overprotection[†]		52 84	(13 63)	49 62	(12 59)
Adult Avoidance		58.57	(23 21)	52 33	(23 38)
Adult Anxiety		69 20	22 89	66 24	19 09
Defeat		19 66	13 03	12 95	9 21 **
Social Comparison		66 13	15 75	68 12	12 23
Depression		29 65	11 99	25 02	9 27 *

Key.

[1] Subscales of the Childhood Attachment Measure, described in chapter six

† Internet $n = 178$, paper $n = 40$

** $p < 001$

* $p < 01$

Using the data from both stages ($n = 70$), five 2x2 mixed ANOVA were conducted to test whether the method of completing the questionnaire differed, or whether the groups of participants differed. A separate analysis was conducted for each variable (excluding age) on which a between groups difference had been observed. For each analysis, the within groups independent variable was the total score at time one compared with the total score at time two, and the between groups independent variable was internet sample was compared with the paper and pencil sample.

No significant main effects or interactions were observed in this series of analyses. The "paper" group did report marginally more adverse childhood experiences when they completed the questionnaire online at time two, but this difference did not meet significance. These analyses therefore demonstrated that completing the questionnaire online had not influenced the accuracy of, or biased participants' responses when compared with completing a paper questionnaire. This supports previous findings (Davis 1999; Young & Rogers, 1998) and indicates that those individuals who were recruited online reported more severe symptoms of depression than those who were recruited using paper and pencil methods.

5.7.3 Life Events

To control for the effects of life events in the analyses exploring temporal effects, participants were asked at time two whether they had experienced any "depressing" life events in the intervening months since they participated in stage one of the data collection. All participants responded to this question. Of the 70 participants with complete data across data collection stages one and two, 44 (62 86%) did not report experiencing any depressing life events over the intervening time (33 females and 11 males). Of the remainder, 15 females and three males (25.71%) reported experiencing just one life event, three females and one male (5.71%) reported experiencing two events, and 4 females (5.71%) reported experiencing three or more life events Participants were asked to describe briefly their "most depressing" life event. Life events were classified according to whether they were independent or dependent, based on the methods of Maciejewski *et al.* (2000). Nine females and one male were classified as reporting an independent life event (e g. "Grandfather taken ill") Thirteen females and three males were classified as having a dependent life event (e g. "argument with dad")

Participants were further questioned as to whether they still felt depressed by this event. Of the four male participants with complete data for this question, one reported "not at all", one reported "a little bit", and two reported "moderately". Of the 21 females who reported experiencing a depressing life event, 11 reported that they were not at all depressed by this event currently. Four participants reported being a little bit depressed by the event, six reported being moderately depressed by the event, and one participant reported being quite a lot depressed by the event. The one person who reported being "quite a lot" depressed had experienced the end of a relationship.

Of the 26 individuals who experienced a depressing life event, 16 reported also experiencing depression between stages one and two. This included four of the males. Only three of the 44 participants who did not experience a negative life event reported experiencing depression in the intervening months between data collection. Individuals who experienced one or more depressing life events were older than those participants who did not report a life event (table 5 8). There were slightly more females and individuals who were cohabiting who reported experiencing a life event. Similar patterns were observed for males and for females.

Table 5.8. Means and Standard Deviations on Depression in Individuals Reporting Depressing Life Events.

	Depressing Events >1 (*n*=26)		No Depressing event (*n*=44)	
Mean Age (SD)	26.31	(8 88)	23.84	(7 54)
Frequencies	***n***	**(%)**	***n***	**(%)**
Sex				
Male	4	(15 38)	11	(25 00)
Female	22	(84 62)	33	(75 00)
Status				
Single	8	(30 77)	20	(45 45)
Going Out	8	(30 77)	14	(31.82)
Cohabiting	10	(38.46)	10	(22.73)
Student Status				
Student	17	(65.38)	24	(54.55)
Non Student	9	(34 62)	20	(45 45)

The majority of participants did not report experiencing any negative life events. In support of this finding, in a community sample only 12.3% of participants reported experiencing a negative life event and 29 2% reported experiencing a 'chronic stressor' over their lifetime (Ezquiaga *et al.*, 1987)

5.8 Planned Analyses

The data analysis was split into four chapters. Chapter six will outline the development and testing of the new measure of childhood attachment. In this chapter the validity of the Parental Bonding Instrument as a measure of attachment will also be explored. Chapter seven presents two analyses. Firstly, the role of attachment as a moderator of the association between social rank and depression will be tested. Secondly, the role of the Involuntary Defeat Strategy as a mediator of the association between childhood experiences and depression will be tested. Chapter eight is concerned with testing the temporal association between attachment and depression Finally, chapter nine presents an exploration of the continuity

between childhood and adulthood attachment, and the implications of stability and change in attachment for depression.

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[1] The development of both childhood avoidance and childhood confidence is described in chapter six.

Chapter 6

Results I: Development of a Retrospective Measure of Childhood Attachment

6.1 The Need for a New Measure of Childhood Attachment

An aim of the present study was to explore pathways between depression and childhood attachment. To fulfil this aim, a measure of childhood attachment was needed. The measure of childhood attachment needed to fulfil four criteria in order to meet the aims of the research. The measure needed to be self report and self administered, it needed to be retrospective and intended for adults, it needed to concern relationships with parents during childhood, and it needed to be congruent with attachment theory (Bowlby, 1969, 1973; 1980).

6.1.1 Existing Measures of Childhood Attachment

A strong empirical movement has been directed towards the observational assessment of infant attachment styles (Ainsworth *et al.,* 1978; Elicker, Englund, & Sroufe, 1992; Hamilton, 2000; Main & Weston, 1981; Waters, 1978; Waters, Hamilton, & Weinfield, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). However, there has been comparatively little research on the retrospective assessment of adult's reports of early relationships with parents. An examination of the literature exploring childhood attachment demonstrated that two instruments were predominantly used to measure childhood attachment, the Adult Attachment Interview (AAI; Main & Goldwyn, 1994) and the Parental Bonding Instrument (Parker *et al* , 1979). These measures have been used to determine the continuity between childhood experiences and adult attachment style (e g , Carnelley *et al* , 1994; Difilippo & Overholser, 2002; Gittleman *et al* , 1998), and in exploring the childhood antecedents of psychological functioning in adulthood (Gerlsma *et al.*, 1990). However, the AAI was not suitable for the current study, as it requires professional training for administration and scoring, the cost of which, both financially and with respect to time, was outside the scope of this research. The Parental Bonding

Instrument was next considered for use in the current research, this is discussed below.

Occasionally, alternative measures or indicators of childhood attachment have been employed. Two of these other measures were designed for children or adolescents and so were not applicable to the current research as they were inappropriately worded. A few studies also used a combination of theoretically relevant indicators of childhood attachment to derive an attachment style. For example, Klohnen and Bera (1998) used the level of childhood family conflict as one indicator of childhood attachment. In addition, Hazan and Shaver (1987) developed three statements to describe three types of parental care giving styles. Using this scale, participants can identify which descriptor best matches their mother or father, or participants may respond on a Likert scale to show the extent to which they agree with each statement (e.g., Collins & Read, 1990). The disadvantage of this method is that the usage of single indicators is less reliable and valid than using a Likert scale.

The Parental Bonding Instrument was examined to explore the extent to which it matched the criteria for the current research. In the literature review, it was noted that the Parental Bonding Instrument is descriptive of parents' behaviours as the participant remembers them during childhood. It was therefore hypothesised that the Parental Bonding Instrument was biased towards the measurement of an individual's working model of other. Therefore, the Parental Bonding Instrument was not considered a suitable measure of childhood attachment for the current study. The Parental Bonding Instrument was retained in the study to test whether it was biased towards the working model of other, and to compare with the new measure.

6.1.2 Parallels with the adult attachment literature

The Parental Bonding Instrument was the most frequently used quantitative measure of childhood attachment detected in the depression literature; however, it was flawed. There was therefore a need to develop a new measure of childhood attachment to satisfy the criteria for the current research. A retrospective measure of attachment to one's parents was designed to address the problems surrounding the use of the Parental Bonding Instrument as a measure of childhood attachment, and the inconsistency with which childhood attachment has been operationalised. It was proposed that the items in the new measure would address autobiographical memories of attachment related experiences with parents as a child (Nelson, 1993; Welch-Ross, 1995).

Inconsistency in measurement methods means that findings cannot be compared, and that the measures used are not always in line with the theory being tested (e g., Klohnen & Bera, 1998). This point was also made regarding the measurement of adulthood attachment, in the mid nineties. In answer to these criticisms, Brennan *et al.* (1998) designed and validated a new measure of adult attachment, the Experiences in Close Relationships scale. The development of the Experiences in Close Relationships scale was described in Chapter four. It was found to be a sound measure, based on empirical, theoretical, and psychometric information, presented by the authors (Brennan *et al.*, 1998), and in subsequent studies (e.g., Lafontaine & Lussier, 2003). The Experiences in Close Relationships scale was found to be a viable basis for the development of the new childhood attachment scale. Given the consistency between theories of childhood and adulthood attachment, the hypothesised continuity of attachment (Bowlby, 1969; 1973;1980; Hazan *et al.*, 1991; Hazan & Shaver, 1987), and continuity of attachment between different relational partners (LaGuardia, Ryan, Couchman, & Deci, 2000), the Experiences in Close

Relationships scale, and the two dimensional model of attachment were used as a starting point from which to design a measure of childhood attachment.

Bartholomew (1990; Bartholomew & Horowitz, 1991; Griffin & Barthlomew, 1994) proposed that avoidant attachment in adulthood was more complex than Ainsworth's categorisations of infant attachment. It is yet unclear whether infants, or children also express avoidant attachment in terms of dismissing and fearful styles, however it has been indicated that childhood attachment can be conceptualised as having two styles of avoidant attachment For example, in Ainsworth's typologies, there existed two subtypes of avoidant attachment, one of which was a little more secure, which demonstrates that variations were found. The use of the disorganised category (as discussed in section 1.6.1) is also an indication that the three childhood classifications did not fully account for the observed behaviours, and that a fourth may have been advantageous. If a positive or negative model of self can be recognised in childhood, then children should be classifiable into fearful avoidant (negative model of self) and dismissing avoidant (positive model of self) attachment styles. Consistent with an evolved mechanism, the dimensions underlying attachment are operational from a very early age. If an infant is capable of determining whether they can self regulate their emotions, as Bowlby (1969, 1973; 1980) suggested, this is no more than suggesting that they can hold a positive or negative model of self, as is consistent with Bartholomew's (1990) model of attachment. Therefore, the present research sought to study childhood attachment in terms of the two dimensional conceptualisation offered by Bartholomew (1990).

6.1.3 Confidence

Alongside the two dimensions of anxiety and avoidance, a set of questions were developed concerning a child's confidence in their parents' availability and

responsiveness. The rationale for the development of this separate subscale was as follows. One difficulty with attempting to measure childhood attachment in terms of the working models of self and other is that Bowlby (1973) suggested that these working models were not fully formed and fixed until adolescence. As such, whether or not these models would be accessible and reliable to measure retrospectively from childhood is one concern. In support of the measurement of these dimensions, evidence from Ainsworth *et al.* (1978) demonstrated the presence of two attachment dimensions in childhood. However, for the purposes of the present study, a third subscale was developed to measure underlying features of both working models. Confidence was selected as it is considered an underlying feature of both anxiety and avoidance; this is discussed further below.

Attachment research stemmed from investigating the effects of long-term separation. On a daily basis, separation can be redefined as threats to the open communication with the caregiver, physically accessibility to the caregiver, and responsiveness of the caregiver (Kobak, 1999). Appraisal of the availability and responsiveness of one's attachment figure provides the child with a level of confidence in their caregiver. Confidence is an essential part of building working models of self and other (Bowlby, 1973). Confidence in the availability and responsiveness of the caregiver rests in the belief that the caregiver will respond, and in the belief that one is worthy of the caregiver's response. Confidence is therefore key to developing a positive working model of other, a positive model of self, and therefore a secure attachment style (Kobak, 1999) Several items were designed to measure confidence in the availability and responsiveness of one's parents If the models were not properly formed in childhood, and therefore not amenable to measurement in the present study, the confidence subscale should still provide a notional indicator of childhood security that is less biased than the Parental Bonding Instrument.

6.2 Development of the new measure

6.2.1 Specifications

The "Bootstrap Approach" (Cronbach & Meehl, 1955) was applied to the design of this questionnaire and to the test of its psychometric properties. This approach combined the two psychometric methods of the rational approach, and the empirical approach In the first stage, theory driven items were designed for the measure (rational approach). Following the administration of the initial scale, empirical procedures, of principle components analysis, and reliability analyses were used to ensure that the items and scale were reliable, and internally consistent (empirical approach) Cronbach and Meehl (1955) also recommended that cross validation be conducted, and norms for the test be established. Analyses were undertaken to establish construct validity using the Parental Bonding Instrument and the Experiences in Close Relationships scale as comparison scales. It was expected that the Childhood Attachment Measure scales would overlap more closely with the Experiences in Close Relationships scale than with the Parental Bonding Instrument as the Childhood Attachment Measure and Experiences in Close Relationships scale both measure two dimensions of attachment, whereas the Parental Bonding Instrument is biased towards the working model of other.

The scale was designed in line with the two dimensional conceptualisation of attachment as proposed by Bartholomew (1990) The two scales of anxiety and avoidance were therefore combined to classify participants into one of four childhood attachment styles. Waters (1978) reported that typically 60% of infants were classified as securely attached when the strange situation paradigm is used. Approximately 20% and 15% of the infants were classified as avoidant and ambivalent respectively. Therefore, it was expected that the majority of participants will be classified as having a secure childhood attachment style. Analyses were

conducted to test the reliability and validity of these four classifications. It was expected that those participants with secure childhood attachment style would be characterised by an optimal bonding style (as defined by the Parental Bonding Instrument subscales).

6.2.2 Design of items

The scale was based upon a revision of the Experiences in Close Relationships scale. Although, adulthood and childhood attachment have some fundamental differences, the three key functions of attachment (proximity, safe haven, and secure base) are hypothesised to be present throughout life (Hazan *et al* , 1991). Therefore, items that reflected these functions most closely were selected from the Experiences in Close Relationships scale and revised to refer to parental relationships Table 6.1 shows the original item from the Experiences in Close Relationships scale and then the adapted item for the childhood attachment measure. The remaining items from the Experiences in Close Relationships scale that were not adapted did not easily map onto experiences of childhood relationships. For example, some items referred to the reciprocal nature of adult attachment (e g "I worry that romantic partners will not care about me as much as I care about them") Other items referred to how the individual coped with becoming close to a partner (e g. "Just when my partner starts to get close to me, I find myself pulling away"). These items appeared to explore proximity maintenance between the individual and their partner, however, they were inappropriate to describe the relationship between a parent and child, and were not adapted for the new scale.

Table 6.1. Items adapted from the Experiences in Close Relationships scale for use in the Childhood Attachment Measure.

Childhood Attachment		Experiences in Close Relationships	
	Avoidance Subscale		
6	I never felt comfortable talking to my parents about personal things	9	I don't feel comfortable opening up to romantic partners
12	I felt comfortable sharing my private thoughts and feelings with my parents	15	I feel comfortable sharing my private thoughts and feelings with my partner
19	I preferred not to get too close to my parents	23	I prefer not to be too close to romantic partners
14	I discussed any school problems with my parents	27	I usually discuss my problems and concerns with my partner
8	Whenever I was sick, I wanted my parents to be near to me	33	It helps to turn to romantic partners in times of need
10	I always allowed my parents to comfort me in times of distress	31	I don't mind asking romantic partners for comfort, advice, or help
	Anxiety Subscale		
3	When my parents disapproved of me, I felt really bad	34	When romantic partners disapprove of me, I feel really bad about myself.
1	I worried about being abandoned by my parents	2	I worry about being abandoned
21	I needed a lot of reassurance that my parents loved me	18	I need a lot of reassurance that I am loved by my partner
11	I did not worry about being abandoned by my parents	22	I do not often worry about being abandoned
17	When my parents were away from me, I felt anxious and alone	28	When I am not involved in a relationship, I feel somewhat anxious and insecure
18	I got frustrated when my parents were not there as much as I wanted	30	I get frustrated when my romantic partner is not around as much as I would like
22	I resented it when my parents spent time away from me	36	I resent it when my partner spends time away from me

Thirteen items were adapted from the Experiences in Close Relationships scale for the new childhood attachment measure. An additional pool of questions were generated based on two core dimensions of attachment theory- the working models of self and other, and confidence. The anxiety dimension of attachment is particularly concerned about proximity to one's attachment figure, and the ability to elicit and maintain that proximity. With this in mind a number of items were designed to ask about feelings of abandonment, and concern about being abandoned, or losing contact with one's parents The avoidance items were designed with reference to an individual's ability to use their attachment figure as a safe haven, and a secure base, especially in times of need Confidence items were designed to ask participants about their trust in the availability and responsiveness of their caregivers when they were a child.

Initially 46 items were generated for this scale The items were given to three volunteers who proofread them to check for ease of reading, and understanding. The three volunteers included an individual from a non-academic profession, who was typical of the intended participants. Items that were considered ambiguous and open to misinterpretation were eliminated (e g. "I was a highly sociable child" and "I often felt like I was in the way") Following the feedback, 11 items remained

The 11 remaining items (listed below) were added to the 13 items derived from the Experiences in Close Relationships scale. The readability of the final scale was assessed using the statistics available in Microsoft Word. The scale had a Flesch reading ease score of 67.3, the recommended score is between 60 and 70 therefore the questionnaire fulfils this criterion for ease of reading. The Flesch-Kincaid Grade Level was 6.7. This means that a child in grade seven in the American schooling system (i e. thirteen years old) would be able to read the scale. This level was considered acceptable.

The final 11 new items-

Anxiety

"I was frightened about losing my parents when we were out of the house"

Avoidance

"As a child, I kept myself to myself"

"I never relied on my parents for emotional support"

Confidence

"I was never confident in my parents' ability to meet my needs"

"I was not confident in my parent's return when I was left with a babysitter"

"I placed trust and confidence in my parents"

"I felt confident that I could rely on my parents to be there for me"

"I was confident that I could turn to my parents in times of need"

"I was confident that my parents could make me feel better when I felt sad"

"I was confident that my parents would meet my needs"

"I had a warm and understanding relationship with my parents"

6.2.3 Format and scoring

As anxiety, avoidance, and confidence represent different dimensions of attachment theoretically, a summative score across all the items generated from each dimension would not be useful. Instead, it was intended that there be three subscales to represent the three dimensions.

The selected item format was a seven point labelled Likert scale, to correspond with the item format of the Experiences in Close Relationships scale The labels were therefore·

1 disagree strongly

2 disagree

3 disagree a bit

4 neutral

5 agree a bit

6 agree

7 agree strongly

A Likert scale format allowed participants to respond on a continuum, this gave greater variability of scores to the scale.

The scale was presented as shown in appendix B. Participants were presented with the list of items, and were required to circle the number that described how far they were in agreement with the statement. The items were distributed throughout the scale such that the positively worded items were separated, and the three subscales were mixed.

If the principle components analysis identified anxiety and avoidance subscales, it was intended that these subscales should be used to categorise individuals into a childhood attachment style, in the same way the Experiences in Close Relationships scale categorises adult attachment style The following analyses are therefore twofold. The first set of analyses refers to the continuous measure of childhood attachment; the second set of analyses refers to the robustness of the categorisation of childhood attachment style by the Childhood Attachment Measure.

6.3 Reliability of the Continuous Measure

The questionnaire was piloted on a sample of 36 participants. This sample consisted of second year social psychology students. There were five males (mean age=19 2; *sd*=.45) and 31 females (mean age =19.5; *sd*=.63). The pilot study had two aims. To establish whether any questions needed to be clarified, and to check whether any of the participants were upset by any of the questions. None of the participants raised any issues about the wording of the questions, and none were upset by the questionnaire content. The childhood attachment measure was therefore included in the questionnaire pack. In total 244 participants completed the questionnaire. Participants were asked to complete the questionnaire twice, with approximately five months between data collection stages. At the second stage, there were 70 repeat participants. Analysis of attrition is presented in chapter five. Analyses of the first wave of the data collection were used to assess the structure of the measure. The reliability of the measure was then analysed using Cronbach alpha and by examining the correlations between participants' scores at each wave of data collection.

6.3.1 Principle Components Analysis

An examination of the inter-item correlations (table 6.2) indicated that seven of the items did not correlate highly (i e. above 0.5) with any other item (items 3, 13, 17, 18, 21, 22, and 7) Six of these items were designed in line with the 'anxiety' subscale of the Experiences in Close Relationships scale; the remaining other item (7) was designed to measure 'confidence'. Five of the items correlated highly with eight or more other items (9, 10, 15, 16, and 24) For items 15 and 16 $r = .85$ ($p<0.001$), which was exceptionally high Both items also correlated highly with item 24 (item 15

r= - 76; n= 244; p<.001; item 16 r= -.74; n= 244; p<.001). These three items were all designed to measure confidence in the relationship with one's parents.

Table 6.2. Inter-item Correlation Matrix for the Childhood attachment questionnaire.

	1	2	3	4	5	6	7	8	9	10	11
2	-.47**										
3	.10	-.17**									
4	.26**	-.31**	23**								
5	- 24**	.38**	-.15*	-.49**							
6	-.22**	-.31**	19**	.56*	-.69**						
7	-.44**	.30**	-.02	-.24**	.26**	-.22**					
8	.04	-.20**	-.01	.24**	-.42**	28**	- 12				
9	-.30**	.45**	.02	-.33**	-.50**	-.38**	23**	- 54**			
10	.17	-.34**	.01	.38**	-.55**	.49**	- 21**	.48**	-.67**		
11	.61**	-.32**	-.02	.22**	-.23**	.14*	-.33**	.12	-.32**	30**	
12	- 28**	- 38**	.16*	.44**	-.58**	.70**	-.18**	.30**	- 47**	.56**	.26**
13	.15	-.08	-.05	-.19**	.03	- 10	-.15*	-.11	-.17**	-.15*	.09
14	.24**	-.22**	.01	.39**	-.46**	.54**	- 12	29**	-.44**	.52**	.26**
15	37**	.54**	-.01	- 46**	.51**	-.45**	31**	-.38**	-.65**	-.62**	-.39**
16	-.36**	51**	-.06	-.41**	- 51**	- 43**	.34**	-.44**	-.68**	-.61**	-.39**
17	.17**	-.08	.10	-.02	.12	-.10	-.18**	-.25**	.24**	-.24**	.13*
18	.16*	-.18**	.11	.05	.11	-.05	-.10	-.15*	.05	-.12	.05
19	.26**	-.38**	.09	.44**	-.57**	.57**	-.30**	.34**	-.51**	.54**	.21**
20	-.22**	.34**	- 04	-.31**	47**	-.39**	.25**	- 44**	.55**	- 64**	-.33**
21	.29**	-.29**	.16*	.25**	-.08	.09	-.24**	-.10	-.11	05	.18**
22	.19**	-.20**	.16*	.09	.01	.02	-.24**	-.15*	-.02	.01	.14*
23	-.32**	.45**	- 05	-.36**	.44**	-.35**	.34**	-.41**	.51**	-.49**	-.29**
24	.30**	- 43**	.04	.47**	- 57**	.56**	-.28**	.46**	- 60**	68**	.34**

	12	13	14	15	16	17	18	19	20	21	22	23
13	- 13*											
14	60**	.46**										
15	- 51**	.08	-.54**									
16	-.52**	.07	-.52**	.85**								
17	-.15	.45**	- 22**	.13*	.13*							
18	-.07	.26**	-.10	-.01	.00	.47**						
19	-.52**	-.09	.46**	-.57**	-.54**	-.12	-.05					
20	-.46**	.10	-.49**	.59**	60**	.16*	.07	-.40**				
21	.14*	.16*	.02	-.18**	-.19**	.33**	.33**	.08	-.10			
22	.03	.22**	-.03	-.05	-.06	44**	.41**	- 00	.09	.49**		
23	-.41**	.05	-.33**	.63**	.57**	.11	.02	- 37**	.50**	-.14*	-.06	
24	.63**	-.08	51**	-.76**	- 74**	-.16*	-.05	62**	-.60**	.14*	.03	-.65**

A initial principal components analysis with varimax rotation (orthogonal) produced five factors, with Eigenvalues greater than one, which accounted for 63.47% of the variance. Assumptions of sphericity (χ^2 = 3098 417; p<0 001) and sampling adequacy were met.

Five factors were extracted. Nine of the twenty-four items loaded most highly onto the first factor which was concerned with confidence in the availability of care and was therefore labelled 'confidence'. The items contributing to the second factor were mainly those developed from the avoidance scale of the Experiences in Close Relationships scale, this factor was therefore labelled 'avoidance'. The third factor related to anxiety about parents being absent and was made up of four items which were derived from the anxiety subscale of the Experiences in Close Relationships scale; consequently, it was labelled 'anxiety about absence'. Factor four related to anxiety about being abandoned by parents and again contained two items derived from the Experiences in Close Relationships scale anxiety subscale; consequently, it was labelled 'anxiety about abandonment'. Only item 13 loaded most highly onto the fifth factor, this item related to anxiety about getting lost. Factors 3, 4, and 5 were combined as they shared the common theme of anxiety about being separated from one's attachment figure.

Table 6.3. Rotated Factor Loading Matrix for the Childhood Attachment Measure

	Item	1	2	3	4	5
	Eigenvalue	8.53	3 06	1.52	1.12	1.00
9	I placed trust and confidence in my parents	80				
16	I was confident that I could turn to my parents in times of need	.79				
15	I felt confident that I could always rely on my parents to be there for me	.78				
24	I had a warm and understanding relationship with my parents	-.76				
10	I always allowed my parents to comfort me in times of distress	-.76				
20	I was confident in my mom's ability to make me feel better when I was a bit sad	.73				
23	I was confident that my parents would meet my needs	.70				
8	Whenever I was sick, I wanted my parents to be near to me	-.70				
2	I was never confident in my parents' ability to meet my needs	.46				
6	I never felt comfortable talking to my parents about personal things		.83			
12	I felt comfortable sharing my private thoughts and feelings with my parents	-.43	.66			

	Item	1	2	3	4	5
5	I never relied on my parents for emotional support	.50	-.65			
4	As a child I kept myself to myself		.64			
19	I preferred not to get too close to my parents	-.51	.54			
3	When my parents disapproved of me, I felt really bad		.49			
14	I always discussed any school problems with my parents	-.43	.48			
22	I resented it when my parents spent a long time away from me			77		
21	I needed a lot of reassurance that my parents loved me			.74		
18	I got frustrated when my parents were not there as much as I wanted			.70		
17	When my parents were away from me I felt anxious and alone			55		52
1	I worried about being abandoned by my parents				.84	
11	I did not worry about being abandoned by my parents				80	
7	I was not confident in my parents return when I was left with a babysitter				-.53	
13	I was extremely frightened about losing my parents when we were out of the house					84

An examination of rotated factor loadings of .4 and above (see table 6.3) demonstrated that four of the items loaded highly onto two factors These items needed to be considered to ensure that the factors were unidimensional, and that the items were grouped according to the correct theme. Item 19 (I preferred not to get too close to my parents) loaded highly onto both factor one (confidence) and factor two (avoidance) As this item was derived from the avoidance subscale of the Experiences in Close Relationships scale, and loaded most highly onto factor two, it was kept with the avoidance factor. Both items 12 and 14 had high negative loadings onto factors one and two. These items do relate to confidence; however, they were designed in line with the Experiences in Close Relationships scale avoidance subscale and so were retained in factor two. Finally, item five (I never relied on my parents for emotional support) loaded highly onto factors one and two. This item reflects both avoidance and confidence in a parent's care It was not clear to which factor this item belonged. As a result, item five was deleted from the scale. Item 17 loaded highly onto both factors three and five, but these factors were merged, so this was not of concern.

Following principle components analysis, the avoidance subscale consisted of six items (3, 4, 6, 12, 14, and 19), the confidence subscale consisted of nine items (2, 8, 9, 10, 15, 16, 20, 23, and 24), and the anxiety subscale consisted of eight items (1, 7, 11, 13, 17, 18, 21, and 22). It was intended that a score on a subscale would be summative. A high score on the avoidance subscale represented a more avoidant childhood attachment. A high score on the anxiety subscale represented a more anxious childhood attachment. A higher score on the confidence subscale represented more confidence in the responsiveness of one's caregivers as a child. Some of the items therefore required re-coding. For example, on item 12 of the avoidance subscale ("I felt comfortable sharing my private thoughts and feelings with my parents") a high score would have indicated less avoidance Reponses to this

item were therefore reversed. The items which need to be recoded as reversed scores were 2, 11, 12, and 14. SPSS Syntax were written to handle this recoding.

6.3.2 Reliability

The Cronbach alphas were considered for each subscale. The Cronbach alpha for the confidence subscale based on nine items was .85. The Cronbach alpha for the avoidance subscale was .79, based on six items. For the anxiety scale, based on eight items, the Cronbach alpha was .59. The removal of item seven (I was not confident in my parents return when I was left with a babysitter) from the anxiety subscale resulted in a more acceptable level of reliability, of 71. The usefulness of item seven was negligible. For example, if an individual were never left with a childminder or baby sitter, then they would not be able to respond reliably to the item. Therefore item seven was removed from this subscale. Totals were calculated for the three subscales. Items 2, 11, 12, and 14 were reverse scored. Due to technical problems with the webpage, items 1 and 11 did not have complete data across the stage two sample; therefore, these two items were excluded at stage two. For the confidence subscale, the correlation between stage one and stage two was .90 (n = 70, p<.001). For the avoidance subscale, the correlation over time was 80 (n=70; p<.001) and for the anxiety subscale, this correlation was 64 (n=70; p<.001). The Childhood Attachment Measure subscales have a good level of reliability over time.

6.4 Construct Validity of the Continuous Measure

A measure has good construct validity if it is measuring the phenomenon it claims to measure, and nothing else. In order to establish the validity of the Childhood Attachment Measure, scores were compared with the Parental Bonding Instrument and the Experiences in Close Relationships scale.

The association between the continuous subscales of the Childhood Attachment Measure and the continuous subscales of the Parental Bonding Instrument was explored. The Parental Bonding Instrument was selected for comparison as it is currently used as a measure of childhood experiences in attachment studies. Listwise Pearson's correlations were conducted between the subscales of the Childhood Attachment Measure (derived from the above analyses), and the subscales of the Parental Bonding Instrument (see table 6.4). These correlations were used to test the hypothesis that the Parental Bonding Instrument is biased towards the measurement of the working model of other. In line with this hypothesis, it was expected that the subscales of the Parental Bonding Instrument should correlate more highly with the avoidance subscale (working model of other) than with the anxiety subscale (working model of self) on the Childhood Attachment Measure.

With regard to the Childhood Attachment Measure, the childhood subscales of anxiety and avoidance did not correlate significantly ($r = .09$, $n = 218$, *ns*). Z –tests were conducted to test the hypothesis that the Parental Bonding instrument would be more highly correlated with the childhood avoidance scale than with the childhood anxiety scale. The probability was partitioned accordingly (.05 / 2 = 025). The critical value for z at the $p< 025$ level was 1.96 (two-tailed). In support of the above hypothesis, the correlations between the Parental Bonding Instrument and the avoidance subscale (Care $r = -.66$; $n = 218$; $p < .01$; Overprotection $r = .39$; $n = 218$; $p < .01$) were significantly stronger (Care $Z = -6.23$, $p<.025$; Overprotection $Z = 2\ 49$; $p<.025$) than were those between the Parental Bonding Instrument and the anxiety subscale (Care $r= -.19$, $n = 218$, $p < .01$; Overprotection $r = .17$, $n = 218$, $p <$ 05).

Table 6.4. Correlations between Childhood Experiences, Adulthood Attachment, Social Rank, and Depression.

	Depression	SC	Defeat	ECR An	ECR Av	Overprotection	Care	Avoidance	Confidence
SC	-.49**								
Defeat	.81**	- 61**							
ECR An	.44**	-.18**	44**						
ECR Av	.38**	-.14**	.38**	.14*					
Over	.27**	-.19**	.33**	14*	.24**				
Care	-.38**	.15*	- 41**	-.14*	-.33**	- 41**			
Avoidance	.39**	-.25**	.41**	.21**	.35**	.39**	- 66**		
Confidence	- 29**	.20**	-.35**	-.09	-.24**	-.37**	.78**	-.68**	
Anxiety	.25**	-.19**	.28**	26**	.10	.17*	-.19**	09	-.07

Key
[a] = Only those participants with complete data for all scales are included in this table. $n = 218$.
* Correlation was significant at the $p<.05$ level
** Correlation was significant at the $p<.01$ level

SC = Social Comparison; ECR An = Anxiety Subscale of the ECR; ECR Av = Avoidance subscale of the ECR

The Experiences in Close Relationships scale was selected because the Childhood Attachment Measure was based upon this scale, and because both scales measure the two dimensions of attachment, avoidance and anxiety. The aim of this analysis was to explore whether the continuous subscales of the new measure were associated with adult attachment subscales (anxiety and avoidance subscales of the Experiences in Close Relationships scale). In order to demonstrate that the Childhood Attachment Measure was measuring concordant dimensions of the attachment system as the Experiences in Close Relationships scale, it was expected that the Childhood Attachment Measure anxiety subscale would be more highly correlated with the Experiences in Close Relationships scale anxiety subscale than with the Experiences in Close Relationships scale avoidance subscale. Similarly, it was expected that the Childhood Attachment Measure avoidance subscale would be more highly correlated with the Experiences in Close Relationships scale avoidance subscale than with the Experiences in Close Relationships scale anxiety subscale.

Two Z-tests were conducted. The probability was partitioned accordingly (.05 / 2 = .025). The critical value for z at the $p<.025$ level was 1.96 (two-tailed). The correlation between avoidant childhood attachment and adulthood avoidance ($r = .35$, $n = 218$, $p < 01$) was significantly ($Z = 2.749$; $p<.025$) higher than the association between childhood avoidance and adult anxiety ($r = .10$, $n = 218$, *ns*). However the results were less clear for the childhood anxiety scale. No significant differences were observed between the association between an anxious attachment to one's parents and adult anxious attachment ($r = .26$, $n = 218$, $p < .01$) when compared with the correlation between childhood anxious attachment and adult avoidant attachment ($r = .21$, $n = 218$, $p < .01$). Anxious attachment in childhood is associated with both anxious and avoidant attachment in adulthood, whereas avoidant attachment in childhood is only associated with avoidant adulthood attachment.

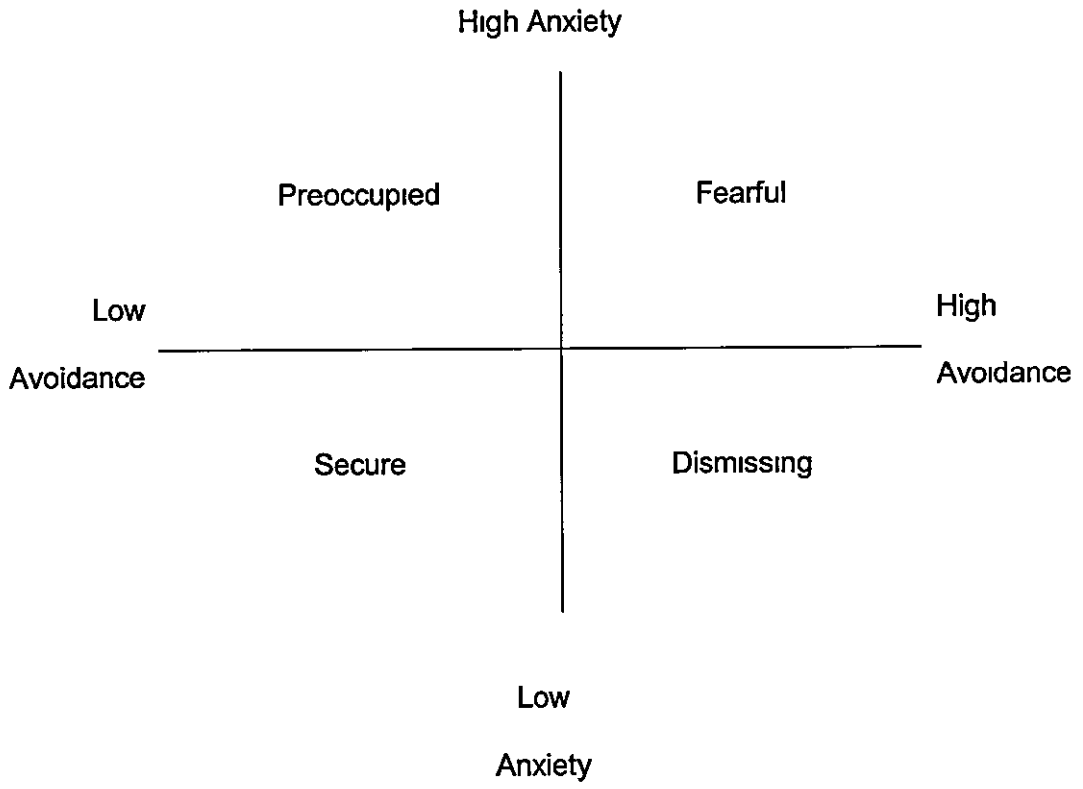
6.4.1 The Confidence subscale

The confidence subscale was correlated with the childhood (r = -.68, n = 218,p < .01) and adulthood (r = - 24, n = 218, p < 01) avoidance subscales, and with the Parental Bonding Instrument subscales (care r = .78, n = 218, p < .01; overprotection r = -.37, n = 218, p < .01) No significant correlations were observed between the confidence subscales and the childhood (r = -.07, n = 218, *ns*) or adulthood (r = - 09, n = 218, *ns*) anxiety subscales. This pattern of correlations suggested that the confidence subscale was an additional measure of the working model of other. As the two dimensions of attachment were already represented for childhood by the anxiety and avoidance subscales, the confidence subscale was discarded from further analyses as it was redundant.

6.5 Reliability and Validity of the Childhood Attachment Measure Derived Classification of Childhood Attachment Style

The Childhood Attachment Measure was based upon a revision of the Experiences in Close Relationships scale to represent childhood attachment to one's parents As noted in chapter five, the Experiences in Close Relationships scale subscales of avoidance and anxiety can be combined to classify four attachment styles, as defined by Bartholomew (1990; see figure 6.1). A low score on each of the dimensions is classified as a secure attachment. This defines an individual who is neither anxious, nor avoidant in their attachment A high score on both subscales is classified as fearful attachment, both anxious and avoidant. A low score on the anxiety dimension, but a high score on the avoidant dimension is classified as dismissing. Finally, a high score on anxiety, but a low score on avoidance, is classified as a preoccupied attachment style.

Figure 6.1. A Two Dimensional Representation of Four Attachment Styles (Bartholomew, 1990)



The possibility of classifying childhood attachment according to the Childhood Attachment Measure subscales was explored. The avoidant and anxiety subscales were selected as they most closely represent the two dimensions of attachment in Bartholomew's model of attachment These two subscales were not significantly correlated, this indicated that there was not a significant amount of shared variance, and therefore they could be combined to describe the four attachment styles. In order to classify participants, a cut point needed to be defined to describe a low score and a high score The mean, could be used as this cut point, however, the mean is sample specific and therefore comparing the populations at the two waves would not be valid. As one scale had six items, and the other seven items, both scales also needed to be represented in a standardised format, before they were combined to describe attachment style. In order to answer both of these requirements, individual

participants' mean item responses (between 1-7) were used to describe each dimension. After the mean item score had been calculated, frequencies were checked and normal distributions were found. The possible range of scores was six (1-7), the range was divided by two (6/2=3), and then added to the lowest possible score (3+1) to obtain the cut point. Therefore, a cut point of four was used to classify participants as high or low scoring on each dimension. SPSS syntax were written to describe the classification based on the two mean scores. For example, the instructions to classify individuals with secure childhood attachment was as follows "IF (meananx≤4 AND meanavo≤4) ch_att=1."

The four groups were formed using the 244 participants with complete Childhood Attachment Measure data from wave one. Of the 244 participants, 108 (44.3%) were classified as secure; 20 (8 2%) were classified as fearful; 17 (7%) were classified as preoccupied; and 99 (40.6%) were classified as dismissing.

6.5.1 Stability of the Childhood Attachment Measure Attachment Styles

The stability of the Childhood Attachment Measure classification was tested using data collected over a five-month interval. The aim of this analysis was to explore the reliability of these classifications over time. For this analysis n=70. Participants' scores on childhood anxiety and avoidance at wave two were used to classify childhood attachment style according to the methods outlined above. The classification at wave one was then compared to the classification at wave two Table 6.5 is a cross tabulation of the attachment classifications. Of the seventy participants, forty-seven (67.14%) reported the same classification at both times. The most stable of the four classifications was the dismissing style, characterised by high avoidance and low anxiety Of the 27 participants who were classified as

dismissing at time one, 21 retained that classification at time two. The secure attachment style also demonstrated a degree of reliability, 21 of the 31 individuals who were classified as secure at time one, retained that classification at time two. The group sizes for the fearful and preoccupied subgroups were too small to draw any formal conclusions.

Table 6.5. Classification of Childhood Attachment at Times One and Two.

		Childhood Attachment Classification – Time 2				
		Secure	Fearful	Preoccupied	Dismissing	Total
Childhood Attachment Classification - Time 1	Secure	21	1	4	5	31
		(67.74%)	(3.23%)	(12.90%)	(16.13%)	(100%)
	Fearful	1	2	1	2	6
		(16.66%)	(33.34%)	(16.66%)	(33.34%)	(100%)
	Preoccupied	1	-	3	2	6
		(16.66%)	-	(50%)	(33.34%)	(100%)
	Dismissing	4	2	-	21	27
		(14 81%)	(7.41%)	-	(77.78%)	(100%)
	Total	27	5	8	30	70

6.5.2 Between Groups Differences on the Childhood Attachment Measure Attachment Styles

To examine whether participants were grouped consistently with attachment theory, the means and standard deviations for parental bonding were considered for each group (see table 6.6). It was expected that individuals classified as securely attached would have more optimal childhood experiences as indicated by the Parental Bonding Instrument.

Table 6.6. Mean Scores for the Four Childhood Attachment Styles Defined by the Childhood Attachment Measure

	Secure (*n*=99)		Fearful (*n*=16)		Preoccupied (*n*=15)		Dismissing (*n*=88)		Total (*n*=218)	
Overprotection mean* (*sd*)	48.26	(11.62)	62.19	(13 87)	49 60	(11.74)	55.39	(14.09)	52.25	(13.48)
Care mean* (*sd*)	84.79	(9.77)	59.63	(14.18)	83 53	(7.95)	68.65	(15.88)	76 34	(15 58)

Key

Participant numbers differ from those reported above due to incomplete data on the Parental Bonding Instrument.

* Significant between group differences were observed

In line with expectations, those individuals classified as having a secure childhood attachment style reported the most optimal childhood bonding experiences. They reported the highest parental care and the least overprotection (on the Parental Bonding Instrument subscales). Those classified as having a fearful childhood attachment style reported suboptimal childhood experiences, they reported less care, and more overprotection than the other three attachment styles

Two univariate ANOVA were conducted to examine whether there was a significant difference between the four attachment styles on the parental bonding subscales. As the Parental Bonding Instrument subscales were inter-correlated, and the group sizes for the preoccupied and fearful groups were small, a MANOVA could not be conducted, as the assumptions were not met. The alpha level was partitioned to account for multiple testing (0.05/2 = 0.025), the criterion alpha level for significance was .025.

A significant difference between the four childhood attachment style groups was observed on both parental bonding subscales (Overprotection F [3, 214] = 8.34, p<.001; Care F [3, 214] = 35.52, p<.001). Scheffe post hoc tests were used to make multiple comparisons.

With regard to parental overprotection, the secure subgroup ($\bar{x}$ = 48.26; SD = 11.62) scored significantly lower than did the fearful ($\bar{x}$ = 62.19, SD = 13 87) and dismissing ($\bar{x}$ = 55.39; 14.09) groups. With regard to parental care, the secure subgroup ($\bar{x}$ = 84.79; SD = 9.77) scored significantly higher than did the fearful ($\bar{x}$ = 59 63; SD = 14.18) and dismissing ($\bar{x}$ = 55.39; SD = 14.09) subgroups, the preoccupied subgroup ($\bar{x}$ = 83.53; SD = 7.95) scored significantly higher than did the fearful subgroup ($\bar{x}$ = 59 63, SD = 14.18), and dismissing groups ($\bar{x}$ = 68.65, SD = 15 88).

6.6 Summary and Discussion

6.6.1 Construct Validity of the Parental Bonding Instrument

As hypothesised, the Parental Bonding Instrument was more highly associated with the model of other than with the model of self. This confirmed the hypothesis that the Parental Bonding Instrument is biased towards the measurement of the working model of other, and is therefore incomplete as a measure of childhood attachment. The Childhood Attachment Measure was designed as a measure of childhood attachment which would overcome this criticism.

6.6.2 Fulfilment of Criteria and Specifications

Four criteria were established which the measure of childhood attachment needed to meet. The Childhood Attachment Measure fulfilled all four criteria, it was a self report scale, suitable for self administration, it was retrospective and intended for adults, it concerned relationships with parents during childhood and it was congruent with the Experiences in Close Relationships scale in terms of it's measurement of attachment These specifications were met.

6.6.3 Reliability and Validity of the Continuous Subscales

Three factors were derived from the Childhood Attachment Measure, these were labelled "anxiety", "avoidance", and "confidence". These subscales demonstrated internal reliability and an acceptable degree of reliability over a five-month period. Although still acceptable, the anxiety subscale had the lowest correlation over time, and the lowest Cronbach alpha This may have been because the subscale was derived from three factors, whereas the other two subscales were each derived from just one factor.

Cross validation was not carried out on the Childhood Attachment Measure. Based upon the formula provided by Janda (1998), were a cross validation analysis conducted using the original 25 items, and an alpha level of 0.05 to select items, only 1.25 items would be expected to be deleted[1]. Reducing the number of items by so few represented only a small validity shrinkage. Chances of validity shrinkage are also reduced given that the scale was theory driven. Data could have been split arbitrarily and then cross validated, however, following the recommendations of Nunnally (1967) it is best to use the whole sample in the initial analysis to benefit from the larger number of participants.

6.6.4 Adult Attachment and the Parental Bonding Instrument

The Childhood Attachment Measure subscales of avoidance and anxiety were related to their congruent adult attachment subscales. This demonstrated the construct validity of the Childhood Attachment Measure subscales and that the avoidance and anxiety subscales were consistent with the two dimensions of attachment described in attachment theory (Bartholomew, 1990). The Childhood Attachment Measure related to both the working model of self and the working model of other, therefore, the Childhood Attachment Measure is an improvement on the Parental Bonding Instrument, in terms of its capacity to measure attachment. Alternatively, the correlation between the Childhood Attachment Measure and the Experiences in Close Relationships scale may be a product of the shared method variance between the measures (i e., both used a Likert scale of 1-7 and both shared common words in the items used).

The avoidance subscale of the Childhood Attachment Measure was correlated with the Parental Bonding Instrument As noted above, the Parental Bonding Instrument

[1] At $p < .05$ and with 25 items on the original scale, only 1.25 items would be expected to have non significant correlations in a cross validation analysis (i e. .05 x 25).

is a measure exploring parental behaviours during childhood. Since the avoidance subscale is intended to represent the working model of other, this set of correlations further supported the construct validity of the Childhood Attachment Measure avoidance subscale.

The confidence subscale was intended as an indicator of security, should the dimensions of anxiety and avoidance fail to emerge. As the two dimensions did emerge from the principle components analysis and were found to be reliable and valid, the confidence subscale was not needed. Correlations between the Parental Bonding Instrument, the Experiences in Close Relationships scale, the Childhood Attachment Measure and the confidence subscale demonstrated the confidence subscale was biased towards measurement of the working model of other. The subscale was omitted from further analyses as it was an additional indicator of the working model of other in childhood. Alongside the childhood avoidance subscale and the Parental Bonding Instrument subscales, the confidence subscale was therefore redundant.

6.6.5 Categories of Childhood Attachment Style

A further improvement on the Parental Bonding Instrument is the utility of the Childhood Attachment Measure in categorising individuals according to their childhood attachment style. The four childhood attachment styles were created by combining the anxiety and avoidance subscales, based on the two dimensional model of attachment as proposed by Bartholomew (1990) The Childhood Attachment Measure classifications demonstrated an acceptable level of stability over a five month period. For the majority of the participants, attachment style was stable over time.

Although the majority of participants were classified as securely attached, based on the report of Waters (1978), the proportion of participants classified as secure was less than expected. Waters (1978) described the behavioural patterns of anxious-ambivalent attachment as proximity seeking, maintaining contact, but also as resisting contact, this attachment style overlaps with the description of preoccupied attachment (Bartholomew, 1990). Typically, 20% of infants would be classified as such (Waters, 1978). This is consistent with the low proportion of participants classified as preoccupied in the current study

As outlined in the literature review, previous research has not defined childhood attachment in terms of fearful and dismissing avoidant attachment styles; rather, these two styles have been combined and defined as "insecure avoidant". Bartholomew (1990) proposed that the fearful attachment style overlaps with the avoidant childhood attachment style. An insecure avoidant infant is described as high on avoiding proximity and low on seeking proximity, maintaining contact, and resisting contact. An observational categorisation of infants attachment styles found 24% of the sample to be "insecure avoidant" (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). Waters (1978) reported that 15-20% of the sample would be expected to have an avoidant classification. In a community sample, a high number of individuals with adverse childhood experiences would not be expected (as compared to a clinical sample for example). Therefore the small proportion of the sample that fell within the fearful classification was acceptable. A high proportion of the population were classified as dismissing, this is discussed below in the limitations.

The observed group differences were consistent with attachment theory and research. As expected, individuals classified as having a secure childhood attachment reported high levels of care from their caregivers, and low levels of

parental overprotection (e g , Hamilton, 2000, Lewis *et al.*, 2000). Consistent with theory (e.g., Ainsworth *et al.*, 1978; Bowlby, 1969; 1973; 1980) a positive childhood experience with one's parents, was congruent with a secure attachment style. This was evidence of the construct validity for this categorisation.

The fearful subgroup reported low perceived care (the lowest between the four groups), and a high degree of parental overprotection. Consistent with the bonding experiences reported within this group, the parent of an avoidant child would be typified by rigid and compulsive care giving, an insensitivity towards the child's signals and needs, and hostility, adversity to physical contact, and blunted emotional expressions (Ainsworth *et al.*, 1978).

The childhood experiences of the preoccupied subgroup closely resembled those of the secure group. Participants who were classified as having a preoccupied childhood attachment style reported optimal bonding experiences. Bartholomew (1990) hypothesised that the preoccupied attachment style was initiated by inconsistent care from the primary caregivers which results in the individuals blaming themselves when care is not provided. Difficulties with parents are therefore distorted, and transferred into self-blame. As the Parental Bonding Instrument only relates to the model of other, it would not detect any insecurity in individuals with preoccupied attachment, as they have a positive model of other and a negative model of self Hence, individuals classified as preoccupied report optimal childhood experiences with their parents and confidence in their parents because their working model of other remains positive. These findings therefore demonstrate the construct validity of the preoccupied classification.

In support of the construct validity of the dismissing attachment classification, participants within this group reported less optimal childhood experiences. This is

because the dismissing attachment style is characterised by high independence, and self-confidence, coupled with a defensive denial of the need for the attachment figure. As the Parental Bonding Instrument items do not focus on the individual's cognitions or behaviours, it is not sensitive enough to pick up all of the subtleties of the dismissing attachment style. The construct validity of this categorisation is demonstrated by the suboptimal childhood experiences described by the Parental Bonding Instrument subscales.

6.6.6 Limitations of the Childhood Attachment Measure

Establishing the validity of retrospective measures, such as this one is difficult without the data from the individual's childhood. The present measure is therefore an indicator of autobiographical memory of the individual's childhood (Nelson, 1993, Welch-Ross, 1995). A difficulty with research on childhood experiences is the influence of false autobiographical memories on retrospective measures which may decrease the validity of such measures. This issue refers both to the Parental Bonding Instrument and to the new measure of childhood attachment. However, when retrospective reports have been compared to actual experiences during childhood, the reports have been found to be valid and reliable. For example, Henry, Moffitt, Caspi, Langley, and Silva (1994) conducted a longitudinal evaluation of the extent to which retrospective and prospective measures were related. Medical, sociological, and psychosocial variables were measured in a group of individuals at two-year intervals from the age of three years. At the age of eighteen, participants were then subject to a retrospective questionnaire concerning their childhood. The retrospective reports were compared to the longitudinal data to determine the accuracy. Of the psychosocial variables they examined, the correlations for attachment were the highest, ranging from .24 (for the whole sample, regarding retrospective reports of attachment at age thirteen) to .45 (for the female sample

regarding attachment at age fifteen). As a comparison, the correlation between retrospective assessments of childhood injuries (broken bones) and an actual count of injuries sustained between the ages of seven and fifteen was .42. Given that this evaluation spanned adolescence, a turbulent period with regard to attachment, these correlations suggest that the retrospective measurement of attachment is meaningful, and reliable. In support, Bifulco, Brown, Lillie, and Jarvis (1997) found a high degree of consistency between siblings on self-report measures of childhood experiences with parents.

From the high number of individuals classified as dismissing, and the low number classified as preoccupied, it was concluded that participants more readily rated themselves as highly avoidant than highly anxious. This may have been because the items from the avoidance subscale referred to the behaviour of or beliefs about parents, whereas the items on the anxiety subscale required an understanding, or memory of the complex cognitive processes that took place during childhood (e g., I *worried* about being abandoned by my parents). Therefore, it may have been easier for participants to report accurately and consistently actual experiences of avoidance than the more subtle experiences of anxious attachment, which led to fewer participants being categorised as highly anxious. In addition, this may be one reason why the anxiety subscale was less reliable (according to the Cronbach alpha) than was the avoidance subscale.

Although the Childhood Attachment Measure has advantages over the Parental Bonding Instrument as it is more congruent with attachment theory, using the Parental Bonding Instrument allowed for a comparison of the findings from the current study with earlier research which has relied on the Parental Bonding Instrument as a measure of childhood experiences. Both measures were used in the

subsequent analyses to allow for a comparison between the Parental Bonding Instrument and the new measure of childhood attachment.

Chapter 7

Results II: Testing the Alternative Pathways

7.1 Introduction

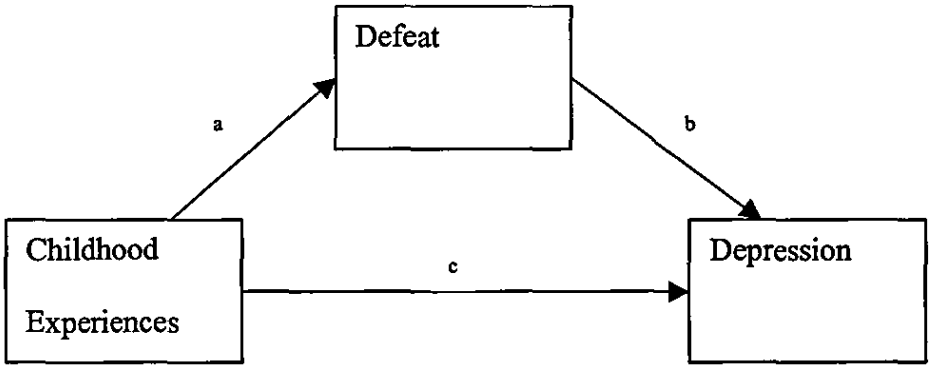
It was hypothesised that childhood attachment was associated with depression through a separate cognitive mediator outside of the attachment system (section 1.9.4). In line with this hypothesis, an alternative pathway was proposed, drawing on the Social Competition Hypothesis of Depression (Price *et al.*, 1994). It was expected that the association between childhood attachment and depression would be mediated by the Involuntary Defeat Strategy. Drawing on the Social Competition Hypothesis of Depression (Price *et al.*, 1994), it was further hypothesised that the role of adulthood attachment was to moderate the relationship between social comparison and depression

7.1.1 Pathway Between Childhood Attachment and Depression

Sloman *et al.* (2003) stated that attachment relationships in one's early years are the first opportunity which one has to learn about social rank. This is achieved as one becomes aware of how others react to and value ones' self For example, as young children we learn the value of a caring relationship, and about our own ability to elicit care, from supportive relationships, and to sustain these relations (Cassidy, 1999). It was proposed by Sloman (2000a) that the Involuntary Defeat Strategy is shaped by childhood experiences. Thus, it was expected that childhood experiences would significantly predict defeat. Sloman (2000a) further stated that the Involuntary Defeat Strategy may be one mechanism by which childhood experiences can be preserved and later affect functioning in adulthood. Importantly, the maladaptive triggering of the Involuntary Defeat Strategy, as observed in individuals with depression (Gilbert & Allan, 1998) "may be attributed to a history of having autocratic and punitive parents" (Sloman, 2000a, pp58) As the defeat system is 'set' by childhood experiences and sensitive to adverse childhood experiences, it was expected that defeat would

mediate the association between attachment to one's parents and depression. This model is shown in figure 7.1.

Figure 7.1. The mediating role of defeat on the relationship between childhood experiences and depression.



A mediating variable is influenced by one variable (a), has an effect on another variable (b), and can explain the relationship between these two variables (a and b) in part or in full (Baron & Kenny, 1986). To demonstrate the mediating effect of defeat upon the relationship between childhood attachment and depression, four criteria need to be demonstrated using a series of regression analyses (Judd & Kenny, 1981) (i) Childhood attachment should significantly predict defeat (path a). (ii) Childhood attachment should significantly predict depression (path c) (iii) Defeat should significantly predict depression (path b). (iv) When the paths from childhood attachment to defeat (path a), and from defeat to depression (path b) are controlled, the relationship between childhood attachment and depression (path c) should be attenuated or non significant. The strongest demonstration of mediation occurs when path c is reduced to zero at the final stage (Baron & Kenny, 1986). The subscales of the Parental Bonding Instrument were included as predictors in the mediator analysis

alongside the subscales of the Childhood Attachment Measure. This was done in order to compare the findings using the Childhood Attachment Measure with those using the Parental Bonding Instrument. As outlined in section 3.5, it was expected that this model would be specific to childhood attachment and that defeat would not mediate the association between adulthood attachment and depression.

7.1.2 Pathway between Adult Attachment and Depression

It was hypothesised that adult attachment would moderate the association between a stressor and depression. This hypothesis was explored within the Social Competition Hypothesis of Depression (Price *et al.*, 1994). According to the moderating model proposed by Sloman *et al.* (2003), when social defeat occurs, a secure attachment style should buffer the individual against episodes of depression. Alternatively, those with insecure attachment fail to learn how to regulate affect, and struggle to cope with adversities, such as defeat. This positions these individuals as more vulnerable to depressive episodes than are those with secure attachment. At present, this model has not been subject to testing; evidence is needed in order to develop this theory.

An aim of this study was to expand on the model proposed by Sloman *et al.* (2003). As stated in the literature review, the present study aims to explore which of childhood or adulthood attachment is implicated as the moderator in this model. Based upon the findings of Hammen *et al.* (1995), it was expected that adulthood attachment would fulfil the moderating role, whereas childhood attachment would not. Furthermore, it was expected that adult attachment would moderate the association between social comparison and depression, rather than between defeat and depression. It was therefore expected that adult attachment would moderate the relationship between social comparison (the stressor) and depression, and that this

effect would not be observed when either defeat was the stressor, or childhood attachment was the moderator.

A moderator is a variable whereby the relationship between two other variables is observed to differ for different values of the moderator (Baron & Kenny, 1986) As outlined earlier in section 3.5, in order for the moderating effect of attachment on the association between social comparison and depression to be significant, having a secure attachment style should reduce the impact of social comparison on depression. Specifically, the association between depression and social comparison should be reduced or non-significant in individuals with a secure attachment style. Similarly, the association between depression and social comparison should be significant in those individuals with an insecure attachment style. The moderator is supported if, in a regression analysis, the interaction between the predictors (the stressor and attachment) accounts for a significant proportion of variance in the prediction of depression than do the predictor variables entered independently (Miles & Shevlin, 2001).

7.2 Correlations

Listwise correlations were conducted between the main variables of interest; depression, social comparison, defeat, adult attachment subscales, parental bonding subscales, and childhood attachment subscales. As outlined in section 1.1, evidence suggests that males and females differ in terms of their experience of depression (e.g., Bos *et al.,* 2005). Therefore, correlations were calculated separately for males and for females (see appendix I) and a series of Z-tests were conducted to examine the difference between the correlations for males and for females. If no significant difference existed between males and females, with regard to the correlations, then the data would be merged for the remainder of the analyses on the premise that no

sex differences were prevalent in the present sample. In total 45 Z-tests were conducted. The probability was partitioned accordingly (05 / 45 = .001). Consequently, the critical value for *z* at the *p*< 001 level was 3 30 (two-tailed). There were no significant differences in the correlations between the male and female samples. Data were therefore merged for the remaining analyses as no sex differences were detected in the associations between the variables of interest.

In order to test whether childhood and adulthood attachment were significantly associated with depression (hypothesis one), listwise Pearson's correlations were explored between depression and each of the childhood and adulthood attachment subscales (see table 6.4). In support of hypothesis one, a positive association was observed between depression and each of adult avoidance (r = 38, n = 218, p < .01), adulthood anxiety (r = .44, n = 218, p < .01), childhood avoidance (r = .39, n = 218, p < .01) and childhood anxiety (r = .25, n = 218, p < .01). A higher score on depression was associated with more anxious and avoidant attachment in childhood and in adulthood.

7.3 Part One: Testing the Involuntary Defeat Strategy as a Mediator of the Association between Childhood Attachment (and Bonding Experiences) and Depression.

To demonstrate that childhood attachment was mediated by a cognitive variable independently of the attachment system, it was necessary to establish both that the childhood attachment was mediated and that adulthood attachment *was* not. Therefore, two mediator analyses were conducted as follows.

1. Test of whether the Involuntary Defeat Strategy mediates the relationship between childhood attachment and depression
2. Test of whether the Involuntary Defeat Strategy mediates the relationship between adulthood attachment and depression

A series of mediator analyses were conducted to test whether the Involuntary Defeat Strategy mediated the relationship between childhood attachment and depression. Analyses were conducted to explore whether the mediated relationship was specific to childhood attachment or whether it was also observed for adulthood attachment. Mediation was demonstrated if a significant association between attachment and depression was reduced and non-significant when a mediating variable (which was associated with both predictor and criterion) was introduced into the model. These analyses also tested whether childhood experiences significantly predicted defeat.

The listwise correlations in table 6 4 confirmed that the hypothesised mediator, defeat, was significantly (p<.01) related to all childhood, and adulthood attachment variables. The highest observed correlation between defeat and an adult attachment variable was with adult anxiety (r = .44, n = 218, p < .01). Within the bonding subscales, defeat was most highly associated with care (r = -.41; n = 218 p < .01). Within the Childhood Attachment Measure subscales, defeat was most highly correlated with avoidance (r = .41, n = 218, p < .01).

It was expected that defeat would mediate the association between childhood experiences with parents and depression experienced in adulthood. A mediator analysis was conducted to test this. The predictor variables were the two Parental Bonding Instrument subscales and the anxiety and avoidance subscales of the Childhood Attachment Measure. The criterion variable was depression, and the mediating variable, defeat. Only individuals with complete data for the scales used in each analysis were included (n = 218; females n = 179; Males, n = 39).

A mediation analysis was conducted using the steps recommended by Baron and Kenny (1986). Data were screened for multivariate outliers. At the p<.01 level (5 df; χ^2 = 15.09) for Mahalanobis Distance, four multivariate outliers were detected and removed. The analysis met the assumptions of linearity, normality, homogeneity of variance and independence (Durbin Watson = 2.11)

The aim of the first stage was to establish whether there was a relationship between the predictors (childhood experiences) and the criterion (depression). The two Parental Bonding Instrument subscales and the anxiety and avoidance Childhood Attachment Measure subscales were entered simultaneously as the predictor variables. The predictor variables accounted for 27.3% of the variance in depression (R=.52; F [4, 209] = 19.61, p< 001). Zero order and semi-partial correlations (table 7.1) illustrated that avoidance, anxiety, and care made significant and unique contributions to the prediction of depression.

Care had the greatest predictive power independently (see table 7.1). Care had a strong negative zero-order correlation with defeat, but a lower semi partial correlation. Over half of the predictive power attributable to care was shared with the other variables. The perception of a more caring parent was related to lower

depression A more avoidant and more anxious childhood attachment as associated with depression Overprotection was not a significant predictor of depression.

The aim of the second stage was to test whether the childhood attachment variables significantly predicted the mediator, defeat. Predictors entered into the model were the two Childhood Attachment Measure subscales, and the two Parental Bonding Instrument subscales. No multivariate outliers were detected, and the analysis met the assumptions of linearity, normality, homogeneity of variance and independence (Durbin Watson = 1.97). The predictors accounted for 33.7% of the variance in defeat (R = .58; F [4, 209] = 26 50; p<.001) Zero order and semi-partial correlations (table 7 1) illustrated that avoidance, anxiety, care, and overprotection each made significant and unique contributions to the prediction of defeat. Anxiety contributed the greatest unique predictive power.

The aim of the third stage was to demonstrate that the mediator (defeat) accounted for significant variance in the prediction of the criterion (depression) A regression equation was therefore estimated Defeat accounted for 65% of the variance in depression (r=.81, F [1, 212] = 394.49, p<.001).

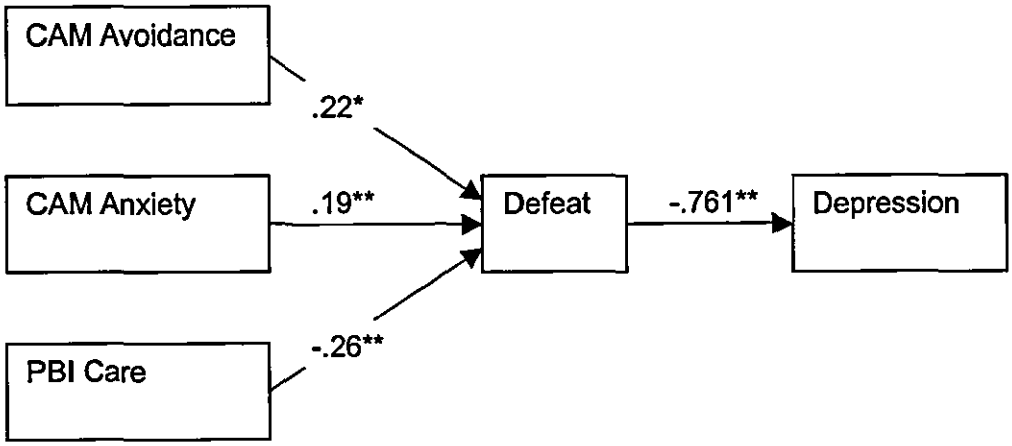
The final stage examined whether the predictors were still related to the criterion variable when the relationship with the mediator was controlled. The predictors were entered in two blocks to allow the change in $r2$ to be examined between the model without the mediator, and the model including the mediator The two subscales of the Childhood Attachment Measure and the two subscales of the Parental Bonding Instrument were entered as predictors in the first block; the mediator defeat was entered in a second block. The criterion was depression. The final estimated model (including both the predictors and the mediator) accounted for 65 7% of the variance in the prediction of depression (R= 81, F [5, 208] = 79 68 p<.001). The second

analysis, including the mediator accounted for significantly more variance in depression than the childhood variables alone ($r2$ change =.38, F change [1, 208] = 232.90, p< 001). Analysis of the standardised beta coefficients demonstrated that defeat mediated the relationship between depression and each of childhood avoidance, anxiety, and care. The beta weights, and partial correlations for avoidance, anxiety, and care were attenuated and non-significant when the mediator was entered into the model. This mediating model is depicted in figure 7 2.

Table 7.1. Defeat as a Mediator between Childhood Experiences and Depression. Zero order and Semi-Partial Correlations.

Stage and Predictors	Criterion	Standardised β	*t*	*p*	Zero Order	Semi-Partial
Stage 1	**Depression**					
Care		- 27	3 28	.001	- 47	-.19
CAM Anxiety		.17	2 76	.006	26	.16
CAM Avoidance		.20	2.52	013	42	.15
Overprotection		07	1 00	.317	.28	06
Stage 2	**Defeat**					
CAM Anxiety		.19	3.39	001	30	.19
Care		- 26	3.26	.001	- 50	-.18
CAM Avoidance		22	2 95	004	.46	.17
Overprotection		.13	2.04	.043	.36	.12
Stage 3	**Depression**					
Defeat		81	19.86	.001	81	-
Stage 4	**Depression**					
Defeat		- 761	15 26	001	81	.62
Care		- 08	1.29	.198	- 47	- 05
Overprotection		- 03	69	491	.28	-.03
CAM Avoidance		03	.54	.594	.42	.02
CAM Anxiety		02	.42	.676	23	.02

Figure 7.2. The Mediating Role of Defeat in the Relationship Between Childhood Attachment and Depression.



Key.
**$p<.001$
* $p<.01$

7.3.1 Adult Attachment

This analysis was repeated using the adulthood attachment dimensions of avoidance and anxiety (Experiences in Close Relationships scale) as the predictors, in place of the childhood attachment variables (appendix J). The association between adult attachment and depression was partially mediated by defeat. However, it was found that anxiety and avoidance maintained significant and independent relationships with depression, at the final stage of the analysis, once defeat had been entered into the model. The partial correlations were attenuated, but still significant. Therefore, defeat did not fully mediate the relationship between adult attachment and depression This demonstrated that the mediating effect of defeat, on the

relationship between attachment and depression, was stronger for childhood attachment.

7.3.2 Summary of Part One

Consistent with expectations higher defeat was related to a more adverse childhood experience involving less care, more overprotection, and higher avoidance and anxiety in childhood relationships with one's parents. As expected, defeat significantly mediated the relationship between childhood attachment and depression. This mediating effect was stronger for childhood attachment than for adult attachment.

7.4 Part Two: Testing the Extent to Which Attachment Style Moderates the Relationship between Social Rank and Depression.

It was expected that adulthood attachment would moderate the relationship between a stressor, which was social comparison, and depression. This moderating effect was not expected either when childhood attachment or bonding experiences were the moderator. Moderator analyses were employed in SPSS to test this. Separate analyses were run to test three different possible moderating variables; these were the Experiences in Close Relationships scale classification of adult attachment style, the Parental Bonding Instrument classification of parental bonding, or the Childhood Attachment Measure classification of childhood attachment style. This series of analyses allowed for a comparison of the differential effects of childhood and adulthood attachment. The analyses also allowed for an examination of the differences between the new measure of childhood attachment and the Parental Bonding Instrument. Sloman *et al.* (2003) hypothesised that the association between defeat and depression would be moderated by adult attachment Therefore, this

possibility was also tested. This combination resulted in six moderator analyses as follows.

1. Test of whether adult attachment moderates the relationship between social comparison and depression.
2. Test of whether adult attachment moderates the relationship between defeat and depression.
3. Test of whether childhood attachment moderates the relationship between social comparison and depression
4. Test of whether childhood attachment moderates the relationship between defeat and depression
5. Test of whether parental bonding moderates the relationship between social comparison and depression
6 Test of whether parental bonding moderates the relationship between defeat and depression

The alpha level was partitioned accordingly, consequently, a probability value of $p<$ .008 (05 / 6) was the criterion for statistical significance in the main analyses. For the moderator analyses, the outcome of the analysis was defined as the r^2 change and the significance of the change between the model without the interactions, and the model including the interactions, rather than the significance of individual regression lines This was because the individual regression lines were for dummy variables which collectively described one variable. Interpreting the individual regression lines would not have been meaningful.

The extent to which adult attachment style (as measured by the Experiences in Close Relationships scale) moderated the relationship between social comparison and depression was tested in the cross sectional data from stage one of the data series. These participants were described in table 5.1. Social comparison was the predictor,

adult attachment was the moderating variable and depression was the criterion variable.

It was predicted that in individuals whose attachment style is insecure, the correlation between social comparison and depression would be higher, than in those individuals whose attachment style is secure To examine whether social comparison and depression were related at different levels within the four attachment styles, listwise Pearson's correlations between social comparison and depression were examined for each group. Of the four attachment styles, the highest Pearson's correlation between social comparison and depression was observed in the fearful group (r = -.68; n = 84; p<.001). In the dismissing group the correlation between social comparison and depression was -.513 (n = 33; p = 002). In the preoccupied group, the correlation was slightly lower (r = -.258; n = 70; p = .031). In the secure subgroup, social comparison did not correlate significantly with depression (r = -.117; n = 57; *ns*). These correlations indicated that adult attachment style was moderating the relationship between social comparison and depression. To explore this further, a moderator analysis was conducted in SPSS

7.4.1 Variables

7.4.1.1 Adult Attachment

The measure of adult attachment used was the Experiences in Close Relationships scale, as described in chapter five. Using the Experiences in Close Relationships scale, attachment can be coded both categorically and continuously (using the dimensions of anxiety and avoidance). In order to explore the relationship between social comparison and depression within different attachment styles, categorical variables were chosen for this analysis. The coding for the categorical variable was based on Fisher's exact co-efficient provided by the authors of the scale (Brennan *et*

al., 1998, pp 72). Four attachment styles were categorised, these were; secure, dismissing, fearful, and preoccupied.

The demographic characteristics of the four attachment style groups are described in table 7.2. 34.4% of participants were classified as fearful, 28.7% as preoccupied, 23.4% as secure, and 13.5% as dismissing. Compared to the guidelines of Brennan *et al* (1998) the numbers in the secure and dismissing groups were too low, and the numbers in the fearful group too high. However, this pattern of results replicated those of Levy *et al.*, (1998), found in a student sample, and was therefore considered acceptable.

The four groups show roughly equivalent age ranges and male-female splits. Only 24.6% of the secure group were single, whereas for the fearful and preoccupied groups 64.3% and 48 5% (respectively) of individuals were single. Across the four groups, the split between sampling methods was roughly equivalent Mean scores on depression and defeat were higher in the insecure subgroups of fearful, preoccupied, and dismissing than they are in those with secure attachment. Although scores were not as discrepant on the Social Comparison Scale, the highest score (indicating a favourable comparison of the self with others) is observed in individuals with secure attachment.

Table 7.2. Demographic Information for Participants across the Four Types of Adult Attachment (As Defined By the Experiences in Close Relationships scale)

		Secure (*n*=57)		Fearful (*n*=84)		Preoccupied (*n*=70)		Dismissing (*n*=33)	
Depression mean (*sd*)		20	(5.68)	33.18	(12.38)	31.07	(10 73)	28.48	(11.64)
Defeat mean (*sd*)		9.49	(6.79)	23.23	(13.54)	20.46	(11.84)	17.91	(12.41)
Social Comparison mean (*sd*)		70 54	(14.21)	65.33	(15.62)	64.96	(14.33)	65.58	(16 94)
Mean Age (*sd*)		24 68	(6.67)	24 58	(7.45)	22.31	(7.49)	23.88	(7 97)
Frequencies		***n***	**(%)**	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Sex	Female	48	(84.21)	65	(77.38)	59	(84.29)	28	(84 85)
	Male	9	(15.79)	19	(22.62)	11	(15.71)	5	(15.15)
Status	Co-habiting	26	(45.61)	17	(20.24)	12	(17.14)	6	(18.19)
	Going out	17	(29.82)	13	(15.48)	34	(48.57)	11	(33.33)
	Single	14	(24.56)	54	(64.29)	24	(34.29)	16	(48.48)
Sampling	Paper	11	(19.30)	12	(14 29)	13	(18.57)	6	(18.18)
Technique	Internet	46	(80 70)	72	(85 71)	57	(81.43)	27	(81.82)

7.4.1.2 Dummy Variables and Interaction Variables

To prepare the variables for the moderator analysis, three steps were taken. Firstly, three dummy variables were created to describe the four attachment styles. The coding is shown in table 7.3. Dummy variables are used to represent categorical variables in regression analyses. Only three dummy variables were needed to describe four variables, as the fourth variable is described by being scored "0" on the three dummy variables (Pedhazur, 1973).

Secondly, the continuous predictor variable of social comparison was centred in order to minimise problems with multicollinearity (Aiken & West, 1991; Miles & Shevlin, 2001). Centering a variable refers to putting scores in deviation form ($x-\bar{x}$) so that the means are zero (Miles & Shevlin, 2001); this is done for each individual by creating a new variable. The criterion variable is not centered

Table 7.3. Dummy Variables for Moderator Analysis

Attachment style	Original code	Dummy Variable codes		
		D1	D2	D3
Secure	1	1	0	0
Fearful	2	0	1	0
Preoccupied	3	0	0	1
Dismissing	4	0	0	0

In the final step to prepare the variables for analysis, the dummy variables and centered social comparison were multiplied to create interaction terms for each participant (see table 7.4).

Table 7.4. Interaction variables

Variable name	Factors	
D1*SC	Dummy variable Secure	Centred Social Comparison
D2*SC	Dummy variable Fearful	Centred Social Comparison
D3*SC	Dummy variable Preoccupied	Centred Social Comparison

7.4.2 Moderator Analysis

A preliminary multiple regression was performed (n=244). Predictor variables were entered in two blocks Block one consisted of the three dummy variables for adult attachment, and centered social comparison. Block two contained the interaction variables describing the interaction between social comparison and depression. The total depression score was entered as the criterion Examination of the plots of the standardised residuals indicated that the regression assumptions of linearity, normality and homogeneity of variance were not violated. The Durbin Watson Statistic for auto correlation was 2.14, indicating independence of the residuals. Using a p< 01 criterion for Mahalanobis distance (df=9; χ^2 = 21.67) four multivariate outliers were detected and removed from the analysis, consequently, n= 240.

Hierarchical Stepwise Regression was applied with 240 participants. Variables were entered in two blocks as for the preliminary analysis described above. The first regression equation accounted for 34.5% of the variance in the prediction of depression; the multiple correlation co-efficient was .59 (F = [4, 235] 30.93; p<0.001). The second regression equation, including the interactions accounted for 40.7% of the variance, the multiple correlation co-efficient was .64 (F = [7, 232] 22.74; p< 001). The $r2$ change between the two models was .06 (F change = [3, 232] 8 09; p <.001). These findings support the proposed model, attachment style significantly moderated the association between social comparison and depression. Having a secure

attachment style therefore reduces the impact of social comparison on depression. Whilst for those with an insecure attachment style, the association between social comparison and depression is significant.

An examination of the beta weights, the zero order, and the semi-partial correlations from the final step (table 7.5), demonstrated that secure attachment, centred social comparison, and the interaction between social comparison and fearful attachment made significant unique contributions to the prediction of depression.

Table 7.5. The Moderating Effect of Adult Attachment on the Relationship between Social Comparison and Depression. Beta Weights, Zero Order and Semi-Partial Correlations at the Final Step

Predictors	Standardised β	*t*	α	Zero order	Partial
Secure	-.39	6.35	.001	-.42	-.32
Dismissing	-.07	1.27	.206	- 04	-.06
Fearful	.07	1.19	233	.28	.06
Centered SC	-.24	2.52	.012	-.45	-.13
Secure x SC	.09	1.27	.205	-.13	.06
Dismissing x SC	-.05	.85	.399	-.12	-.04
Fearful x SC	.27	3.44	.001	- 44	-.17

Key SC= Social Comparison

The model was further tested, substituting childhood attachment into the model. The model was not significant when either parental bonding, or childhood attachment style (appendix K) were substituted into the model as moderators. Therefore, as predicted, this pathway to depression is specific to adulthood attachment.

The model was further tested substituting defeat as the predictor variable in accordance with the hypothesis of Sloman *et al.* (2003). Using a $p<.01$ criterion for Mahalanobis distance ($df = 9$; $\chi^2 = 21.67$) six multivariate outliers were detected and removed from the analysis, consequently, $n = 238$ The moderating effect was not significant, no significant change in *r2* was observed (*r2* change = .02; *F* change = [3, 230] 3.69; *ns*). The model was not significant when each of Childhood attachment and Parental Bonding were substituted as the moderating variables (see appendix K).

7.4.3 Summary of Part Two

Moderator analyses demonstrated that adulthood attachment moderated the relationship between social comparison and depression. Neither of childhood attachment or Parental Bonding moderated the association between social comparison and depression. Furthermore, when defeat was entered into the model as the predictor, the moderating effect was not significant.

7.5 Summary and Discussion

The interactions between attachment and social rank in the prediction of depression were explored. As hypothesised, childhood attachment and adulthood attachment interacted with different social rank strategies in the prediction of current depression. In line with this hypothesis, Defeat mediated the relationship between childhood attachment and care and depression and adult attachment significantly moderated the relationship between social comparison and depression.

7.5.1 Pathway to Depression from Childhood Attachment

It was found that defeat was significantly predicted by childhood experiences. These findings therefore provided support for Sloman's (2000a) hypothesis that the

Involuntary Defeat Strategy is shaped during childhood In further support, it was demonstrated that the Involuntary Defeat Strategy is a cognitive mechanism through which childhood experiences influence current depressed mood. The association between adulthood attachment and depression was only partially mediated by defeat. The adult attachment dimensions retained significant and unique predictive power when defeat was entered into the model.

Each of childhood avoidance, anxiety, and care, significantly predict depression. Defeat mediated the relationship between depression and these three variables. The Parental Bonding Instrument overprotection subscale was not significantly correlated with depression. Importantly, the two attachment variables were mediated. This analysis demonstrated the value of the new childhood attachment measure, as mediating effect was not shown as clearly for parental bonding, as for childhood attachment.

7.5.2 Pathway to Depression from Adulthood Attachment

Depression was related to more anxious and avoidant adult attachment. Consistent with previous research, mean scores on depression (e.g., Priel & Shamai, 1995) were higher in the insecure subgroups of fearful, preoccupied, and dismissing than they are in those with secure attachment. Contrary to Sloman *et al.* (2003) attachment did not moderate the association between defeat and depression. As expected, a significant moderating effect for adult attachment was found between social comparison and depression. As expected, the moderating effect was specific to adulthood attachment and was not generalised to childhood attachment or bonding. In support of Sloman *et al.* (2003) security of attachment moderated the association between the stressor (social comparison) and depression. This was

noted as significant correlations between social comparison and depression were observed for all three of the insecure attachment styles.

The temporal causal pathway between attachment and depression cannot be concluded from these analyses. However, these analyses formed the first part of a longitudinal study, the temporal ordering between attachment and depression will be explored in chapter eight.

7.5.3 Summary

As hypothesised, there are two pathways, one for childhood attachment, and one for adulthood attachment, which each influence depression though interaction with different social rank systems. Together these analyses suggest that childhood attachment is a distal vulnerability factor which influences depression in adulthood through the Involuntary Defeat Strategy, whereas adult attachment is a proximal vulnerability factor which acts to promote or protect individuals against depression when they encounter stressors, such as perceived low social rank.

7.5.4 Alternative Pathway from Childhood Attachment to Depression

These analyses have demonstrated different pathways towards depression for each of adulthood and childhood attachment. An alternative perspective is that attachment is continuous across the lifespan and that childhood and adulthood attachment share a common mechanism in the prediction of depression. It is possible that childhood experiences prime another cognitive system, the internal working models of the attachment system. In this way, childhood experiences act as a vulnerability factor operating through adult attachment. This would require a stable pathway from

childhood attachment to adulthood attachment. Thus far, evidence is inconclusive on this matter (Gittleman *et al.*, 1998). This pathway is the focus of chapter nine.

7.5.5 Limitations

Conducting one overall path analysis, rather than several mediator and moderator analyses would have been more parsimonious However, the data would not have fulfilled the required assumptions for this type of analysis, with regard to the ratio of participants to parameters This type of analysis would not have allowed comparisons to be made between childhood and adulthood attachment. An attempt was made to overcome the limitation of using multiple regression analyses by partialling the probability accordingly for the number of analyses. It is assumed that in a mediational model, the mediating variable has zero measurement error. This assumption could not be met for the mediator variables presented in this series of analyses. The presence of measurement error results in an overestimation of the effect of the predictors on the criterion and may result in significant mediators being overlooked. However, as findings were in line with theoretical hypotheses, the presence of measurement error did not impede the analyses. In a moderator model, it is "desirable" that the moderator is correlated with neither the predictor, nor the criterion (Baron & Kenny, 1986, pp 1174). Using a categorical measure of adult attachment reduced the correlation with depression, compared to using the continuous measure. However, a significant correlation was found between the categorical variable of adult attachment style and depression.

A further limitation associated with these analyses, is that it is assumed that the criterion, in theory, cannot cause moderator or mediator variables. The relationship between adult attachment and depression is unclear on this point, adding a limitation to the validity of this analysis. Likewise, the temporal relationship between defeat

and depression has not been empirically acknowledged To account for this limitation Panel Analyses were undertaken to explore the temporal relationship between attachment and depression, and between defeat and depression. These analyses are presented in chapter eight.

Chapter 8

Results III: Temporal Pathways

8.1 Introduction

The aim of this chapter was to describe the temporal relationship between attachment and depression (pathway two) and the temporal relationship between defeat and depression. An episode of depression has been found to leave a "scar" or residual symptoms (Osgrodniczuk *et al* , 2004). In particular, it has been found that residual symptoms may be related to an insecure attachment style (Bifulco, Moran, Ball, & Lillie, 2002; Carnelley *et al.*, 1994; Hirschfield *et al.*, 1983; Rohde *et al.*, 1990), and an increased risk of relapse (Osgrodniczuk *et al* , 2004). Barnett and Gotlib (1988) suggest that the nature of internal working models of attachment may be changed by the experience of depression, and may not be restored after the depressive episode. Based upon the recurrent nature of depression, and the scar hypothesis, it was hypothesised that prior depression (depression at time 1) would contribute significantly to a model of current depression (depression at time two). It was expected that individuals with prior depression would have significantly less secure adult attachment style than would those individuals with no history of depression.

Cross sectional studies, including the present study, have found a significant relationship between depression and adult attachment (e g., Bifulco,Moran, Ball, & Bernazzani, 2002; Carnelley *et al.*, 1994; Pettem *et al.*, 1993; Priel & Shamai, 1995). However, because the majority of research exploring the relationship between attachment and depression is cross-sectional (e g., Carnelley *et al.*, 1994; Priel & Shamai, 1995; Zuroff & Fitzpatrick, 1995), no firm conclusions can be drawn as to the causal relationship between attachment and depression, and speculations cannot be made as to the predictive nature of one, independent of the other. This study aimed to expand upon this literature by examining the temporal relationship between attachment and depression over a period of five months.

Findings from prospective studies suggest that insecure attachment is a stable and enduring vulnerability factor that contributes to the onset of depression (e.g., Lewinsohn *et al.*, 1999; 2000; 2003; Rohde *et al.*, 1990). However, the limited number of panel studies that have been conducted suggest that either that relationship is non-significant (e.g , Whiffen *et al* , 2001). The present study has addressed a number of criticisms of prior panel studies. For example, a dimensional, rather than a categorical, measure of attachment was used, and LISREL was used rather than a series of regression analyses. It was expected that the association between attachment style at stage one and depression at stage two would be stronger than the association between depression at time one and attachment at time two.

The panel analyses fulfilled the further purpose of expanding on the model presented in chapter seven. Analyses in chapter seven found that adult attachment significantly moderated the relationship between social comparison and depression, and that defeat significantly mediated the relationship between childhood attachment and depression, therefore adult attachment was a moderator, and defeat was a mediator. One assumption of moderator and mediator analyses is that the criterion (depression in this analysis) cannot cause the moderating or the mediating variables (Baron & Kenny, 1986). A further aim of this chapter was therefore to account for this limitation by analysing the temporal relationship between attachment and depression, and between defeat and depression, with the purpose of demonstrating whether depression significantly predicted either adult attachment or defeat over time. If no significant cross-lagged relationships were found between depression at time one, and either of adult attachment at time two, or defeat at time two, then it would be concluded that depression did not cause defeat or adult attachment in this sample, over the five month lag. In which case the assumptions of the moderator and

mediator analyses would be considered satisfied. In support of the mediating model presented in chapter seven, it was hypothesised that depression at time one would not predict defeat at time two.

8.2 Part 1: Exploring the Temporal Relationship between Attachment and Depression

8.2.1 The Association between Prior depression and Current Depression

A one-way ANOVA was conducted to test whether individuals with a history of prior depression were significantly more depressed than those who reported never being depressed in this sample. Mean scores are displayed in table 8.1. The independent variable was prior depression, this was measured dichotomously (prior depression and no prior depression) The dependent variable was the participants' total score on the Symptom Checklist-90 depression subscale at time one. All participants with complete data for the first stage of the data collection were included in this analysis (*n*=244).

Table 8.1 Group Differences on Depression, Anxiety, and Avoidance.

	Prior depression (*n*=109)		Never Depressed (*n*=135)	
Depression	34 17	(12 362)	24 57	(9.113)
Avoidance	63 28	(24 844)	52 83	(20 951)
Anxiety	74 06	(22.466)	64 36	(21 232)

Individuals with prior episodes of depression reported significantly higher levels of depression than did participants who were never depressed (main effect of prior depression; F [1, 242] = 48.718; $p <$ 001).

8.2.2 The Association between Prior Depression and Adult Attachment.

The aim of these analyses was to determine whether individuals with prior experiences of depression differed to those with no such experiences with regard to their attachment. Individuals with prior depression reported higher scores on both the avoidance, and the anxiety dimensions of attachment, which was an indication of insecure attachment (see table 8.1). To test whether this between groups difference was significant, a one way MANOVA was conducted (n=244). The independent variable for this analysis was prior depression (prior depression or no prior depression). The dependent variables were the two subscales of the Experiences in Close Relationships scale, avoidance and anxiety.

The main multivariate effect of prior depression was significant (Wilks' Lambda = .912, F [2, 241] = 11.585, p< 001). A significant difference was observed between groups for both anxiety (F [1, 242] = 11.971, p=.001) and avoidance (F [1, 242] = 12.690, p = .001). Individuals with prior depression reported higher scores on both subscales, indicating less secure adult attachment than those with no history of depression.

8.2.3 Controlling for Life Events

The occurrence of negative life events is related to the onset of depression (Brown & Harris, 1978). Information about life events experienced in the intervening period between times one and two was therefore collected and included in the panel analysis as a control variable. Participants were asked at time two whether they had experienced any "depressing" life events in the intervening time since they participated in stage 1 of the data collection. Experiences of life events were reported in chapter five.

Table 8.2. Mean Depression Score and Experiences of Life Events.

	Within Groups Analyses								Between Groups Analysis	
	>1 depressing events (n=26)				No Depressing event (n=44)					
	Mean	*SD*	*t*	*p*	Mean	*SD*	*t*	*p*	*t*	*p*
Depression 1	27.73	11 07	-1.442	.162	25.05	10 47	942	.352	-1 015	314
Depression 2	30 88	11 69			23.73	9 48			-2.796	007

A two way mixed ANOVA was conducted to test whether depression was different at the two stages of data collection (within groups IV= TIME). Those who reported a depressing life event were compared with those who did not (between groups IV = Events). The aim of this analysis was to examine whether experiencing a depressing life event had any impact on depressed mood or not.

Participants who experienced a life event scored significantly higher on the measure of depression (main effect of life event; $F[1,68] = 4.620$; p=.035). There was no significant difference observed over time, and no significant interaction effect was observed. This demonstrated that the measure of depression was stable within each group over time. Experiencing a life event did not lead to an increase in depressed mood (see table 8.2). However, there was a significant association between life events and depression at time 2. Therefore, life events were retained in panel analysis exploring attachment and depression as a control variable

8.2.4 Panel Analysis

The temporal relationship between attachment and depression was explored. These analyses served the dual purpose of supporting the findings in chapter seven by demonstrating that depression predicted neither attachment nor defeat over time, and answering the original hypothesis pertaining to the temporal ordering of attachment and depression. Rather than using a series of regression analyses, the panel analyses were conducted in LISREL. This took advantage of two key features

available in LISREL; the ability to directly compare and contrast different models using indices of fit, and the ability to compare path co-efficients without the bias of measurement error. Those elements common to both the defeat and the attachment analyses will firstly be addressed.

According to Bollen (1989) three criteria need to be satisfied in order to establish causality within a model. Firstly, a statistically significant relationship is required between the predictor and the criterion variable. Secondly, the association between the two variables must not be due to another, omitted variable. Finally, the causal variable must precede the criterion variable in time. Bollen and Long (1993) describe five stages involved in Structural Equation Modelling. These stages are Model specification, Identification, Estimation, Testing Fit, and Model Respecification. Each of these will be considered in turn

8.2.5 Model Specification

Model specification refers to the development of the hypothesised model based on theoretical assumptions. The hypothesis being tested in the first two analyses was that attachment and depression are causally related over time, and in the last analysis, that defeat and depression are causally related over time. The direction of causality is however unspecified The data were collected twice over a five month period, in order to satisfy the third criterion set by Bollen (1989), that the causal variable should precede the criterion variable in time. The specification of each model will be outlined below preceding the relevant panel analyses.

8.2.6 Participants

The recommended sample size for Linear Structural Relationships Analyses is equal to or greater than 200 participants (Marsh, Balla, & MacDonald, 1988) However, Bentler and Chou (1987) suggested that the ratio between observations and estimated parameters should fall between 5:1 and 10:1. For the saturated model in each of the below analyses, the ratio of observations to parameters was approximately 6:1. The recommended sample size was therefore achieved. The data met assumptions for sample size, ratio of observations to parameters, and ratio of observations to variables. Consequently, all analyses were conducted with the 70 participants with complete data across the two waves of data. Complete demographic information for this group is presented in table 5.5.

8.2.7 Identification, Excluded Variables, and Excluded Parameters

As described above, prior depression is considered to account for variance in current mood, and in current adult attachment. In these analyses however, lifetime prior depression was not included. There were two reasons. Firstly, for the purposes of this specific model, the focus was on the five months study period, and on the prediction of variables at the second wave. For this reason, prior depression was defined as depression at wave one for these analyses. Secondly, lifetime prior depression was measured as a single indicator and no alpha reliability can be calculated for this variable. Depression at time 1 was therefore a preferable measure of prior depression as measurement error can be calculated and included in the model.

Cross sectional parameters were excluded from the analyses. The primary reason for excluding the cross sectional correlations between attachment and depression was to make the model just-identified. Identification refers to the ratio of parameters

to variables in a model, a model may be over identified, under identified, or just-identified (Pedhazur, 1973). Identification is the second stage of SEM as defined by Bollen and Long (1993). A model is just-identified (also known as saturated) when the number of parameters is equal to the number of variables. Such a model can offer only one solution. This solution will be able to perfectly reproduce the correlation matrix. When the number of parameters exceeds the number of variables, as it would if the cross sectional correlations were included, the model would be underidentified The number of unknowns would then exceed the number of equations. An overidentified model is ideal in social sciences. In an overidentified model, the number of equations exceeds the number of possible unknowns. There are a number of unique solutions and the aim of the analyses is to find the solution that best fits the data. The second reason for excluding the cross sectional correlations was that this section of the analysis was concerned with how variables interacted over time, the previous chapter explored the cross sectional relationships in depth, to do so again would have been repetitive. The second criterion for inferring causality is that the observed relationship is not due to another omitted variable (Bollen, 1989). A final limitation to this analysis was therefore that it would be near impossible to account for all the variables which might possibly contribute to depression.

8.2.8 Description of Measurement Error in the Model

One advantage of SEM is the capacity to estimate a model incorporating both measurement and structural considerations. Such a model makes use of all eight matrices in LISREL to combine structural and measurement considerations. Single indicators were used for each variable in place of the full factorial model. A full factorial model is preferable. However, there was one observed variable per latent variable and it is recommended that there are at least three observed variables per latent variable when running a full factorial model (Cramer, 2003). To run a full

factorial model would have involved contriving the single measures into three separate subscales. There were no sound theoretical justifications for performing such a split on the measures. Single indicators were therefore used and measurement error was accounted for by setting common factor loadings (described by the Lambda matrix) and unique factor loadings (described by the Theta Epsilon and Theta Delta matrices) at predetermined values based on the alpha reliability for that measure. This provided an estimate of the percentage of error variance. Alpha reliabilities for each measure are reported in table 8.3. All alpha reliabilities were above the accepted level of 0.8, indicating that the measures in this analysis were reliable. The exogenous variable "Life Events" posed a problem as it was measured initially using a single item; alpha reliability could not therefore be calculated. With such variables, it has been suggested (Kelloway, 1998) that perfect reliability is assumed. Therefore, the common factor loading was fixed to one and the unique factor loading was fixed to zero. "Life Events" was therefore entered into each model with no measurement error.

8.2.9 Methods of Estimation

Estimation is the third stage of SEM according to Bollon and Long (1993). The user can specify a fitting criterion which stops LISREL generating solutions iteratively once the criterion is minimised. There are three common estimation methods used to determine the criterion; these are Ordinary Least Squares, Generalised Least Squares, and Maximum Likelihood. In each case, LISREL attempts to minimise the difference between the observed and the estimated covariance matrices. Maximum Likelihood estimation was used in these analyses. Maximum likelihood estimation attempts to minimise the differences between the observed matrix, and the matrix implied by the model solution, it is a full information technique, meaning that all parameters are estimated simultaneously. This method of estimation allows the Chi

Square test to be used if the sample is multivariate normal. This is described in the following section.

8.2.10 Method of Testing Model Fit

According to Bollon and Long (1993) the fourth stage of SEM is testing the fit of a model. Model fit can refer to the absolute fit of the model to the data, the fit of a model relative to other models, or the degree of parsimonious fit of the model relative to other models Parsimony refers to representing the model with the least number of parameters necessary. For these analyses, fit was tested relative to other plausible models, the compared models were nested.

A nested relationship exists between two models if one can obtain the model with the fewest number of free parameters by constraining some or all of the parameters in the model with the largest number of free parameters When two models stand in nested sequence, the difference between the two may be directly tested with the χ^2 difference test. The accepted model is whichever of the nested models provides a better fit to the data. In the following analyses, the first model had six parameters. Alternative models were derived from and compared to this initial model. As the model for comparison was saturated, no other model would provide a better fit to the data. When nested models fit the data equally well (they are not significantly different to one another judging from the χ^2 difference test) the model with the most parsimonious solution is accepted (Cramer, 2003).

Four indices of fit were used in the following analyses, these were calculated by LISREL (Joreskog & Sorbom, 1992). The Goodness of Fit Index (GFI) gives the proportion of variance explained by the model. A better fit is indicated by a GFI statistic nearer to one The Adjusted Goodness of Fit Index (AGFI) takes account of

the degrees of freedom used in estimating free parameters in the model and is interpreted in the same way was the GFI. The Standardised Root Mean Residual gives the average residuals between the observed covariance matrix and the estimated matrix. Values below .05 are indicative of an acceptable fit of the model to the data (Diamantopoulos & Siguaw, 2000). Finally, the Expected Cross Validation Index (ECVI) assesses the degree to which a model is likely to cross validate across samples of the same size and from the same population. It is used to compare the cross validation potential of opposing models. The ECVI measures the discrepancy between the fitted covariance matrix in the analysed sample and the expected covariance matrix that would be obtained in another sample of equivalent size. The smallest obtained value of ECVI is the one that represents the greatest potential for replication. The significance of individual parameters will also be taken into account when assessing model fit. For a sample size of 70, the critical value for *t* is about ±2 648 at p=.001.

8.2.11 Model Respecification

The aim of model re-specification is to improve either the parsimony or the fit of the data to the accepted model. Model respecification is an iterative process. It is achieved through the deletion and addition of parameters according to theoretical assumptions and statistical significance. Options are available in LISREL to determine Modification Indices which can be used to structure a model which best fits the data Modification Indices offer data on the possible χ^2 change associated with the deletion or addition of a parameter from the specified model. The final stage of SEM is to cross validate the specified model This would require a separate and dedicated study with a new sample.

8.2.12 LISREL Analyses

To extend upon the existing research exploring the relationship between attachment and depression, data were collected twice over a five-month period, and the temporal relationship between attachment and depression was explored using Linear Structural Relationship Analysis (LISREL). A series of nested models were tested and compared. Cross sectional parameters were removed from the model, Chi-Square was used as the test of model fit, and maximum likelihood estimation was used. Alpha reliabilities were entered into the model to account for measurement error. Alpha reliabilities are reported in table 8 3. In addition, life events were entered into the model as a predictor of time two variables.

A series of nested models were tested. The five models are diagrammed in appendix L. The reciprocal model was saturated and both cross-lagged correlations were functional. Therefore, this model assumed that the relationship between attachment and depression was reciprocal over the interval, attachment was influenced by depression, and depression by attachment. Additionally, this model held life events to be a predictor of both attachment and depression (shown in figures 8.1 and 8.3). The remaining four models were nested. The second model omitted the parameter describing the relationship between life events and attachment this will be referred to as the life events model The third and fourth models specified that only one or other of the two cross-lagged paths were functional. Therefore, the third model held that there was a unidirectional relationship and that depression predicted attachment over time, this will be known as the depression model. The cross lagged path specifying a relationship from attachment at time 1 to depression at time two was omitted from this model. The fourth model held that there was a unidirectional relationship and that attachment predicted depression over time, this will be known as the attachment model. In this model, the cross lagged path specifying a

relationship between depression at time one and attachment at time two was omitted. The fifth model to be tested omitted both cross lagged paths, this will be known as the no effect model (shown in figures 8.2 and 8 4).

Although model re-specification is the final stage in SEM, this option was not used in the present analysis. The justification for this decision was that the analyses were concerned with comparing a set of nested models, not with testing which model best predicted depression. To add or delete parameters from the final model would be contrary to the aim of comparing the nested models.

Correlations between depression, anxious attachment, avoidant attachment, and Life Events are presented in table 8.3. The highest observed correlations were those achieved over time (e g., between avoidance at time 1 and avoidance at time two). Of the correlations over time, anxious attachment has the highest correlation, and depression the lowest. This suggests that depression is the least stable over time, of the variables measured, and anxious attachment (working model of self) is the most stable. The measure used for Life Events was a single indicator. At the second stage, participants were asked how many "depressing events" had occurred in the intervening time since they last participated. This count was used in the analysis. Of the depression and attachment variables, only depression at time two achieved a significant correlation with Life Events (r = .48; p<.001; n=70). This correlation was higher than were any of the correlations between depression and the attachment variables. Of the cross sectional correlations, the correlation between anxiety 1 and depression 1 was the highest. The cross sectional correlations between depression and the attachment variables were similar at both stages. Of the cross lagged correlations, the correlation between depression 1 and anxious attachment two was the highest (r=.43; p<.001; n = 70). This correlation was almost as high as the cross sectional correlation observed between these two variables.

Table 8.3. Pearson's Correlations, and Descriptive Statistics.

	Dep 1	Dep 2	Anx 1	Anx 2	Avoid 1	Avoid 2	LE
Dep 2	.55**						
Anx 1	.44**	.26*					
Anx 2	.44**	.40**	.81**				
Avoid 1	43**	.29*	.30*	.28*			
Avoid 2	.29*	.42**	.29*	.40**	.70**		
LE	.18	.48**	.04	.08	-.12	.03	
Mean	26.04	26.39	67.21	66 81	50 44	53 84	.52
SD	10 69	10.85	21.76	23 31	19.59	18.71	.85
Alpha	0.93	0.93	0.95	0.92	0.93	0.92	-

Related *t*-tests were conducted on depression and the attachment variables to examine any changes over time. No significant differences were observed between depression at times one and two or between the Experiences in Close Relationships scale subscales at times one and two (means are reported in table 8.3).

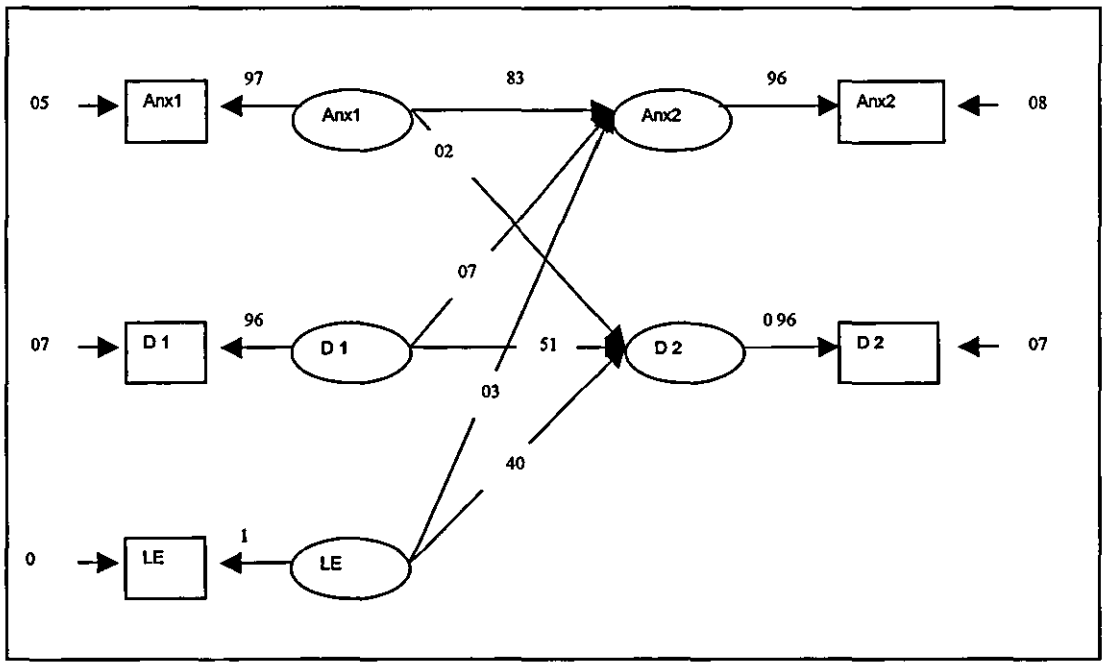
The LISREL analyses were conducted in two stages. The first stage included only the construct of anxious attachment (as measured by the anxiety subscale of the Experiences in Close Relationships scale) The second stage involved only the construct of avoidant attachment (as measured by the avoidance subscale of the Experiences in Close Relationships scale). At both stages of the analysis, the model tested was the same, except for the dimension of attachment The reason for conducting these analyses separately for each dimension was in order to explore whether there was one dimension which predicted depression more so than did the other. Previous research did not find a temporal association between attachment

and depression. This research had used a categorical measurement of attachment. Therefore, the present study used a dimensional measure of attachment, and the two dimensions are considered separately in order that any differences between the two dimensions may be examined.

8.2.12.1 Anxiety Model

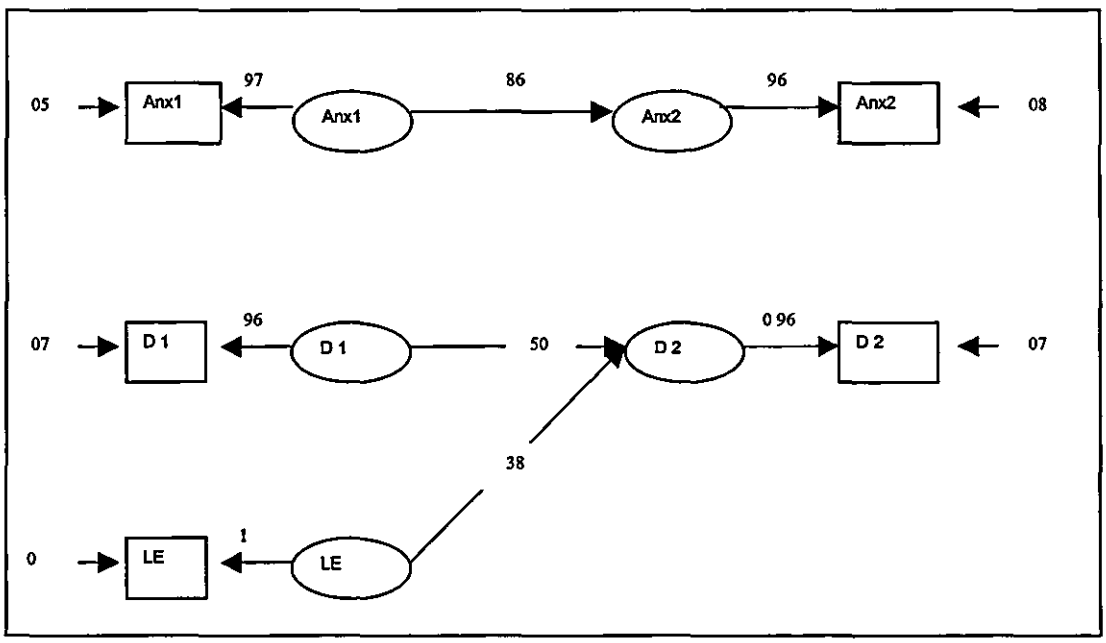
Analyses were conducted with the 70 participants with complete data across the two waves of data. The assumptions of multivariate normality and linearity were assessed using SPSS. Using a $p < 001$ criterion for Mahalanobis distance, ($\chi^2 = 16.75$; $df = 4$) no multivariate outliers were detected. Data had previously been screened for univariate outliers. There were none present. Histograms and scatterplots were used to examine the assumptions of normality and linearity. The data met both of these assumptions

Figure 8.1. The Reciprocal Model



Key. Anx1 = Anxiety subscale of the ECR at time 1; Anx2 = Anxiety subscale of the ECR at time two, D1= Depression at time 1, D2 = Depression at time two, LE = life events

Figure 8.2. The No Effect Model



Key. Anx1 = Anxiety subscale of the ECR at time 1; Anx2 = Anxiety subscale of the ECR at time two, D1= Depression at time 1; D2 = Depression at time two, LE = life events

Model tests were conducted in LISREL v8.52 (Jöreskog & Sorbom, 1992), were based upon the covariance matrix, and were conducted using maximum likelihood estimation. A series of Nested Model Comparisons were conducted using LISREL v8.52. In total five models were tested and compared before a model was accepted. The saturated model fitted the data perfectly (X^2=0; *df*=0, *p*=1) Subsequent models were compared using the χ^2 difference tests. The χ^2 and indices of fit, are shown in table 8.4.

Table 8.4. Goodness of Fit Indices for the Panel Data for Anxiety and Depression*

Model	Reciprocal Model**	Life Events Model	Depression Model	Attachment Model	No effect Model
df	0	1	2	2	3
χ^2	0	0.21	.25	.95	1.06
p	1	647	.884	.620	.787
GFI	-	1	1	.99	.99
AGFI	-	.98	.99	96	97
SRMR	-	.01	.01	.02	.03
ECVI	-	.42	.41	.41	.39

* Models are described in section 8 2.12 and are diagrammed in appendix L

** As the reciprocal model was saturated, goodness of fit statistics are not reported.

All five models provide an acceptable fit to the data as indicated by a non-significant χ^2 statistic for each. The model omitting the parameter between life events and anxiety at time two (the life events model) did not differ significantly from the reciprocal model (χ^2 = 0 21; *df* = 1; *ns*). The statistical fit of the depression model (whereby depression predicted anxiety over time) was not significantly different to the fit of the reciprocal model (χ^2 = 25; *d f*= 2; *ns*). The statistical fit of the anxiety model

(whereby anxiety predicted depression over time) did not differ significantly from the reciprocal model ($\chi^2 = 95$; $df = 1$; *ns*). The fit of the no effect model did not differ significantly from either of the life events ($\chi^2 = 85$, $df = 1$; *ns*), the depression ($\chi^2 = 81$, $df = 1$; *ns*), or the anxiety ($\chi^2 = .11$; $df = 1$; *ns*) models. The GFI and AGFI demonstrated that the life events and the depression models had the best fit to the data All four models demonstrated an acceptable level of model fit to the data according to the SRMR criteria of .05 or below. The model which presents the greatest potential for replication, according to the ECVI is the no effect model. As all other models consist of one or more non-significant parameters, the no effect model was retained for further analysis based on considerations of parsimony.

Standardised parameter estimates for the no effect model are presented in figure 8.2, and in table 8 5. The parameter values are taken from the Gamma matrix (Γ) that describes the relationships between exogenous and endogenous variables. For a sample size of 70, the critical value for t is about ±2 65 at p=.001. Depression at time two was significantly predicted by depression at time 1 and life events. Anxiety at time two was significantly predicted by anxiety at time 1. All parameters in the accepted model were significant. The strongest pathway was between anxiety at time one and anxiety at time two. The no effect model accounted for 75% of the variance in anxiety two and 49% of the variance in depression two. The reciprocal model had accounted for 75% of the variance in anxiety and 51% of the variance in depression. Therefore, the reduction in parameters in the no effect model had not produced a commensurate reduction in the proportion of variance that was accounted for.

Table 8.5. Standardised Parameter Values and Significance Levels for the Anxiety Model.

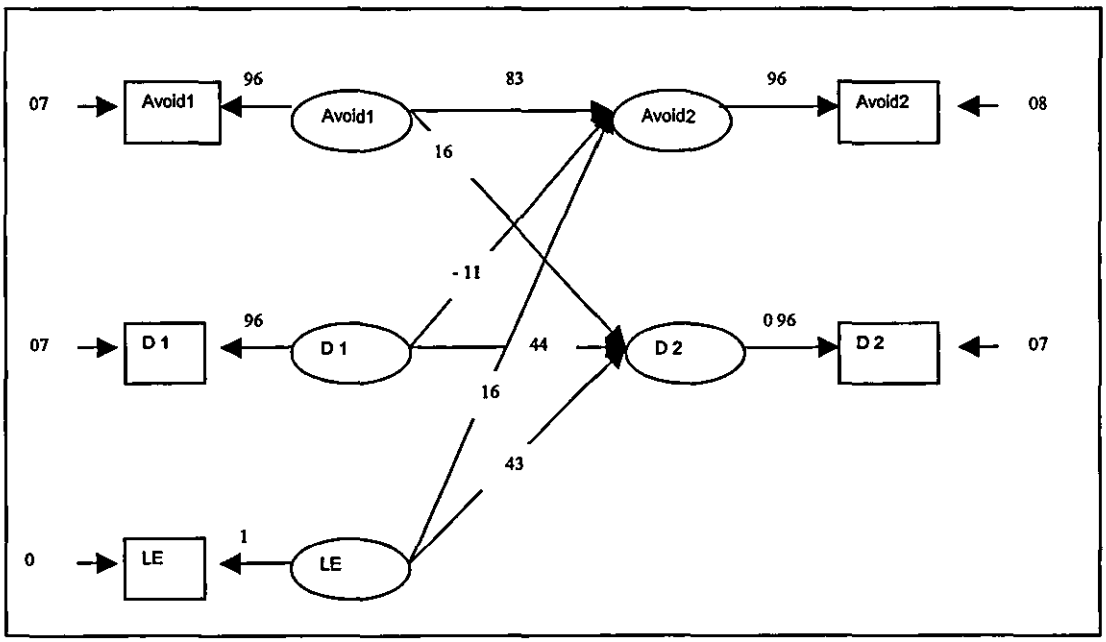
	Standardised β	*t*	*SD*	*p*
Reciprocal Model				
Anx1→Anx2	0 83	9.47	0.09	*p*<.001
D1→D2	0.51	4.54	0.11	*p*<.001
LE→D2	0 40	4.24	0.09	*p*<.001
D1→Anx2	0.07	0.76	0 09	*ns*
LE→Anx2	0 03	0.46	0 07	*ns*
Anx1→D2	0.02	0 20	0.11	*ns*
No Effect Model				
Anx1→Anx2	0.86	11.67	0 07	*p*<.001
D1→D2	0.50	5.35	0.09	*p*<.001
LE→D2	0 38	4.28	0.09	*p*<.001

Key: Anx1 = Anxiety subscale of the ECR at time 1, Anx2 = Anxiety subscale of the ECR at time two; D1= Depression at time 1; D2 = Depression at time two, LE = life events

8.2.12.2 Avoidance Model

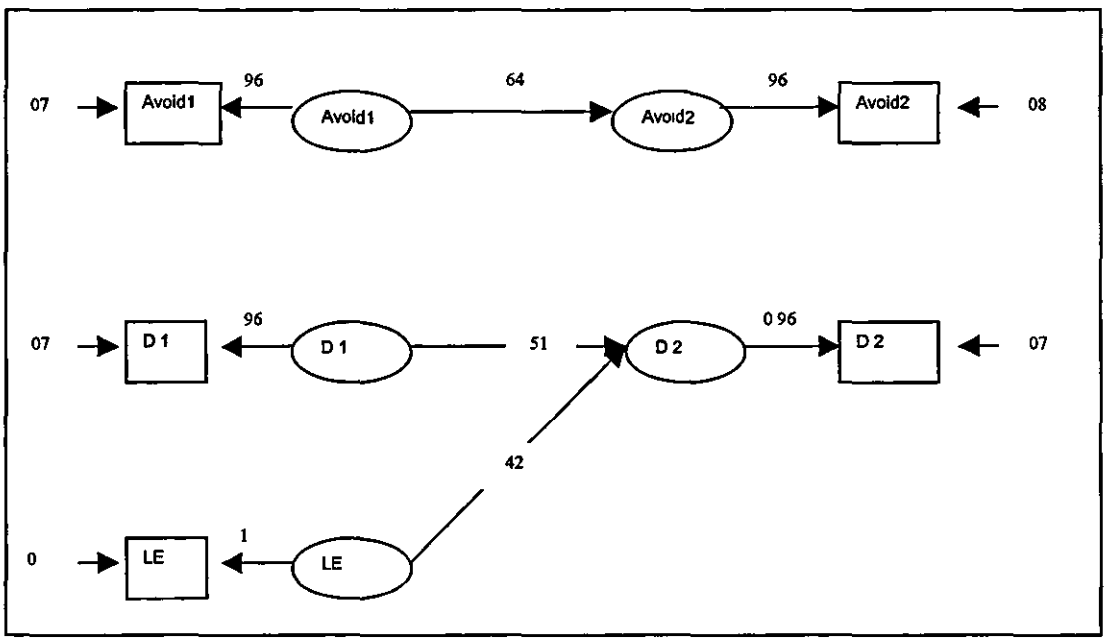
The model was tested substituting avoidant attachment, in place of anxious attachment. The assumptions of multivariate normality and linearity were again assessed using SPSS. Using a $p< 001$ criterion for Mahalanobis distance, (χ^2 = 16.75; *df* =4) no multivariate outliers were detected. Data were previously screened for univariate outliers, none were detected. Histograms and scatterplots were used to examine the assumptions of normality and linearity. The data met both of these assumptions.

Figure 8.3. The Reciprocal Model



Key. Avoid1 = Avoidance subscale of the ECR at time one, Avoid2 = Avoidance subscale of the ECR at time two; D1= Depression at time one; D2 = Depression at time two; LE = life events

Figure 8.4. The No Effect Model



Key: Avoid1 = Avoidance subscale of the ECR at time one; Avoid2 = Avoidance subscale of the ECR at time two; D1= Depression at time one; D2 = Depression at time two, LE = life events

As in the first analysis, a series of nested model comparisons were used to contrast the reciprocal model with nested alternatives. The initial model, shown in figure 8.3, was just-identified and subsequent models were overidentified. Five models were tested and compared before a model was accepted. All model tests were conducted in LISREL v8 52 (Jöreskog & Sorbom, 1992), were based upon the covariance matrix and used maximum likelihood estimation. The saturated model fitted the data perfectly, and subsequent models were compared to this model using χ^2 difference tests. The χ^2 and indices of fit are shown in table 8 6.

Table 8.6. Goodness of Fit Indices for the Panel Data for Avoidance and Depression*

Model	Reciprocal Model**	Life Events Model	Depression Model	Attachment Model	No effect Model
df	0	1	2	2	3
χ^2	0	2.70	4.28	2 92	4.35
p	1	.100	.118	.231	.226
GFI	-	98	.98	.98	.98
AGFI	-	.77	.82	.87	.88
SRMR	-	04	.05	.03	.05
ECVI	-	.44	.44	.42	.41

* Models are described in section 8 2.12 and are diagrammed in appendix L

** As the reciprocal model was saturated, goodness of fit statistics are not reported.

All five models provided an acceptable fit to the data as indicated by the non-significant χ^2 statistics. Neither of the Life events model (χ^2 = 2.70, *df* = 1; *ns*), the depression model (χ^2 = 4 28, *d f*= 2; *ns*), or the attachment models (χ^2 = 2 92, *d f*= 2; *ns*) provided a significantly different statistical fit to the data than did the reciprocal model. No significant difference was observed between the fit of the no effect model

and either of the depression ($\chi^2 = 0.07$, $df = 1$; *ns*) or the avoidance models ($\chi^2 = 1.43$; $df = 1$, *ns*). The GFI was equivalent for all models; however, the AGFI and the ECVI indicated that the no effect model provided the best fit to the data. According to the SRMR, all models fulfilled the criteria of .05 or below, indicating an acceptable fit of the model to the data. Based on considerations of parsimony, and on the indices of fit, the no effect model was accepted for further analysis.

Standardised parameter estimates for the no effect model are presented in figure 8 4 and table 8.7. Depression was significantly predicted by depression at time one and by life events. Avoidance was significantly predicted by avoidance at time one. The accepted model accounted for 55% of the variance predicting avoidance at time two and 50% of the variance predicting depression at time two The reciprocal model accounted for 61% of the variance in avoidance and 53% of the variance in depression. The strongest parameter was that describing the relationship between avoidance over time.

Table 8.7. Parameter Values and Significance Levels for the Saturated and Accepted Models.

	Standardised β	*t*	*SD*	*Significance*
Reciprocal Model				
Avoid1→Avoid2	0.83	7.57	0.11	$p<.001$
LE→D2	0 43	4.53	0.10	$p< 001$
D1→D2	0 44	3 90	0.11	$p<.001$
LE→Avoid2	0.16	1.68	0.09	$p<.05$
Avoid1→D2	0.16	1 43	0.11	*ns*
D1→Avoid2	-0.11	-0.98	0.00	*ns*
No Effect Model				
Avoid1→Avoid2	0.73	8.10	0.09	$p<.001$
D1→D2	0.55	5.89	0.09	$p<.001$
LE→D2	0.35	3 96	0.09	$p< 001$

Key: Avoid1 = Avoidance subscale of the ECR at time one, Avoid2 = Avoidance subscale of the ECR at time two, D1= Depression at time one, D2 = Depression at time two; LE = life events

8.3 Part 2: The Temporal Relationship between Defeat and Depression

The temporal relationship between defeat and depression was explored. Defeat at times one and two was substituted into the model in place of adult attachment. Life events were retained in the model, as was depression at times one and two. A series of nested models were compared. As with the previous analyses, the cross sectional parameters were removed from the model, Chi-Square was used as the test of model fit, and maximum likelihood estimation was used. Alpha reliabilities were entered into the model to account for measurement error, these are shown in table 8.8.

A series of nested models were tested. The models are diagrammed in appendix M. The reciprocal model was saturated and both cross-lagged correlations were functional. Therefore, this model assumed that the relationship between defeat and depression was reciprocal over the interval; Defeat was influenced by depression, and depression by defeat Additionally, this model held life events to be a significant predictor of both defeat and depression. The remaining three models were nested. The second and third models specified that only one or other of the two cross-lagged paths were functional. Therefore, the second model held that there was a unidirectional relationship and that depression predicted defeat over time, this will be known as the depression model. The cross-lagged path specifying a relationship from defeat at time one to depression at time two was omitted from this model. The third model held that there was a unidirectional relationship and that defeat predicted depression over time, this will be known as the defeat model. In this model, the cross lagged path specifying a relationship between depression at time one and defeat at time two was omitted The fourth model to be tested omitted both cross-lagged paths; this will be known as the no effect model.

Table 8.8. Pearson's Correlations and Descriptive Statistics

	Dep 1	Dep 2	Defeat 1	Defeat 2	LE
Dep 2	55				
Defeat 1	.78	.51			
Defeat 2	.58	.78	.68		
LE	.15	.48	.16	.35	
Mean	26.04	26.39	16 61	16.57	.52
SD	10.69	10.85	11.33	11.89	.85
Alpha	.92	.93	95	.95	-

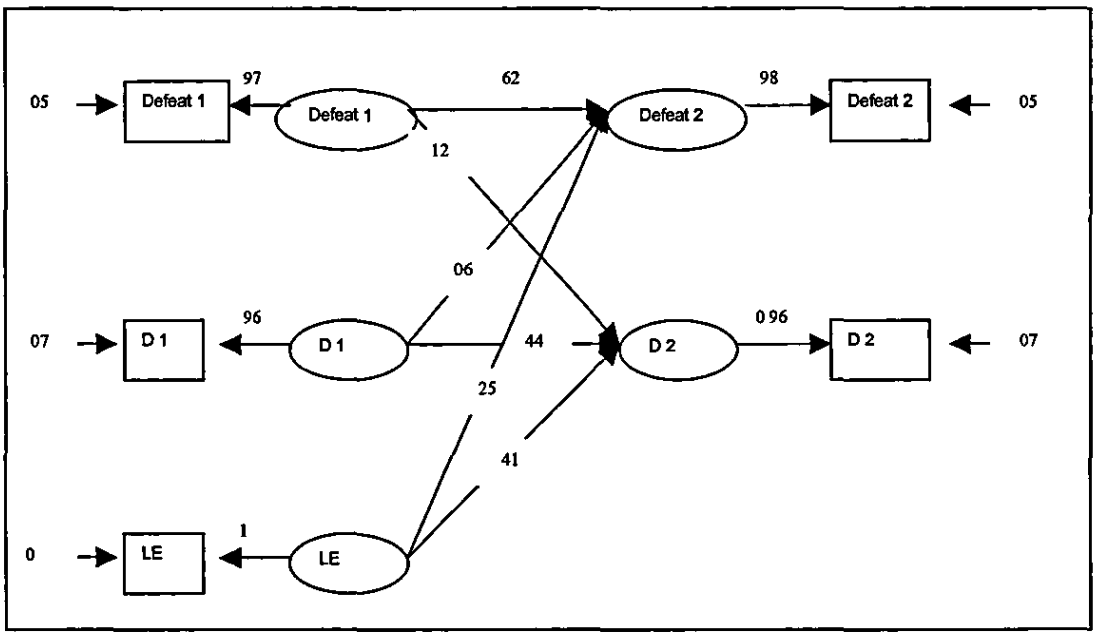
Pair wise correlations were examined initially (See table 8.8). The highest observed correlations were those correlations achieved over time (e.g. between defeat at time one and defeat at time two). Defeat achieved the highest correlation over time; a slightly lower correlation was achieved over time for depression. Of all the depression and defeat variables, depression at time two achieved the highest correlation with Life Events, and depression at time one, the lowest.

Of the cross lagged correlations, the highest correlation was that between depression at time one and defeat at time two, although there was only a margin of difference between this correlation and the correlation between defeat at time one and depression at time two. The correlations alone suggested that depression predicted defeat equally as accurately as defeat predicted depression. The cross sectional correlations between depression and defeat were almost equal to one another at times one and two. The highly significant relationship between these two variables was consistent over time. Related *t*-tests were conducted on depression and defeat to examine any changes over time. No significant differences were observed

between depression at times one and two or between defeat at times one and two (means are reported in table 8.8).

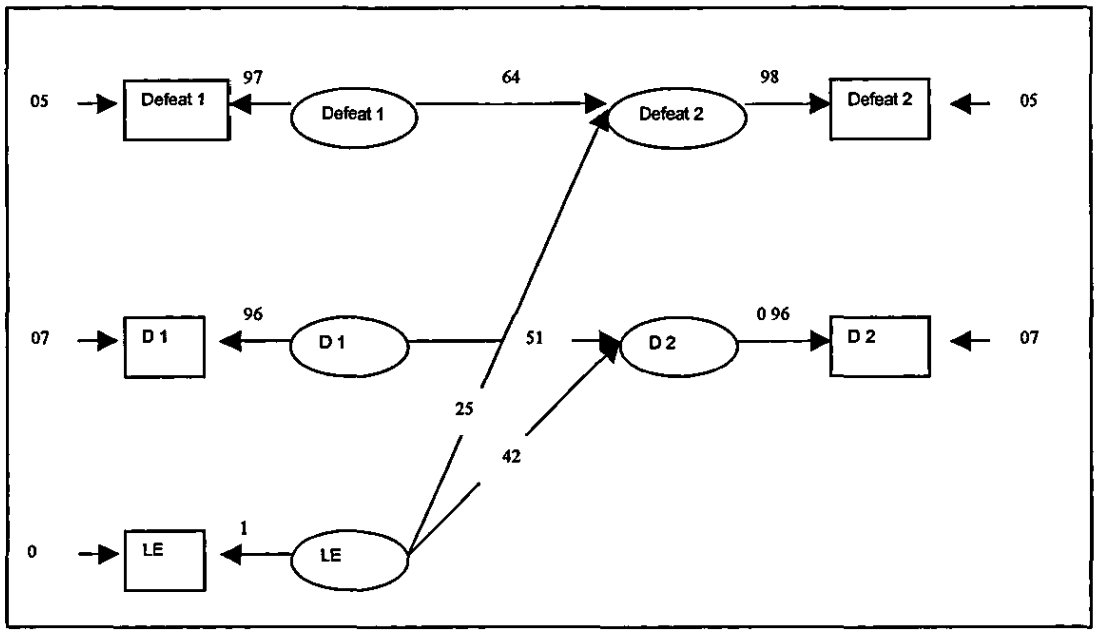
Analyses were conducted with the 70 participants with complete data across the two waves of data Complete demographic information for this group is presented in table 5.5. The assumptions of multivariate normality and linearity were assessed using SPSS. Using a $p<.001$ criterion for Mahalanobis distance, ($\chi^2 = 16.75$; $df = 4$) no multivariate outliers were detected. Data were previously screened for univariate outliers, none were detected. Histograms and scatter plots were used to examine the assumptions of normality and linearity. The data met both of these assumptions.

Figure 8.5. The Reciprocal Model



Key: Defeat 1 = Defeat Scale at time one; Defeat 2 = Defeat Scale at time two; D1 = depression at time one; D2 = depression at time two; LE = life events

Figure 8.6. The No Effect Model



Key. Defeat 1 = Defeat Scale at time one, Defeat 2 = Defeat Scale at time two; D1 = depression at time one; D2 = depression at time two, LE = life events

Model tests were conducted in LISREL v8.52 (Joreskog & Sörbom, 1992), were based upon the covariance matrix, and were conducted using maximum likelihood estimation. A series of four Nested Model Comparisons were tested and compared before a model was accepted. Models a to d are diagrammed in appendix M The saturated model (figure 8.5) fitted the data perfectly ($\chi^2 = 0$; $df = 0$; $p=1$). Subsequent models were compared using the χ^2 difference tests. The χ^2, indices of fit, and comparative statistics for each of the four models are shown in table 8.9.

The initial four models provided an acceptable fit to the data, as indicated by the non significant χ^2 test statistic for each The statistical fit of the depression model did not differ significantly to the reciprocal model ($\chi^2 = 0.38$; $df = 1$; *ns*). The statistical fit of the defeat model did not differ significantly from the reciprocal model ($\chi^2 = 0.12$, $df = 1$; *ns*). No significant difference was observed between the fit of the no effect model and either of the depression ($\chi^2 = 0.64$; $df = 1$; *ns*), or the defeat models ($\chi^2 = 0.9$; $df = 1$; *ns*). The GFI shows the defeat and the depression model as having the best fit to the data, as does the AGFI. According to the SRMR the defeat model, the depression model, and the no effect model fulfil the criteria of 0.05 or below to demonstrate an acceptable level of model fit to the data. The ECVI demonstrated that the no effect model represented the greatest potential for replication, however this was only by a margin. The reciprocal, depression, and defeat models all included the non-significant cross-lagged path coefficients. However, all parameters within the no effect model were significant (see table 8.10). Based on considerations of parsimonious fit, the no effect model was therefore retained for further analysis.

Table 8.9. Goodness of Fit Indices for the Panel Data for Defeat and Depression

Model	Reciprocal Model	Depression Model	Defeat Model	No effect Model	Modified1	Modified2
df	0	1	1	2	3	3
χ^2	0	0.38	0 12	1 02	8 78	17.25
p	1	.539	.734	.602	.032	.001
GFI	-	1	1	.99	.95	.91
AGFI	-	.97	.99	.96	76	55
SRMR	-	01	.01	.02	.09	.12
ECVI	-	.42	.42	.41	.48	0 60

* Models are described above and are diagrammed in appendix M

** As the reciprocal model was saturated, goodness of fit statistics are not reported.

Standardised parameter estimates for the no effect model are presented in figure 8 6. As shown defeat at time 2 was significantly predicted by both Defeat at time one and life events. Depression at time two was significantly predicted by Depression at time one and life events. All paths in the model were significant. In the accepted model, all four parameters were significant, the strongest parameter was that describing the relationship between defeat over time, and the weakest was that describing the relationship between life events and defeat at time two.

Two modifications were tested. Firstly, the parameter describing the relationship between life events and defeat was excluded (modified 1) and as a result this model was a significantly poorer fit to the data than was the no effect model ($\chi^2 = 7.76$; $df = 1$; $p<.01$). Secondly, the parameter describing the relationship between life events and depression was excluded (modified 2) and as a result the model was a

significantly poorer fit to the data than was the no effect model (χ^2 = 16 23; *d f*= 1; *p*<.001). Both parameters were therefore retained in the final accepted model.

Table 8.10. Standardised Parameter Values and Significance Levels for the Reciprocal and No Effect Models.

	Standardised β	*SD*	*t*	*p*
Reciprocal Model				
LE →D2	41	.09	4.48	001
Defeat1→Defeat2	.62	.18	3.51	.001
LE →Defeat2	.25	.09	2.87	.001
D1 →D2	.44	.19	2.30	.05
Defeat1→D2	.12	.19	.62	*ns*
D1 →Defeat2	.06	.18	.34	*ns*
No Effect Model				
Defeat1→Defeat2	.64	0.08	7.74	.001
Dep1 →D2	51	0.09	5.72	.001
LE →D2	.42	0.09	4.55	.001
LE →Defeat2	.25	0.09	2.93	.001

Key: Defeat 1 = Defeat Scale at time one; Defeat 2 = Defeat Scale at time two; D1 = depression at time one; D2 = depression at time two, LE = life events

The no effect model accounted for 55% of the variance in defeat at time two and 51% of the variance in depression at time two. The reciprocal model accounted for 57% of the variance in defeat at time two and 53% of the variance in depression at time two. The significance of each parameter for the saturated model, and for the final, accepted model is displayed in table 8.10. The parameter values were taken from the Gamma matrix (Γ) that describes the relationships between exogenous and endogenous variables. For a sample size of 70, the critical value for *t* is about

±2.648 at p=.001. As table 8.10 shows, the accepted model includes only those parameters which were significant in the reciprocal model

8.4 Summary and Discussion

8.4.1 Panel Analysis

As expected, it was found that individuals with a history of depression were significantly less secure in their adult attachment than were those individuals with no history of depression. This finding supported prior research (e.g., Barnett & Gotlib, 1988; Bifulco, Moran, Ball, & Lillie, 2002; Carnelley *et al.*, 1994). This finding suggested that depression may have an effect on attachment, however this was not supported in the panel analysis, as the cross lagged parameter between depression at time one and either or anxious or avoidant adult attachment at time two was non significant. The panel analysis further demonstrated that neither did attachment predict depression; rather the analysis illustrated that both attachment and depression were consistent over time, and that life events significantly predicted depression. This research therefore supported the findings of previous studies (Roberts *et al.*, 1996, Whiffen *et al.*, 2001). Although the parameter between Life events and Avoidant attachment was marginally significant in the panel analyses (saturated model), it was not retained in the final model. The avoidant model is the "model of others", therefore it is likely that the small association between life events and avoidant attachment was a result of life events that were associated with relationships, or bereavement. The association between life events and attachment is explored in chapter nine.

In the accepted model, depression did not predict defeat over time. This finding supports the role of defeat as a mediator between childhood attachment experiences and depression. It has been demonstrated that defeat was not predicted by

depression. Therefore, the assumptions of the mediator analysis are satisfied, and the mediator model presented in chapter seven is supported. However, defeat did not predict depression over the five-month lag. Rather each of depression and defeat were continuous over time, and significantly predicted by their time one counterparts. Additionally, life events in the intervening time between data collection significantly predicted both depression and defeat at time two. The relationship between defeat and life events could be explained by the high degree of shared variance between depression and defeat.

For all three panel analyses, the accepted models did not retain cross lagged coefficients The absence of cross-lagged coefficients in the three panel analyses may be due to the length of the time lag being examined or due to the methodology employed. In the case of attachment, as outlined above, a change may take longer than five months to occur, and to have an effect on mood Therefore, these findings could be due to the lag being insufficient in length. Alternative explanations may be found in criticising the measures or the method employed for the sampling and data collection. However, the cross sectional correlations were in the expected direction and of the expected magnitude. Therefore, the absence of the cross-lagged coefficients is unlikely to be due to methodological reasons.

It is of note that none of the cross-lagged coefficients was retained in the three panel analyses, or in the research that was earlier reviewed. This pattern of findings could raise concern over the reliability of this statistical method for assessing longitudinal and panel data, particularly considering the high cross sectional correlation between the variables which were examined. It was thought that the stability of variables over time might have presented a limitation to analyses of this kind. Examining the temporal relationship between two variables is difficult unless there is sufficient change occurring in a variable over time (Cramer, Henderson, & Scott, 1997)

Although the cross-lagged correlations were not retained, the variables demonstrated consistency over time. An examination of the path coefficients demonstrated that depression, defeat, and attachment were all stable over time; this may explain why cross-lagged relationships were not retained in these analyses. Defeat and working models of self (anxiety) and other (avoidance) were more stable than was depression. The consistency of both attachment and defeat over time offers support for the conceptualisation of these variables as stable cognitive constructs The roles of attachment and defeat as mediating cognitive structures will be further considered in the general discussion.

There were a number of limitations associated with conducting panel analysis. This type of analysis assumes that all variables of importance in predicting the criterion variables are included in the model (isolation). A specification error may therefore be apparent as all possible indicators of defeat, attachment, and depression were not included, nor is this a possibility in a practical sense. In addition, although the sample size satisfied the criterion ratio proposed by Bentler and Chou (1987), indices of fit are a better gauge of data fit to the model in larger sample sizes, likewise, the Chi Square is more useful in larger samples.

8.4.2 Prior Depression

As expected, and in line with previous research, it was found that prior depression was a significant predictor of, and significantly related to current depression (Angst, 1986; Bifulco *et al.*, 1998; Coyne *et al.*, 1999; Maciejewski *et al.,* 2000) Individuals with prior depression were significantly more depressed that were individuals with no history of depression. This finding was supported in the Panel analysis, where the depression at time one significantly predicted depression at time two.

8.4.3 Life Events

Experiencing life events was found to be associated with a higher score on the Symptom Checklist-90 depression scale. Life Events accounted for a significant and independent proportion of the variance in the prediction of depression at time two, once depression scores at time one, and adult attachment at times one and two had been controlled. This is further support for the notion that depression is preceded by a severe negative life event (Bebbington *et al.*, 1981; Bifulco *et al* , 1998; Brown & Harris, 1978). Participants who experienced a depressing life event were significantly more depressed than were those reporting no life event. However, the difference in depression occurred both before and after they had experienced the reported life event, suggesting that prior depression could have contributed to life events, rather than vice versa. This echoes the previous findings of Maciejewski *et al.* (2000) and Szádóczky, Rozsa, Zambori, and Furedi (2004)

8.4.4 Summary

These analyses have demonstrated support for the role of life events, and prior depression as vulnerability factors for current depression. Life events significantly predicted both depression and defeat. These analyses demonstrated support for the two models presented in chapter seven and introduced evidence to suggest that attachment and defeat are continuous cognitive structures, which supports previous theory (e.g., Bartholomew, 1990; Bowlby, 1969, 1973; 1980; Sloman, 2000a). The findings offer support for the notion that attachment is a stable and enduring cognitive trait. Chapter nine will explore the continuity between childhood and adulthood attachment, effects of life events upon attachment style, and the implications of attachment stability for the prediction of depression.

Chapter 9

Results IV: The Stability of Attachment and Implications for Pathways to Depression

9.1 Introduction

It has already been demonstrated that the Involuntary Defeat Strategy mediated the relationship between childhood attachment and depression (chapter seven). An alternative explanation is that the working models of attachment mediate this association (pathway one). In earlier chapters, an emphasis has been placed on examining the different pathways to depression from childhood attachment to one's parents and adulthood attachment. The aim of this chapter is to explore the alternative: to what extent childhood and adulthood attachment are continuous and part of the same pathway to depression. The second aim of this chapter was to explore the stability of attachment over time and the implications this had for modelling vulnerability to depression

9.1.1 The Mediator Model

The concept of the working model is relevant to this chapter, as it has been proposed that working models are the cognitive mechanisms which allow attachment to be a life span phenomenon, and to be continuous throughout life (Bowlby, 1969). If indeed, working models of attachment were stable cognitive mechanisms throughout life, these mechanisms would be one conduit through which childhood experiences exert their effect on depression in later life (Gotlib & Hammen, 1992). Therefore, the working models of attachment in adulthood would mediate the relationship between childhood attachment experiences and current mood.

Although there is an emerging trend that adult attachment mediates the relationship between maternal care (measured by the Parental Bonding Instrument) and current depression (Difilippo & Overholser, 2002; Gittleman *et al* , 1998; Lloyd & Miller, 1997; McMahon *et al.*, 2005) findings to date are inconsistent It was hypothesised that this inconsistency was, in part, due to the use of the Parental Bonding Instrument as a

measure of childhood attachment To address this criticism, the present study sought to test the mediator model using the Childhood Attachment Measure as an additional measure of childhood experiences.

9.1.2 Continuity of Attachment

In line with the mediator model, childhood and adulthood attachment should demonstrate continuity of attachment across the lifespan. Childhood and adulthood attachment share a number of communalities (Ainsworth *et al.*, 1978; Crowell *et al*, 1999; Fraley & Davies, 1997; Fraley & Shaver, 1998; Hazan & Shaver, 1987; 1990; 1994; Mikulincer *et al.*, 2002) The central difference between childhood and adulthood attachment is that Bartholomew (1990; Bartholomew and Horowitz, 1991; Griffin and Bartholomew, 1994) further defined adult avoidant attachment into two subtypes; those with a positive model of self (dismissing attachment), and those with a negative model of self (fearful attachment). Those individuals classified as dismissing incorporate an avoidance of others with a defensive denial of the importance of close relationships, and a high level of autonomy. Those classified as fearful combine avoidance of others with self-blame and lack of self worth. This distinction has not previously been made in the childhood attachment literature; therefore, it was of interest to explore the continuity of avoidant attachment classifications between childhood and adulthood attachment.

With regard to lifespan continuity of attachment, secure adulthood attachment is related to a more positive perception of early parenting, when compared with insecure adulthood attachment. These findings are consistent using retrospective questionnaires (Collins & Read, 1990; Crowell *et al.*, 2002; Feeney & Noller, 1990; Gittleman *et al.*,1998; Levy *et al* ,1998), longitudinal methods (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000), and meta-analysis (Fraley, 2002), and have

been replicated with individuals from non conventional families (Hamilton, 2000). These findings support Bowlby's (1969, 1973; 1980) theory that attachment is continuous, and that early experiences are influential in forming working models which exert their influence throughout life. The extent to which childhood and adulthood attachment classifications were associated with one another was explored in the present study. Longitudinal studies have also demonstrated the stability of attachment in adulthood over a number of months (e.g. Scharfe & Bartholomew, 1994; Sibley & Liu, 2004), and in women throughout their adult years (Klohnen & Bera, 1998). Davila *et al.* (1997), reported a rate of 72% stability over a six month period and 66% stability over a two year period in which women experienced a major life transition.

9.1.3 Change in Attachment

It was relevant to explore variables associated with change in attachment because if the life events that predict depression, are also associated with changes in attachment, this weakens the case for the utility of attachment as a mediator, or as a moderator (e.g., chapter seven) in a pathway to depression. An aim of this chapter was therefore to explore whether life events were associated with instability in attachment.

One factor that has an impact on the stability and change of attachment style is an interpersonal life event. For example, major rites of passage like starting at university, leaving home, getting married, becoming a parent, or moving house promote the reorganisation of internal working models of attachment (Bowlby, 1969; 1973; 1980). However, Scharfe and Bartholomew (1994) reported that changes in attachment ratings were not significantly related to life events during an eight-month

period. The association between change in attachment style and life events was therefore explored.

9.1.4 Implications of Change on Depression

One aim of this research was to explore the differences in depression between individuals who were continuous and discontinuous in their attachment styles. Pearson *et al.*, (1994) found that individuals who changed towards security in adulthood reported significantly higher levels of depression than did individuals with continuous security. Therefore, childhood insecurity was more influential on current mood, than was adulthood security. Alternatively, it may have been the change that was the key variable that influenced mood. The present study further sought to consider the implications of continuity between childhood and adulthood attachment for the prediction of current depression, to examine whether change in attachment is key, rather than the security of attachment. The present study expanded on the study by Pearson *et al.* (1994) by also exploring changes towards insecurity in adulthood. This was to be explored in terms of continuity of adult attachment, and with regard to lifespan continuity.

There are two parts to the present chapter. Part one explored discontinuity in the security of attachment and the implications of this for depression. Part two tested the mediating model (pathway one).

9.2 Part 1: Stability in Attachment Styles

In order to explore whether discontinuity of attachment security was associated with depression, rather than attachment styles per se, individuals were categorised according to change in their attachment style. Adult attachment styles as

categorised by the Experiences in Close Relationships scale and childhood attachment styles as categorised by the Childhood Attachment Measure were condensed into a secure/insecure classification to show more easily changes in security of attachment. Therefore, the preoccupied, dismissing, and fearful groups were integrated to form the "insecure" group Two sets of analyses were conducted: Analyses that examined changes in adult attachment over the five month lag and analyses that examined changes in attachment over the lifespan as measured by childhood and adulthood attachment measures at stage one.

9.2.1 Stability in Adult Attachment Style

Participants had previously been categorised according to their adult attachment style using the Experiences in Close Relationships scale at time one and again five months later at the second wave of the data collection Attachment security at time one was then compared to attachment security at time two to identify those individuals who had experienced a change in adult attachment classification during the course of the study (see table 9.1) Four groups described a change to secure attachment, a change to insecure attachment, continuous secure attachment, and continuous insecure attachment. In total, 16 participants were found to change in the security of their attachment classification between times one and two. Half changed towards security, and half towards insecurity. The largest group is that describing continuously insecure individuals. This is most likely because that grouping describes three attachment styles (preoccupied, fearful, and dismissing).

Participants who had experienced one or more adverse life events in the intervening time between stages one and two of data collection were then compared to those reporting no such life event to examine whether the former group consisted of more individuals who had experienced a change in attachment style. The aim of this

comparison was to identify whether a change in attachment style was associated with the experience of a life event Life events reported by participants are described in chapter five. Table 9.1 displays the results of this comparison.

Table 9.1. Stability in Adult Attachment in Relation to Life Events and Depression.

			Life Events		Depression (time 2)	
		Total Sample	None	>1	Mean	(*SD*)
Stability in Adult Attachment	Change to secure	8	6	2	19 25	(4.71)
	(%)	(11.43)	(13 64)	(7.69)		
	Change to insecure	8	4	4	28.63	(13.77)
	(%)	(11.43)	(9.09)	(15.38)		
	Continuous secure	13	10	3	21 85	(7.31)
	(%)	(18.57)	(22.73)	(11.54)		
	Continuous insecure	41	24	17	28 78	(11.23)
	(%)	(58.57)	(54 55)	(65.38)		
	Total	70	44	26	26.39	(10 85)
	(%)	(100)	(100)	(100)		

In the group who did not experience any life events 22.73% (n=10) demonstrated a change in their adult attachment security. Of the group who experienced a life event 23.08% (n=6) experienced a change in their adult attachment security. Overall, there were fewer individuals classified as secure in the group who experienced a life event. Participants were asked to describe the event. Events associated with relationships were found for both individuals who experience a change in attachment (e g., "end of a relationship") and those that do not (e g , "bereavement") There was no significant association between life events and stability of adult attachment security (Fishers Exact = 2 42; *ns*)

A One-Way ANOVA was conducted to determine whether a change in attachment style was associated with self-reported depression. The independent variable described the four stability classifications The dependent variable was depression at stage two. A significant between groups difference was observed in terms of depression score (F (3, 66) = 2.92, p<.05). With regard to depression at time two across the four groups, two clusters of scores were apparent. Individuals who were currently secure (i.e , continuously secure, or changed to secure) scored lower on the Symptom Checklist-90 depression scale than did those individuals who were currently insecure in their adult attachment style. No significant differences were observed when Scheffe's Multiple Comparisons were analysed

9.2.2 Stability in Lifespan Attachment Security

The stability of attachment over the lifespan was explored. Childhood and adulthood attachment styles were used to allocate participants to one of four stability groups. As with adult attachment, the four groups described a change to secure attachment, a change to insecure attachment, continuous secure attachment, and continuous insecure attachment. However, in these analyses, childhood to adulthood

attachment was compared, and the whole sample at time one (n = 244) were used. The frequencies of participants within each group are shown in table 9 2. Just under half of the participants reported continuous insecurity, a third reported a change towards security. 14.75% were continuously secure, and the smallest group consisted of those who changed to an insecure attachment style in adulthood. Overall, 61.89% of participants indicated continuity in the security of attachment between childhood and adulthood.

Table 9.2. Stability and Change in Lifespan Attachment Security in Relation to Current Depression.

			Depression (time 1)	
		Total	Mean	(*SD*)
Change/Stability in Attachment	Change to secure	72	27.17	(9.71)
	(%)	(29.51)		
	Change to insecure	21	21.29	(6.86)
	(%)	(8.61)		
	Continuous Secure	36	19.25	(4.81)
	(%)	(14 75)		
	Continuous Insecure	115	34.31	(12 06)
	(%)	(47.13)		
	Total	244	28 86	(11.69)
	(%)	(100)		

The association between self-reported depression and lifetime stability of attachment was explored. An examination of the mean scores for depression at time one demonstrated that individuals with insecure childhood (whether continuous, or changing to secure as an adult) scored more highly on depression (i e., are more

depressed) than did those individuals who reported a secure childhood attachment (whether this remained continuous, or changed towards insecure attachment in adulthood).

A one-way ANOVA was conducted to examine whether there was a significant difference between groups regarding the score for depression. A significant difference in depression scores were observed between the four groups (F [3, 240] = 26.06, p< 001). Post-hoc multiple comparisons (Scheffe) demonstrated that the continuously secure group scored significantly lower on depression ($\bar{x}$= 19.25; SD = 4.81) than did the group who changed to secure ($\bar{x}$ = 27.17, SD = 9.71). The continuously insecure group scored significantly higher ($\bar{x}$ = 34.31, SD = 12.06) than each of the continuously secure ($\bar{x}$ = 19 25, SD = 4.81), change to secure ($\bar{x}$ = 27.17, SD = 9.71), and change to insecure ($\bar{x}$ = 21.29, SD = 6.86) groups. Therefore, the effect of continuity or discontinuity was secondary to the effect of security of attachment

9.3 Part 2: The Mediator Model

It was hypothesised that working models of attachment mediated the relationship between childhood attachment experiences and depression. In support of this hypothesis, the above analyses have demonstrated that 61.89% of participants were continuous in the security of their attachment between childhood and adulthood.

A mediation analysis was conducted using the four stages recommended by Baron and Kenny (1986; Judd & Kenny, 1981). The aim of this analysis was to test whether the association between childhood attachment and depression was mediated by the dimensions of the attachment system as measured by the Experiences in Close Relationships scale in adulthood. A second aim was to compare the roles of the

Parental Bonding Instrument and the Childhood Attachment Measure within this analysis. For this analysis, the criterion variable was depression; the predictors were the Anxiety, and Avoidance subscales of the Childhood Attachment Measure and the two subscales of the Parental Bonding Instrument. The mediating variables were the two subscales of the Experiences in Close Relationships scale which represent the working models of self (anxiety) and other (avoidance). Only those with complete data on the Parental Bonding Instrument were included, consequently, n=218. At the p<.01 level (7df; χ^2 = 18.47) for Mahalanobis distance five multivariate outliers were detected and removed from the analysis. Consequently, n = 213.

Table 9.3. Adult Attachment as a Mediator between Childhood Experiences and Depression: Standardised Beta Weights, Zero Order, and Semi-Partial Correlations

Stage and Predictors	Criterion	Standardised β	*t*	*p*	Zero Order	Semi-Partial
Stage 1	**Depression**					
Care		-.24	2 79	006	- 44	-.17
CAM Anxiety		.17	2.66	008	26	.16
CAM Avoidance		.19	2 34	020	39	.14
Overprotection		07	1.00	.317	29	.06
Stage 2a	**Anxiety**					
CAM Anxiety		24	3 56	001	26	.23
CAM Avoidance		.25	2 80	006	25	.18
Care		035	.378	.706	-.19	03
Overprotection		006	.082	.935	.14	01
Stage 2b	**Avoidance**					
CAM Avoidance		.18	2 11	037	34	.13
Overprotection		.12	1 69	.093	27	.11
Care		-.15	1.62	.107	- 34	- 10
CAM Anxiety		05	81	419	13	.05
Stage 3	**Depression**					
Anxiety		.38	6.39	001	45	37
Avoidance		32	5 46	.001	40	32
Stage 4-Final Step	**Depression**					
ECR Anxiety		31	5 33	001	45	.29
ECR Avoidance		22	3 59	001	40	20
Care		-.22	2.79	.006	- 44	-.15
CAM Anxiety		08	1.36	.175	26	.07
CAM Avoidance		08	98	327	39	05
Overprotection		04	65	518	29	04

In the first stage of the mediator analysis childhood anxiety and avoidance and the Parental Bonding Instrument subscales overprotection and care significantly accounted for 24.5% of the variance in depression (R = .49, F [4, 208] = 16.88; p<.001). Each of anxiety, avoidance, and care made a significant and unique contribution to the prediction of depression (table 9 3).

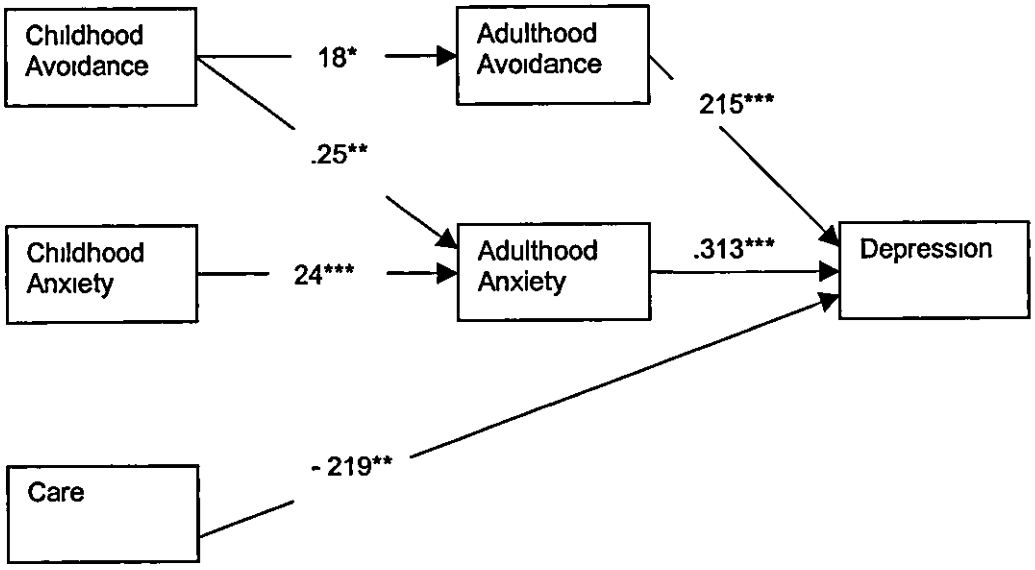
The second stage tested whether the predictor variables had a significant effect upon the mediators; adult anxiety and adult avoidance. Two multiple regression equations were estimated. For the first equation, anxiety was the criterion, and for the second equation, avoidance was the criterion. It was found that childhood attachment significantly predicted the mediators adult anxiety (R = .35; r-square = 12, F [4, 208] = 7.09, p <.001) and adult avoidance (R = .39; r-square = .153, F [4, 208] = 9.39, p<.001). There were two significant predictors of adult anxiety, these were childhood anxiety and childhood avoidance. There was one significant predictor of adult avoidance, this was childhood avoidance (see table 9.3)

The aim of the third stage was to demonstrate a significant relationship between the mediators and the criterion. A multiple regression equation was estimated, adult anxiety and adult avoidance were entered as the predictors, and depression as the criterion. Working models of adult attachment accounted for 29.8% of the variance in depression (R = .546; F [2, 210] = 44.59, p<.001) An examination of the zero order and partial correlations (table 9.3) demonstrated that both mediators had a significant and strong unique contribution to the prediction of depression.

The final stage examined whether the predictors were still directly related to the criterion variable when the relationship between the predictors, mediators, and the criterion is controlled. The predictors were entered in two blocks. The first block consisted of the childhood attachment variables (the predictors), avoidance, anxiety,

overprotection, and care The second block included adult anxiety, and adult avoidance (the mediator variables). The criterion was depression. At the final step (including both blocks), this analysis produced a significant model which accounted for 38.5% of the variance in depression (R = .620; F [6, 206] = 21.45, p< 001). This second model accounted for significantly more variance in depression than did the first model which excluded the mediators (r-square change =.139; F change [2, 206] = 23 333, p<.001) In support of the hypothesis, analysis of the standardised beta coefficients and semi-partial correlation coefficients demonstrated that adult attachment variables of anxiety and avoidance mediated the relationship between childhood attachment (avoidance and anxiety) and depression (table 9.3 and Figure 9.1). The direct relationship between depression and each of childhood anxiety and childhood avoidance was reduced and was no longer significant once working models of adult attachment were entered into the equation. The care subscale retained a significant unique inverse relationship with depression which was not mediated by adult attachment.

Figure 9.1. The Mediating Role Of Adult Attachment In The Relationship Between Childhood Attachment And Depression



Key.

*** $p \leq 001$

** $p < 01$

* $p < 05$

9.4 Summary and Discussion

The focus this chapter was to explore the remaining parameter of the model presented at the end of chapter seven. It has already been demonstrated that the Involuntary Defeat Strategy mediates the relationship between childhood attachment and depression (chapter seven), however, an alternative explanation is that the working models of attachment mediate this association. In support of the hypothesis, the working models of attachment in adulthood significantly mediated the association between childhood attachment and depression. Each section of findings will be discussed in turn.

9.4.1 Stability of Attachment

Life events were not associated with changes in adult attachment style Consistent with the findings of Scharfe and Bartholomew (1994), changes in adult attachment style were similar for those who reported a life event and those who did not. It is possible that the five month lag employed in the current study, and the eight month lag employed by Scharfe and Bartholomew (1994) were of insufficient length to detect any discernable trend in changes of adult attachment style. A change in attachment style would involve the reworking of models of self and other, the accommodation of new information, and confirmation of one's expectations which are derived from the model. The length of time for such a process has not previously been estimated. Studies of bereavement indicate that adjustment following the loss of a loved one takes place at least 15 months following the bereavement (Fraley & Bonanno, 2004)

One trend which was worthy of note was that the proportion of participants who changed towards insecurity was slightly higher in those individuals who experienced a life event, whereas a change towards security was slightly higher in those who did

not report such a life event. However, due to the small group numbers, no conclusions could be drawn and these results would need to be replicated with a larger sample.

In support of Pearson *et al.* (1994), individuals with insecure childhood attachment scored higher on depression, regardless of current adult attachment. In an extension of the analyses conducted by Pearson *et al.* (1994), the present study also examined change towards insecurity. Discontinuity in attachment style did not predict a higher score on depression. However, of those with insecure childhood attachment, the participants who changed to a secure attachment style in adulthood scored significantly lower on depression than did those who were continuously insecure. Changing to a secure adult attachment style therefore had the effect of attenuating the influence of childhood experiences on depression. This finding implies that both childhood and adulthood attachment are implicated and that adult attachment had somehow buffered, or reduced the effect of childhood attachment on depression. The continuously insecure groups were different from all three groups who had reported secure attachment in either or both of adult or childhood attachment. Therefore, the presence of secure attachment, in either relationship resulted in a lower score on depression, as compared to individuals who had not reported secure attachment in either relationship. With regard to adult attachment, present security, rather than change in security, or prior security, was more strongly associated with depression.

Participants were more likely to change in their attachment style towards insecurity rather than towards security over the five month interval, which disputes the assertions of Hazan and Shaver (1994). With regard to adulthood attachment, of those who changed, half changed towards security and half towards insecurity. Only a small proportion experienced a change in security in the five month lag The rate of

stability was found to be around 60% across the lifespan. In support, Lewis *et al.*, (2000) found 51% stability, whilst Waters' research group found stability rates of 64% (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000) and 77% (Hamilton, 2000) between infancy and early adulthood. With regard to adulthood attachment the rate of stability was 77% across the five month lag. In support, Davila *et al.* (1997) found 72% stability over six months and 66% stability over two years. Rates of stability in the present study were therefore in line with previous findings.

9.4.2 The Mediator Model

Adult attachment mediated the relationship between childhood attachment and depression. The association between childhood anxiety and depression was mediated by adulthood anxiety and adulthood avoidance. The association between childhood avoidance and depression was mediated by adulthood avoidance. Of the Parental Bonding Instrument subscales, care retained a significant and independent relationship with depression, and overprotection was not significantly associated with depression.

In line with prior research, depression was related to more aversive childhood experiences (Difilippo & Overholser, 2002; Gotlib *et al* , 1988, McCarthy *et al.*, 2001; Lloyd & Miller, 1997), and insecure attachment as a child (Collins & Read, 1990; Difillipo & Overholser, 2002; Feeney & Noller, 1990; Gittleman *et al.*,1998; Levy *et al.*,1998) and as an adult (Beck, 1967; Barnett & Gotlib, 1988; Carnelley *et al.* 1994; Coyne, 1976a; 1976b; Difilippo & Overholser, 2002; Gotlib & Hammen, 1992; Whiffen *et al.*, 2001)

Care retained a significant and independent relationship with depression and was not mediated by adult attachment This demonstrated that care is associated with

depression in later life outside of the attachment system. Therefore there are other factors through which care may exert its influence on depression in later life. This finding disputes Gittleman *et al.* (1998) who found that adult attachment mediated the relationship between parental bonding and depression. It is suggested that a more robust measure of childhood attachment, coupled with a continuous measure of adult attachment has led to this difference in findings.

This analysis demonstrated that working models of adult attachment are the generative mechanisms through which childhood attachment experiences are able to influence depression. These findings support and extend upon prior research which has indicated the plausibility of this mediating model (Difilippo & Overholser, 2002; Gittleman *et al.*, 1998). The present study has demonstrated that the adult working model of self is implicated, as a mediating variable, prior research has not found this dimension to have a mediating effect. This finding is attributed to the use of the childhood attachment measure which is more true to attachment theory than is the Parental Bonding Instrument As suggested by Gittleman *et al.* (1998), it is likely that measures which "are more faithful to attachment theory are more likely to support hypotheses arising from that orientation" (pp 1452). As the Parental Bonding Instrument only refers to parental behaviour, the childhood working model of self is not operationalised in this measure. This may be one reason why the adult model of self was not significantly predicted by childhood experiences (as measured by the Parental Bonding Instrument) in the study conducted by Difilippo and Overholser (2002).

Chapter 10

General Discussion

Each results chapter has discussed specific findings in relation to the existing literature. This general discussion is concerned with exploring the extent to which the present study has clarified the role of attachment as a vulnerability factor for depression. This chapter will address issues common to all the chapters (e.g., the utility of the Childhood Attachment Measure), integrate the findings, answer outstanding questions, and present applications, limitations, and suggestions for further research.

10.1 Summary of Findings

In relation to the four problems initially outlined:

1. It was earlier argued (section 3.1.1) that there was a lack of a valid and reliable retrospective measure of childhood attachment to one's parents. In support of hypothesis two, it was found in chapter six that the Parental Bonding Instrument was biased towards the measurement of the working model of other. The new measure, the Childhood Attachment Measure, was found to be an improvement on the Parental Bonding Instrument, with regard to demonstrating the association between childhood attachment and depression and with regard to demonstrating the mediating effect of the working models of attachment and the Involuntary Defeat Strategy on that association.

2. It was argued in section 1 9.4 that the discontinuity of attachment in response to life events weakened the case for the working models of the attachment system being the cognitive mediators through which childhood attachment could have an effect upon depression. As hypothesised, it was found that childhood attachment had an effect upon depression through a cognitive mediator outside of the attachment system. In chapter seven, the Involuntary Defeat Strategy was found to mediate the association between childhood attachment and depression. However, contrary to the above argument (section 1.9 4) it was found in chapter nine that the working models of the attachment system also mediated the association between childhood attachment and depression.

3. Based on the findings from prospective studies (section 3.2.2), it was hypothesised that attachment would predict depression over time (section 3 2 3). With regard to the temporal association between attachment and

depression, in the final accepted model attachment did not predict depression over time when depression at time one was entered into the model. However, these analyses indicated that the attachment dimensions were stable and enduring cognitive structures. Analyses exploring the temporal association between defeat and depression found support for defeat as a stable and enduring cognitive mechanism.

4. It was argued in section 3.3 that attachment was a cognitive variable that was responsible for moderating the effect of stressors upon depression. Following this argument, it was hypothesised in section 3.5 that adult attachment moderated the association between social comparison and depression. It was found in chapter seven that adult attachment moderated the association between social comparison and depression, which supported the hypothesis. Testing this moderating model extended the theory offered by Sloman *et al.* (2003) by specifying that the moderating effect was produced by adult attachment, and not childhood attachment, and was specific to social comparison rather than defeat.

10.2 Evaluation of the Childhood Attachment Measure

In support of hypothesis two, the Parental Bonding Instrument was biased towards the measurement of the working model of other, over the working model of self. As expected, the Parental Bonding Instrument was therefore found to be inadequate as a measure of childhood attachment. Dimensional scores (of anxiety and avoidance) and attachment styles were derived from the Childhood Attachment Measure and used in subsequent analyses.

10.2.1 Utility of Childhood Attachment Measure in the Present Study

As discussed in chapter six, the Childhood Attachment Measure was found to be a reliable measure of childhood attachment, when compared to measures of adulthood attachment, and to the Parental Bonding Instrument. In subsequent analyses (chapter nine), the Childhood Attachment Measure demonstrated an association between working models of self and other in childhood and current depression. This association had only been demonstrated previously using the Parental Bonding Instrument as a proximal indicator of the working model of other (e g., Brewin *et al.*, 1992; Carnelley *et al.*, 1994; Difilippo & Overholser, 2002; Gittleman *et al.*, 1998; Lloyd & Miller, 1997; Pedersen, 1994). Therefore, the Childhood Attachment Measure contributed two new findings to the literature on childhood attachment and depression; firstly, that the association between depression and childhood attachment could be found using a self-report measure, and secondly that the association was found to exist for the working model of self, a finding which the Parental Bonding Instrument was inadequate to demonstrate.

The new self report measure of childhood attachment was also useful in determining the continuity between childhood and adulthood attachment. Two findings in particular demonstrate the validity and value of the new measure. Firstly, in chapter nine, it was found that the continuity of attachment between childhood and adulthood attachment found cross-sectionally using two self report measures (the Childhood Attachment Measure and the Experiences in Close Relationships scale) was close to the rate of continuity achieved longitudinally using the Strange Situation during infancy and the Adult Attachment Interview in early adulthood (Hamilton, 2000, Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield *et al.*, 2000). Secondly, the findings of Pearson *et al.* (1994) regarding earned security and current depression were accurately replicated. Pearson *et al.*, (1994) had employed the

Adult Attachment Interview to ascertain earned secure individuals, however the present study replicated their findings with the use of self-report measures of child and adulthood attachment to determine lifetime change in security. These findings provide support for the congruency between the Childhood Attachment Measure and interview measures of attachment, and for the utility of the Childhood Attachment Measure as an indicator of childhood attachment.

The Childhood Attachment Measure proved more useful than the Parental Bonding Instrument in demonstrating the mediating effect of the working models of attachment on the pathway between childhood attachment and depression. As discussed in chapter nine, it was demonstrated that the working models of attachment, as measured in adulthood, were the generative mechanisms through which childhood attachment was able to influence current depressive mood. Prior cross-sectional research was limited in exploring the continuity between childhood and adulthood attachment, and therefore this mediating model could not be fully explored. This is because the Parental Bonding Instrument was used as a measure of childhood attachment, and this measure was found to be limited in its representation of the working model of self, which made findings inconsistent (e g., Difilippo & Overholser, 2002; Gittleman *et al.*, 1998; Lloyd & Miller, 1997; McMahon *et al.*, 2005; Strahan, 1995). As discussed in chapter seven, the Childhood Attachment Measure demonstrated the association between childhood experiences and the Involuntary Defeat Strategy and the mediating effect of the strategy on the association between childhood attachment and depression.

As expected, the Parental Bonding Instrument was biased towards the working model of other in childhood experiences. This has implications for previous research which has employed the Parental Bonding Instrument as a measure of childhood experiences or attachment. For example, Difilippo and Overholser (2002) found that

the working model of other mediated the association between Parental Bonding Instrument subscales and depression. Rather than concluding that the working model of self is not implicated in this mediating model, the findings of Difilippo and Overholser (2002) can now be interpreted as representing only the working model of other. In the present study, the working model of self was implicated in the mediating model because it was represented amongst the childhood predictors. As expected, one reason why a mediating model had not consistently been found was due to the use of the Parental Bonding Instrument as an indicator of childhood attachment (Difilippo & Overholser, 2002; Gittleman *et al.*, 1998; Strahan, 1995).

10.2.2 Further Research with the Childhood Attachment Measure and Applications

Whether or not the two-dimensional model of attachment (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994) can be applied to childhood attachment is still unclear. Ainsworth *et al.* (1978) demonstrated that there were two dimensions underlying the three patterns of infant attachment observed. However, this is the first study which has attempted to measure these dimensions retrospectively via self-report. Replication is therefore needed before any conclusions can be drawn regarding the validity of these attachment styles within childhood. It was noted that the model of other was measured more reliably and more consistently than was the model of self. This may be derived from the use of three factors to create the anxiety subscale, as discussed in chapter six. Equally, this may be a problem in the design of the items, which were based on an adult attachment measure. Further research should therefore focus upon validating the model of self to ensure that representation of childhood working model of self is accurate, and congruent with this dimension in adulthood. This could be achieved through interviewing children about their relationships for example, and identifying

whether the outcome of the interview is congruent with the model of self in theory and with their response on the Childhood Attachment Measure with regard to their current attachment Future research should also be directed towards exploring childhood attachment in terms of Bartholomew's (1990) two-dimensional model.

The Childhood Attachment Measure produced reliable results and demonstrated potential for use in future research. A retrospective self-report measure has the potential to add greatly to the literature exploring the association between childhood attachment and adult attachment, or current experiences, as there are fewer practical restrictions on cross sectional research compared to longitudinal or interview studies The new self-report scale is congruent with observed, longitudinal, and interview findings. Therefore, one application of this measure could be towards pilot studies to assess the value of conducting longitudinal or interview studies

10.3 Pathways between Attachment and Depression

The present study sought to clarify the role of childhood attachment as a vulnerability factor towards depression, by exploring the cognitive mechanisms through which childhood attachment could exert an effect on depression in adulthood. The present study demonstrated the social rank and attachment systems formed two cognitive vulnerability mechanisms that predicted depression. As hypothesised, the Involuntary Defeat Strategy was one mechanism which was found to mediate the association between childhood attachment experiences and depression. However, contrary to the argument advanced in section 1.9 4, adult attachment was the second mechanism also found to interact with childhood attachment to predict current depression. Two pathways between adult attachment and depression were explored Pathway 2 concerned the direct temporal association between attachment

and depression and pathway 3 defined adult attachment style as a moderator between the experience of a stressor and depressed mood.

10.3.1 Pathway 1: The Attachment Pathway

The Dimensions of Attachment as Mediators of the Association between Childhood Attachment and Depression

Continuity of depression across the lifespan is required for adult attachment dimensions to mediate the association between childhood attachment and depression. As the same life events that contribute to the onset of depression also contribute towards changes in attachment style (Bowlby, 1953; Brown & Harris, 1978), it was earlier argued (section 1 9.4) that continuity in attachment would not be found and this mediating model would not be significant. However, this argument was not supported in the present study.

It was found that insecure childhood attachment was associated insecure adulthood attachment. This finding supported prior research (Carnelley *et al.*, 1994, Collins & Read, 1990; Gittleman *et al.*, 1998; Hazan & Shaver, 1987). In support of attachment as a stable and enduring cognitive mechanism, experiences of negative life events were not associated with changes in attachment style during adulthood. It is acknowledged that a simplified measure of life events was taken; however, findings were consistent with Scharfe and Bartholomew (1994) who used the Life Events Survey (Sarason *et al.*, 1978). Life events were associated with depression, but not with attachment. Therefore, the possibility that the same life event could both influence change in attachment style, and change in depressed mood was disputed.

In line with attachment theory, it was found in chapter nine that the working model of other in adulthood (avoidance) mediated the association between depression and

childhood avoidance. It was further found that the working model of self in adulthood (anxiety) mediated the association between depression and each of childhood avoidance and anxiety Previously only the working model of other has demonstrated a mediating role on the association between childhood attachment and depression (Difilippo & Overholser, 2002; Gittleman *et al.*, 1998; Lloyd & Miller, 1997; McMahon *et al.*, 2005; Strahan, 1995). The present study demonstrated that both working models of self and other are implicated in mediating the association between childhood attachment and depression, this is a new contribution to the literature. This supports the role of working models as enduring cognitive representations of self and other that are based on childhood experiences (Bowlby, 1969; 1973; 1980). The present study supported the findings of Difilippo and Overholser (2002) who found that the working model of other mediated the association between experiences with others as a child and later depression.

This finding demonstrates that one implication of the continuity of attachment is mental health in adulthood. The adult attachment dimensions are the cognitive mechanisms through which childhood attachment experiences have an effect upon adulthood. Childhood experiences influence the vulnerability towards depression through contributing to the development of working models as follows. Adverse childhood experiences lead to insecure attachment in childhood; consequently, negative working models of self and other are developed in adulthood which promote poor affect regulation and an increased vulnerability towards depression. Conversely, optimal experiences as a child which result in secure attachment throughout the lifespan allow an individual to regulate their emotions when faced with a stressor and therefore buffer an individual against depression. The interaction between stressors and attachment in adulthood is discussed in detail below

With regard to how childhood experiences influence attachment style throughout life (Fraley, 2002; Fraley & Shaver, 2000; Kobak, 1999), the present study contributed support for the revisionist perspective. A degree of continuity was observed between childhood and adulthood attachment, and attachment was stable over time, even in response to life events. With regard to attachment as a vulnerability factor towards depression the revisionist perspective held. Whilst childhood attachment was the most important predictor of depression, changing to a secure adult attachment style had the effect of attenuating the influence of insecure childhood experiences on depression which was in line with the findings of Pearson *et al.* (1994).

10.3.2 Alternative Pathway: The Mediating Effect of the Involuntary Defeat Strategy

The present study contributed support for Sloman (2000a) The Involuntary Defeat Strategy mediated the association between depression and each of childhood avoidance, childhood anxiety, and parental care. The Involuntary Defeat Strategy therefore represented a second "generative mechanism" through which childhood attachment experiences were able to influence current mood (Baron & Kenny, 1986). These findings support the hypothesis that the Involuntary Defeat Strategy develops during childhood and that adverse childhood experiences can 'set' the Involuntary Defeat Strategy to trigger defeat at an abnormally low threshold thereby affecting later psychological functioning (Sloman, 2000a) These findings are amongst the first to demonstrate empirical evidence towards the existence of, and the function of, the hypothesised Involuntary Defeat Strategy in vulnerability towards depression (Price, 1967; Sloman, 2000a). These findings also supported the hypothesis that childhood attachment influenced depression through a cognitive mechanism that was independent from the attachment system. The roles of the Involuntary Defeat

Strategy and attachment system therefore overlap. This outstanding issue will be discussed below.

With regard to the analysis of the temporal association between defeat and depression, defeat was found to be consistent over time. In support of the mediator effect, it was found that depression was not a predictor of defeat over time. However, defeat did not significantly predict depression over time either. As with the adult attachment dimensions, when there is little variance over time, a temporal effect is difficult to establish.

10.3.3 Pathway 2: The Temporal Relationship between Attachment and Depression

In line with the findings of Bifulco, Moran, Ball and Lillie (2002), Carnelley *et al.* (1994), and Haaga *et al* (2002), individuals with prior depression reported less secure adult attachment than those without experiences of depression. However, as discussed in chapter eight, adult attachment did not predict current depression over the five-month lag. Neither did depression predict attachment over time when attachment at time one was taken into account. This supports the findings of previous panel studies (Roberts *et al.*, 1996; Whiffen *et al.*, 2001). The dimensions of attachment demonstrated more stability over time than did depression. It was concluded that adult attachment was a stable cognitive structure that continuously influenced depression. This supports previous research which has reported the stability of adult attachment (Klohnen & Bera, 1998; Sibley & Liu, 2004; Scharfe & Bartholomew, 1994) and associated variables (Buist-Bouwman *et al.*, 2004; Lewinsohn *et al.*, 1981; Lewinsohn *et al.*, 1999; 2000; 2003; Rohde *et al.*, 1990). No association was found between the experience of life events and changes in attachment style. This finding further supports the role of attachment as a stable and enduring vulnerability factor. Importantly, the panel analysis employed in the present

study was different from prior research which has attempted to examine the temporal ordering between attachment and depression. Whiffen *et al.*, (2001, study three) and Roberts *et al.*, (1996, studies two and three) did not take account of whether depression may cause attachment. Although the temporal ordering of attachment and depression is still unclear, the findings are in favour of attachment as a continuous vulnerability factor that could influence vulnerability to symptoms of depression, rather than the reverse.

It is known that the attachment system is revised upon the entrance or exit of an attachment figure. Therefore attachment may change as a result of life events such as the beginning or end of a romantic relationship (Fraley & Davis, 1997; Ruvolo *et al.*, 2001), birth (Damoto, 2004), or bereavement (Cozzarelli *et al* , 2003; Fraley & Bonanno, 2004). Further research may demonstrate the temporal ordering between attachment and depression more effectively by studying prospectively a population in which a major attachment related life event is expected. Examining the association between attachment and depression as a reaction to bereavement or loss would be impeded by the commonalities between grief and depressive symptoms (Freud, 1917; Zisook, Schuchter, Sledge, Paulus, & Judd, 1994). However, exploring attachment and depression in association with birth may be more successful. Examining the association between attachment and depression with regard to a specific life event such as birth, would produce more variation in participant's responses over time, and should more clearly demonstrate the temporal ordering of attachment and depression Furthermore, such a study would be of use in identifying the role of attachment in intergenerational transmission of depression For example maternal depression has been found to significantly predict postnatal attachment to the newborn (Damato, 2004), which may in turn influence the attachment style of the child and hence later vulnerability towards depression. Alternatively, a clinically

depressed sample may be employed and their recovery or cycle of symptoms charted alongside any fluctuations in dimensions of attachment.

10.3.4 Pathway 3: Adult Attachment as a Moderator of Distress

Contrary to Sloman *et al.* (2003) attachment did not moderate the association between defeat and depression. As argued in section 3.4.3, it is thought that this is because the Involuntary Defeat Strategy is a cognitive mechanism that regulates affect, therefore it is unclear why it would be moderated by the attachment system, which is a further affect regulating strategy. However, in partial support of Sloman *et al.* (2003), adult attachment moderated the association between social comparison and depression. This present study contributed support for the hypothesis that adult attachment was a cognitive mechanism, responsible for a moderating effect.

The present findings extended upon the study by Hammen *et al.* (1995) as a moderator analysis was used, and attachment *types* rather than dimensions. It was therefore possible to explore the association between the stressor and depression within each attachment style, and hence demonstrate any between group differences. The interaction demonstrated that social comparison was only associated with depression in individuals with an insecure attachment style. The dismissing insecure attachment style is characterised by a negative model of other, the preoccupied insecure attachment style is characterised by a negative model of self, whilst the fearful insecure attachment style is characterised by both models being negative. These findings extend on those of Hammen *et al.* (1995) who only found an interaction between negative life events and the working model of other (dependency) when predicting depression.

According to the moderating model in the present study, when an individual compares themselves unfavourably with others, if they have a secure attachment style, this protects against feelings of depression. However, if they have an insecure attachment style, this promotes depression under these circumstances. This supports the theory of Cassidy (1994) regarding the role of the working models of adult attachment in affect regulation. Security of attachment provided a buffer against vulnerability to depression. Those who are able to elicit help from others are able to regulate their affective response towards perceived lowered social rank; therefore, depression is not a consequence. Conversely, depression would be experienced by those who cannot elicit the help of others, and rely upon themselves to regulate affect, along with those who do not have a positive model of themselves and rely too heavily on the feedback of others. This is inline with research conducted by Wei and her colleagues (e.g., Wei *et al.*, 2005) who demonstrated that adult attachment was associated with affect regulation strategies such as coping (Lopez *et al.*, 2002; Wei *et al.*, 2003), self esteem (Roberts *et al.*, 1996), reassurance seeking (Abela *et al.*, 2005), and self efficacy (Strodl & Noller, 2003).

This analysis has contributed to the development of the hypothesised model (Sloman *et al* , 2003) in three ways. Firstly, the analyses demonstrated that the moderating effect is specific to adulthood attachment and is not true for childhood attachment. Secondly, the model is true for social comparison, but not for defeat. Lastly, Sloman *et al.*, refer to security and insecurity of attachment, whereas the present study has demonstrated that the association between social comparison and depression is different within the different insecure attachment styles. Within the insecure attachment styles, the association is the strongest for individuals with both negative models (fearful attachment) and the weakest for those with a negative model of self but a positive model of other (preoccupied attachment). Whilst lowered perceived social comparison is a possible response to a wide range of losses, and life events, it

is important for further research to consider how other sources of stress might be moderated by attachment. This idea is expanded upon below. As expected, and contrary to previous findings (Abela *et al.*, 2005; Roberts *et al*, 1996; Strodl & Noller, 2003; Wei *et al.*, 2003; 2005) support was not found for a mediator between adult attachment and depression.

Because findings demonstrated that adult attachment was not associated with life events, this provided support for attachment as a moderator between the perception of stressors and depressed mood. That is, attachment style influences the way we cope with stressors, by means of affect regulation, and this may result in depressed mood where insecure attachment is concerned. However, the stressors (life events) do not have a direct effect upon attachment. The recurrence of depression (Angst, 1986; Coyne *et al.*, 2001; WHO, 2001a) is one feature for which a vulnerability factor should account. The stability of attachment over time provides tentative support for the role of insecure attachment as a stable vulnerability factor that may predispose individuals towards recurrent episodes of depression.

10.3.4.1 Inconsistencies in the Model

Although the moderating model was significant, the significant association between depression and social comparison in the dismissing attachment group was inconsistent with expectations. A negative working model of other is characterised by avoidant attachment, and with a deactivation strategy in response to stress (Bartholomew, 1990; Bowlby, 1969; 1973; 1980; Cassidy, 1994; Mikulincer *et al*, 2003). As individuals with a dismissing attachment style, in particular, would be expected to deny any distress, it was not expected that depression would be positively correlated with the stressor for individuals within this attachment style. However, the stressor and depression *were* significantly correlated for individuals

with an avoidant attachment style. It is argued that in the present study, this finding is specific to perceived social rank in the following manner.

In the present study, the stressor was a negative comparison of self with others. As an association between social comparison and depression was observed within the dismissing attachment style, the deactivating strategy did not successfully regulate the distress resulting from a negative comparison of self with others. The deactivating strategy, employed by dismissing individuals would usually regulate distress concerning a negative model of other, as is consistent with the dismissing style. The deactivating strategy was therefore ill-equipped to regulate distress from this type of negative self-comparison, which is why depressed mood was more likely.

Is it unclear whether those with a fearful attachment style have a hyperactivating or deactivating strategy. Individuals with a fearful attachment style are both avoidant and anxious, and therefore have a negative model of self and of other. However, it is difficult to comprehend how they could employ both a hyperactivating, and a deactivating strategy simultaneously. This would involve acts of denying the distress one is feeling so that others are avoided, alongside displaying high levels of distress to attract the care of others. The answer could be that they alternate between strategies, changing when their attempts to attract their attachment figure are unsuccessful. If this were the case though, they would not be categorised as having "fearful" attachment, but should be categorised according to the strategy they are currently employing, or the strategy they employ most often. According to Bartholomew (1990), individuals with a fearful attachment style both "desire social contact and intimacy, but experience pervasive interpersonal distrust and fear of rejection" (pp 164) This results in hypersensitivity to social approval and avoidance is motivated by limiting the opportunity for rejection or disapproval. Bartholomew (1990) did not associate deactivating strategy with the fearful group, only with the

dismissing group. Similarly, the hyperactivating attachment style is associated only with the preoccupied group.

The hyperactivating and deactivating strategies do not interact or map neatly onto the fearful attachment style (George & West, 1999; Shaver & Mikulincer, 2002; Mikulincer *et al.*, 2003). It is possible that those with a fearful attachment style do not adopt any form of organised strategy for the activation of their attachment system, and as such are alike the disorganised attachment pattern observed in infants by Ainsworth *et al.* (1978). As those with a fearful attachment style report the highest levels of depressed mood, this interpretation is consistent with the case that hyperactivating and deactivating strategies are, to an extent, effective in regulating distress within the preoccupied and dismissing styles. George and West (1999) stressed that the fearful attachment style was not the adult equivalent of the disorganised attachment style; however, findings from the present study contradict that notion

The present study, and that of Hammen, *et al.* (1995), have demonstrated that the moderating role of adult attachment is applicable to the association between depression and at least two sources of stress, and that the pattern of group differences found will be different depending on the stressor. Future research could therefore explore this moderating model using different stressors as the predictor, to examine these group differences. The Social Comparison Scale is unique in its role as a stressor as the cognitive mechanisms used when comparing one's self with others overlap with adult attachment working models of self and other, therefore the findings with this scale may be more clear than for other sources of distress.

10.4 Similarities between the Involuntary Defeat Strategy and the Attachment System

It remains to be explored to what extent defeat and adult attachment overlap in their function of mediating the association between childhood attachment and depression. In the present study, defeat and adult attachment do not significantly interact to predict depression; therefore, the two pathways are not linked in adulthood. Nonetheless, both pathways share a common origin in childhood experiences, and both are cognitive mechanisms that protect against, or promote experiences of depression through the hyperactivation or deactivation of strategies. Furthermore, life events significantly predicted defeat (in the panel analysis in chapter eight), which may indicate that defeat also moderates or mediates the association between stressors and depression.

The similarities between social rank and attachment were earlier outlined (section 3.4.3). For example, the first attachment relationship is also the first experience an individual has of social rank, and dominant and subordinate social rank strategies overlap with deactivating and hyperactivating attachment strategies (respectively). According to Sloman and Gilbert (2000), the "adaptive function of the Involuntary Defeat Strategy is to assist individuals in giving up attachments, be they to things, persons, or status" (pp 217) Therefore, there are theoretical commonalities between these systems.

The similarities between the attachment system and the Involuntary Defeat Strategy in predicting vulnerability to depression could indicate that the two systems are working together, or are both part of a larger mechanism. Sloman (2000b) stated that activation of the Involuntary Defeat Strategy is more likely in individuals with insecure attachment as they cannot rely on the attachment system to regulate their mood, and so the dominant and subordinate systems are triggered instead.

However, as no significant interaction was found between defeat and adult attachment, the two systems were not working together.

In support of the distinctiveness between the Involuntary Defeat Strategy and the attachment system, Bowlby (1969; 1973) proposed that proximity seeking, as a response to a stressor, was an alternative to the fight or flight mechanism which was referred to in social rank theory. However, the Involuntary Defeat Strategy and the attachment system operate differently in their association with depression. Whereas attachment is a stable vulnerability factor, defeat is a process variable This means that when an individual is feeling defeated, their experiences of depressed mood will also increase. Likewise, when the feeling of defeat subsides, the depressive mood will also lessen. This is supported by the high correlations between defeat and depression, observed in the present study and others (e g., Gilbert & Allan, 1998). Sloman (2000b) encouraged more work towards defining more precisely the processes surrounding the Involuntary Defeat Strategy, the present study has contributed towards this.

10.5 Therapeutic Implications.

Importantly, the present study has demonstrated that whilst childhood and adult attachment may be continuous, childhood attachment can also operate through separate cognitive mechanisms to have an influence on depression Therefore, it would be advantageous to explore these different pathways therapeutically for individuals with depression. Equally, the present study has provided support for the role of adult attachment as a stable and enduring vulnerability factor towards depression. As such, it is likely that this stable factor may be of significance in directing treatment for recurrent episodes of depression and residual symptoms (Osgrodniczuk *et al.*, 2004).

An advantage of the present study is that the mechanisms which buffer against depression have been identified, these are secure attachment, and the effective functioning of the Involuntary Defeat Strategy when in pursuit of an unreachable goal. It is therefore suggested that therapeutic intervention be directed towards encouraging the optimal functioning of each system. As both systems are rooted in ethological theory, it is possible to show clients that their symptoms are the extreme component on a continuum of normally occurring experiences. The therapist could demonstrate to clients that their depression is the result of a biological adaptive strategy like social rank or attachment. This conceptualisation is more positive than a cognitive approach as it eliminates blaming the client for their symptoms (Gilbert, 1992).

10.5.1 Adult Attachment

The present study explored the reaction to social comparison as a stressor. Importantly, social comparison was related to depressed mood for those with an insecure attachment style. It is important to recognise the interaction between the source of stress and attachment strategies therapeutically. For dismissing individuals, personal failures, and thwarted goal attempts are more likely to lead to onset of depression, as they are more salient and damage their positive model of self which usually bolsters them against depression. It would be expected that preoccupied individuals would find that events which refer to the other letting them down or disappearing are more salient as they have a positive model of other which would usually bolster them against depressed mood.

Each of the hyperactivating and deactivating systems would result in different responses to therapeutic intervention, with each individual bringing into the

therapeutic relationship their particular attachment behaviours. In support, Slade (1999) reported that individuals with an avoidant attachment style were rejecting of help, found therapy intrusive, and took a long time to acknowledge feelings of loss, or sadness. Individuals with an anxious attachment style demonstrated an inability to collaborate with the therapist, present themselves as needy and dependent, placed demand on therapist's time outside of the regular sessions, and become annoyed with the therapist when they perceive them as being less available (Slade, 1999). Variables that could be affected by attachment include the therapeutic relationship, what clients ask of the therapist, how well clients receive therapy, how long therapy takes, and the response of the therapist. Being aware of a client's attachment style would therefore be of great value in knowing what to target in therapy, and in guiding the therapist's expectations.

The present study demonstrated a degree of flexibility in attachment between childhood and adulthood, and those that changed towards security demonstrated slightly less depression than those that were consistently insecure. Encouraging a change towards security is therefore an important step in alleviating depressed mood. Therapy could first focus upon demonstrating to the client how hyperactivating and deactivating strategies work to regulate affect, and showing where a negative cycle can persist when the help of others is not elicited. By showing clients that their way of coping can be effective if it is engaged over the short term, may help to normalise their symptoms. Clients could also be trained to recognise when they are employing hyperactivating and deactivating strategies, in an attempt to counter recurrent episodes of depressed mood. Further research exploring the correlates of change towards security has the potential to inform this type of intervention.

10.5.2 The Involuntary Defeat Strategy

Therapeutic applications regarding the Involuntary Defeat Strategy are outlined elsewhere (e.g., Sloman, 2000a). The functioning Involuntary Defeat Strategy is defined by appropriate triggers for activation and deactivation, and effectively serving the purpose of disengaging an individual from pursuit of an unobtainable goal. The pathological functioning only occurs with prolonged or serial activation at a low threshold. The aim of therapy should therefore be to encourage the effective functioning of the Involuntary Defeat Strategy with respect to the present activation, and to prevent recurrence though countering the automatic triggering of the Involuntary Defeat Strategy in future. To achieve the first goal, it would therefore be useful to explore in the therapeutic setting what the client feels triggered their state of defeat. Swallow (2000) suggested that a state of involuntary defeat was be triggered through personal assumptions such as "to fail at one thing is to be a complete failure" (Swallow, 2000, pp 192). In line with the findings of the present study, it may be helpful to discuss the possibility of developmental origins of these assumptions. This would be focussed on anxious and avoidant attachment. In line with the suggestion of Sloman (2000a) it may be useful to explore with clients the extent to which their assumptions are based upon childhood experiences, and challenge the application of these assumptions in the present. In support, Henry *et al* (1994) stated that the perception of one's experiences could be as powerful as the actual childhood experiences, even if this perception is inaccurate. Likewise Main (1991) considered that the conceptualisation of past attachment relationships was an important feature of current attachment and mental functioning.

10.5.3 The Involuntary Defeat Strategy and Attachment

In a case study, Sloman and Atkinson (2000) noted a trade off between the Involuntary Defeat Strategy and the attachment system. When attachment was

secure, it allowed for more flexibility with the Involuntary Defeat Strategy. Insecure attachment, on the other hand, led to maladaptive engagement of dominant and subordinate strategies. However, in the present study defeat and attachment did not interact. As both systems contribute to the prediction of depression however, therapeutic intervention targeted towards developing secure attachment, and towards a stable social rank strategy would be complimentary and would avoid the individual becoming reliant upon an alternative maladaptive strategy. For example, if a client is insecurely attached, fear of losing their attachment figure may prevent them from being assertive in conflict situations. In therapy, the therapist operates as a secure base for the client. This allows the opportunity for the client to experiment with different social rank strategies, and learn to be assertive to avoid triggering the Involuntary Defeat Strategy in the future. Thus, the two systems can compliment each other.

10.6 Limitations

10.6.1 Internet Mediated Data Collection

Completing the questionnaire online did not bias the accuracy of participants' responses according to the analyses conducted in chapter five. For those participants who completed the questionnaire through both mediums, the internet mediated data and "paper and pencil" data were in agreement, in support of Krantz and Dalal (2000). Therefore, in contradiction to prior research, there were no differences with regard to the level of candour between methods (Davis, 1999; Joinson & Buchanan, 2001; Wallace, 1999). In support of prior research (Davis, 1999, Young & Rogers, 1998) individuals who took part online were more depressed. It is likely that a number of individuals elected to participate in the research because they were interested in depression, due to past experiences. In addition, a number of disinterested participants may have dropped out of the study, which would have been

more difficult in a traditional data collection scenario. The high rate of response at time two is evidence that internet mediated data collection is successful at retaining participants without the pressures of face-to-face contact.

10.6.2 Other Considerations

Whilst the present study has focused upon cognitive and social psychological vulnerability factors associated with depression, it is acknowledged that depression can develop from a biological origin outside of social influence, and unaccompanied by any life events. Theories of depression have typically examined the biological and social correlates of depression separately. However, the ethological basis of social rank and attachment theories has lead to the study of biological correlates of these systems (e.g., Beatson & Taryan, 2003; Levitan, Hasey & Sloman, 2000). Therefore, using such frameworks for the study of depression, in the future has the potential to provide a theory to bridge the gap between biological and social correlates of depression.

10.7 Further research

Throughout the study, it has been indicated where further research would be of value both generally in relation to findings, and in relation to exploring the four problems this research aimed to explore. In this section, three further lines of research will be proposed that would extend upon the findings of the current study.

Hammen *et al.* (1995) found that the interaction between attachment and stressors was not specific to depression, but was also found for anxiety and general mental health symptoms (e.g , substance abuse, eating disorders, and anti social personality). It would therefore be beneficial to replicate the present study in relation

to other disorders of ill mental health, especially those with a hypothesised social vulnerability factor, a known cognitive or social rank component, or those linked to early life (e.g., eating disorders; Cole-Detke & Kobak, 1996). It is thought that adult attachment moderates disorder specific stressors, so it would be useful to explore this moderating model with regard to a wide range of disorders and a wide range of stressors. These findings may then be applied to therapeutic intervention, with a focus on guiding affect regulation in response to stressors. It would also be useful to test the mediator and moderator models with a clinical population, to test whether the findings hold in relation to clinical depression, and to evaluate any differences that were found in relation to the continuity hypothesis.

The third line of research should be focused upon the social rank mechanism, the Involuntary Defeat Strategy. This was the first known study to examine the function of the Involuntary Defeat Strategy in relation to depression and childhood experiences. Furthermore, the measure of defeat which was used, demonstrated the mediating model adequately, and differentiated between the childhood pathway and the adulthood pathway. Although this measure was a good indicator of defeat, it was not known what caused the feeling of defeat. Rather, the measure captured a baseline level of defeat, perhaps just below the threshold of activation. Exploring the Involuntary Defeat Strategy in an experimental manipulation of defeat would be of value to explore to what extent the measure of defeat correlates with experienced defeat, and with depression. Further research may be able to identify dimensions underlying defeat, or indeed types of defeat to explain individual differences in depression, and in the association between childhood experiences and depression.

Another consideration is that this study was concerned with adult romantic attachment. It has been found that attachment styles are not consistent across different attachment relationships in adulthood (La Guardia *et al.,* 2000). Therefore,

future research may explore the association between depression and attachment to siblings, and friends in adulthood for example.

10.8 Conclusion

The role of attachment as a vulnerability factor towards depressed mood was clarified with respect to four criticisms of the current literature. It was concluded that the pathway from childhood attachment to depression could be mediated by the attachment system, or by the Involuntary Defeat Strategy. With regard to the attachment pathway, the present study contributed new findings with respect to the working model of self in childhood; this was achieved through the development of a retrospective measure of attachment to one's parents. The working model of self in childhood was associated with depression and with adulthood attachment Continuity of working models between childhood and adulthood attachment was found. This measure was implicated in demonstrating that the working model of self (as measured in adulthood) mediated the association between childhood experiences and depression. Previous studies had used the Parental Bonding Instrument and only demonstrated these associations for the working model of other. This new measure extended upon those findings and clarified the role of both working models as potential vulnerability factors towards depression. Therefore, the development of the new measure allowed for the attachment pathway (pathway 1) to depression, between childhood and adulthood attachment to be tested and demonstrated.

The Involuntary Defeat Strategy was found to mediate the association between childhood attachment and depression. Exploring this pathway has contributed support for the function and development of the Involuntary Defeat Strategy (Sloman, 2000a). Further analyses provided support for and developed the theory proposed

by Sloman *et al.* (2003). Specifically, it was found that the association between social comparison and depression was moderated by adulthood attachment style. On a broader scale, both of these findings in the present study demonstrated that attachment theory has potential to provide an aetiological model of vulnerability to depression whereby childhood attachment influences depression through cognitive mediators and adulthood attachment moderates the impact of stressors upon depression. Further research should explore the potential cognitive mechanisms and stressors that complement this model.

The present study contributed to the literature by demonstrating the mechanisms through which childhood attachment experiences could influence depression in adulthood. Early adversity, both predicted a low threshold for the activation of the Involuntary Defeat Strategy, and increased the likelihood of insecure adult attachment style. Importantly, exploring vulnerability towards depression within these systems contributed insight into non-pathological development. Therefore, an individual with an optimal and secure attachment experiences as a child would have a higher threshold for perceiving defeat, and would have a secure attachment style as an adult. Both promote adaptive and non-pathological strategies for coping with stressors, and hence buffer an individual against experiencing depression as an adult.

Attachment was a stable and enduring cognitive vulnerability factor and was unaffected by life events. However, the temporal association between attachment and depression was not established in the present study despite using robust analysis, and appropriate measures. It was concluded that a lack of variability in attachment and depression over time had confounded the analysis, and did not allow the temporal association to be observed. Suggestions have been made for future research where an association would more likely be detected. Of the four problems,

initially outlined, the temporal association between adult attachment and depression requires further clarification. This finding supports the few previous analyses of the temporal association between attachment and depression. It is therefore argued that in order to advance understanding of the association between adult attachment and depression, a prospective study should be undertaken in a sample for which changes in attachment or depression are expected.

Adult attachment had strengths in moderating the association between stressors and depression, and in demonstrating cognitive mediators of childhood experiences Attachment theory has further potential for exploring recurrence of depressive episodes and the intergenerational transmission of depression. The present study has contributed a greater understanding of the association between attachment and depression, and calls for further research to expand upon and validate this model within a clinical sample.

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Appendices

Appendix A

The Development of Self Report Measures of Adult Attachment

Hazan and Shaver (1987; 1990; 1994) developed the first self-report measures of adult romantic attachment when they applied the theory and findings of Bowlby and Ainsworth to the study of adult romantic relationships. The Romantic Attachment Questionnaire (RAQ) consisted of three statements regarding adult romantic attachment which reflected the three childhood attachment styles described by Ainsworth, Blehar, Waters and Wall (1978); secure, anxious, and avoidant. Participants were required to read the statements and mark the one that best captured how they generally experience and behave in a romantic attachment. These statements are presented in table A.1.

Table A.1. Reproduced from Table 2 Hazan and Shaver (1987, pp 515)

Secure	I find it relatively east to get close to others and am comfortable depending on them and having them depend on me I don't often worry about being abandoned or about someone getting too close to me.
Avoidant	I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being.
Anxious/ambivalent	I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away.

In its favour the RAQ is brief, easy to administer, and has good face validity. Participants' self reported categorisations were associated with theoretically relevant variables such as working models (assessed through beliefs about relationships and about love), and recollections of early experiences (Hazan & Shaver, 1987) However, there exist some concerns over the reliability of this measure. The categorisation of participants across different samples is varied. For example, in a

community sample, Hazan and Shaver (1987) found that 56% of participants rated themselves as secure, 25% as avoidant, and 19% as anxious/ambivalent, however, in an undergraduate sample, Priel and Shamai (1995) found that 59% of participants were rated as secure, 31% as avoidant, and 10% as ambivalent. Furthermore, the test-retest reliability of this measure was only 70%, or r=.4 (Baldwin & Fehr, 1995) That this statistic did not change meaningfully in association with the interval length between the test and the retest was indicative that changes in attachment style were related to measurement error, rather than a change in individuals' attachment style (Fraley & Waller, 1998).

Levy and Davis (1988) noted that a continuous scoring system whereby participants scored their likeness to all three statements on a Likert scale was more reliable, and more informative than the forced choice method. For example, Roberts, Gotlib and Kassel (1996) used a ten point scale on which participants (undergraduates) could rate the degree to which each attachment style was like them. The authors argued that an advantage of this method over the forced choice method is that "it provides an opportunity to examine individual differences within attachment categories and allows for the possibility that some individuals might best be characterised by a blend of two or more styles" (pp 313). Roberts *et al* (1996) then classified individuals based upon their highest score for attachment style. Using this method, 54% of participants were secure, 23% were avoidant, and 15% were anxious/ambivalent. They found a higher score for depression was correlated with lower similarity with the secure style, and higher similarity with the anxious/ambivalent and the avoidant styles. Together, ratings on the three attachment styles accounted for 12% of the variance in depression (Roberts *et al.*, 1996). Test retest reliability for periods between one to eight weeks was reported to be about r =.6, this was an improvement on the reliability of the former categorical version (Baldwin & Fehr, 1995; Feeney & Noller, 1990). An additional advantage of the continuous scoring of this scale is that

it can be more usefully employed in correlational analysis. However, the RAQ lacks congruency with Bartholomew's two-dimensional conceptualisation of adult attachment The RAQ does not refer to the dismissing attachment style, nor has it been found to be associated with dismissing attachment (Bartholomew & Shaver, 1998).

A further development of Hazan and Shaver's measure involved taking the composite sentences for each statement and creating an individual test item for each (Collins & Read, 1990; Simpson, 1990). The Adult Attachment Scale (Collins & Read, 1990) derived 15 items from Hazan and Shaver's (1987) descriptive statements, to which Collins and Read added three questions relating to the dependability of others and three questions relating to the concern over separation from the attachment object (the latter were excluded from the final measure). These additional items were based upon the childhood attachment literature. The questionnaire was measured on five point Likert scale from one (not at all characteristic), to five (very characteristic). Factor analysis revealed three factors, these were labelled depend, anxiety, and close. The authors argued that this was in line with the dimensions of attachment originally outlined by Ainsworth *et al* (1978) and that the Adult Attachment Scale therefore captures the core theoretical constructs thought to underlie attachment styles. The authors further propose that this measure is advantageous over that by Hazan and Shaver (1987) on four counts. Most importantly, they suggest that there is a need to detect individual differences and that this is best done through a dimensional measure of attachment rather than through one which categorises individuals into particular styles. Furthermore, this manner of measuring attachment lends itself to identifying which particular components of attachment relate to other constructs. For example, rather than simply saying depressed people are more likely to be insecurely attached, a more elaborate description of their attachment characteristics could be found in relation to

closeness, dependency, and anxiety. This measure is therefore more sensitive than that of Hazan and Shaver (1987). The adult attachment scale therefore allows for the measurement of the dimensions underlying attachment styles, without losing the conceptual framework which holds them together. Roberts *et al.* (1996) correlated the three subscales with the Inventory to Diagnose depression. In a non-depressed female sample (n=119), they found correlations of $r = .22$ ($p<.01$), $r = -.22$ ($p< 01$), and $r = -.22$ ($p< 01$) with the Anxiety, Close, and Depend subscales respectively.

The disadvantage of the Adult Attachment Scale is that the majority of research exploring attachment and depression categorises individuals in terms of their attachment style, or at least in terms of a secure/insecure dichotomy (e.g., Gittleman *et al.*, 1998). The AAS does not allow for the categorisation of individuals into attachment styles according to Bartholomew's (1990) two dimensional model. There are also doubts concerning the reliability of the AAS. Reese, Kieffer, and Briggs (2002) conducted a reliability generalisation meta-analysis on five continuous measures of attachment. Of the five measures, the AAS demonstrated the lowest score reliability in terms of internal consistency, and temporal stability. Alpha coefficients for the depend, close, and anxiety scales were .78, .72, and .77 respectively, and the test-retest reliability coefficients were .71, .70, and .64 respectively (the mean length of intervening time for the test-retests was not presented).

A development in attachment theory lead to the proposal of a two dimensional model of adult attachment, comprising four attachment styles (Bartholomew & Horowitz (1991). These two dimensions were anxiety (about abandonment or insufficient love) and avoidance (of intimacy and emotional expression). This development in attachment theory is outlined chapter 1. In response to this development in the theoretical framework, Bartholomew and Horowitz (1991) developed the Relationship

Questionnaire, following the style of Hazan and Shaver's (1987) forced choice categorical measure. Bartholomew and Horowitz (1991) designed short descriptions (table A.2) of the four attachment styles afforded by their two dimensional framework (secure, preoccupied, dismissing, and fearful). The wording of the secure, preoccupied, and fearful styles is similar to the wording Hazan and Shaver used for the secure, ambivalent, and avoidant (respectively) styles. Hazan and Shaver lacked the representation of the dismissing attachment style. Bartholomew and Horowitz (1991) found that the self-reported categories were congruent with interview data, a self-report data and friend-report data (study one). In addition, the correlations between the four styles were in line with theoretical expectations (Bartholomew & Shaver, 1998), which demonstrated construct validity. Categories were scored using a seven point Likert scale. Over a period of eight months, this method of classification achieved 59.03% stability in a sample (n=144) of young adults (Scharfe and Bartholomew, 1994).

Table A.2 The Romantic Attachment Scale (Bartholomew and Horowitz, 1991).

Fearful	I am somewhat uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I sometimes worry that I will be hurt if I allow myself to become too close to others.
Preoccupied	I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them
Secure	It is relatively easy for me to become emotionally close to others. I am comfortable depending on others and having others depend on me. I don't worry about being alone or having others not accept me.
Dismissing	I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Again, a mixture of forced choice and Likert scoring has been used with this measure. For example, Murphy and Bates (1997) used a four point Likert scale to score the questionnaire. In addition, participants were required to indicate the 'most characteristic' of the styles. Using this method in a student and volunteer sample, Murphy and Bates (1997) found that 56% of participants rated themselves as secure, 20% as dismissive, 17% as fearful, and 7% as preoccupied. It is of note that these figures are similar to the rates obtained with the original Hazan and Shaver measure, where it is hypothesised that the fearful and preoccupied styles were merged. Using the seven point Likert scale scoring method in a community sample of new parents (n=1022), Gittleman *et al.*, (1998) found significant differences between attachment groups according to their depression scores. Individuals who were classified as secure reported less depression. Using the forced choice method in an undergraduate sample, Van Buren and Cooley (2002) found that 44% of participants rated themselves as secure, 27% as fearful, 15% as preoccupied, and 14% as dismissive. Using this categorical measure, the working models of participants are not directly measured In addition, there is ambivalence with regard to the scoring and classification methods used with this measure which would create difficulty when comparing findings with previous research.

As with the categorical measure proposed by Hazan and Shaver (1987), the descriptive statements proposed by Bartholomew and Horowitz (1991) were used as a base from which to develop a multi-item attachment scale: the Relationship Scales Questionnaire (Griffin & Bartholomew, 1994). The 30-item inventory incorporated sentences from both Hazan and Shaver's (1987) category descriptions, and those of Bartholomew and Horowitz (1991). A strength of this measure is the variety of scoring systems it allows. Participants can be allocated a score for their propensity towards each of the four attachment styles; in addition, the scale can be used to produce a score for each individual on the working models of self (anxiety) and other (avoidance). As would be expected with a continuous scoring system the reliability is higher than the categorical systems r= 65 for the four attachment style scales (Fraley & Shaver, 1997). However Scharfe and Bartholomew (1994) reported lower reliability of this measure with a mean correlation of r= 47 between the scales over an eight month test-retest period.

The Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998) incorporated two subscales which measure the dimensions of avoidance (other working model) and anxiety (self working model). These dimensions are found in the model of attachment proposed by Bartholomew (1990; Bartholomew & Horowitz, 1991) and map onto the patterns of attachment applied to infants (Ainsworth *et al.*, 1978). The use of the two dimensions; avoidance and attachment, means participants can be allocated both a categorical style, and a dimensional score which can be used in correlational studies Brennan *et al.* (1998) found that the ECR produced stronger results than the previous measure by Bartholomew and Horowitz (1991).

Appendix B

Questionnaire Pack

nstructions: Please indicate your response to each item by ticking the appropriate box. Give added information, if asked, in the spaces provided.

Today's Date _____ / _____ / _____

Your Mother's Maiden Name _____

Your Day of Birth _____
(E g , If your date of birth is 28/03/80, you simply write 28)

1. **Age** _____

2. **Please state your ethnicity** _____

3. **Status**
   - Co-habiting with partner ☐
   - Going out ☐
   - Single ☐

4. **Sex**
   - Female ☐
   - Male ☐

5 **Nationality** _____

6. **What is your occupation?**
   - Student ☐ Subject _____
   - Non-Student ☐ Occupation _____

7. **a) Have you ever had depression?**
   - Yes ☐
   - No ☐ (Go to next page)

   b) How many episodes of depression have you had? _____

   c) Please indicate below the duration of your longest depressive episode

   Years _____ Months _____ Weeks _____ Days _____

   d) Please mark below how severe previous depressive episodes have been for you (tick one box)

   - Feelings of unexplained sadness for less than two weeks ☐
   - Severe sadness for *less* than two weeks ☐
   - Severe sadness for *longer* than two weeks ☐
   - Unable to feel happy or get any pleasure out of life ☐
   - A visit to the GP was required ☐
   - Therapy and/or medication was required ☐
   - Therapy and/or medication was required on a *long term* basis ☐
   - Hospitalisation was required ☐
   - I have never recovered ☐

   e) How long ago was your last episode of depression?

   Years _____ Months _____ Weeks _____ Days _____

[TIME 2]

Today's date _____ /_____ / _____

MOTHERS MAIDEN NAME _____

DAY OF BIRTH _____

(E g. if your date of birth is 28/03/80, simply write 28)

1	**Status**	Co-habiting with partner	☐
		Going out	☐
		Single	☐
2	**What is your occupation?**	Student	☐ Subject _____
		Non student	☐ Occupation _____

This next section is asking you about how your mood has been since you last completed this questionnaire a few months ago.

3a How many majorly depressing events have happened to you in the last 3 months?
(e g Redundancy, Break up of a relationship; Bereavement, serious financial problems; losing a good friend)

- ☐ None (go to question 4a on the next page)
- ☐ 1
- ☐ 2
- ☐ 3+

3b What has been the most one most upsetting event? (Give brief details in the space below)

3c How depressed is this event making you at the moment?

- ☐ Not at all
- ☐ A little bit
- ☐ Moderately
- ☐ Quite a lot
- ☐ Extremely

Two questionnaires are asking about your relationships as you were growing up Who did you grow up with up to the age of 12? (please circle)

Both Parents Single parent family Guardians Grandparents

Others – who were they? _____

Childhood Attachment

Instructions: Please complete the questionnaire as you remember thinking about and behaving with your mother /father /guardians /carers during your first 12 years. Please circle one answer per statement using the following rating scale.

Disagree strongly Neutral/mixed Agree strongly

1 2 3 4 5 6 7

1	I worried about being abandoned by my parents	1	2	3	4	5	6	7
2	I was never confident in my parents' ability to meet my needs	1	2	3	4	5	6	7
3	When my parents disapproved of me, I felt really bad	1	2	3	4	5	6	7
4	As a child I kept myself to myself	1	2	3	4	5	6	7
5	I never relied on my parents for emotional support	1	2	3	4	5	6	7
6	I never felt comfortable talking to my parents about personal things	1	2	3	4	5	6	7
7	I was not confident in my parents' return when I was left with a babysitter	1	2	3	4	5	6	7
8	Whenever I was sick, I wanted my parents to be near to me	1	2	3	4	5	6	7
9	I placed trust and confidence in my parents	1	2	3	4	5	6	7
10	I always allowed my parents to comfort me in times of distress	1	2	3	4	5	6	7
11	I did not worry about being abandoned by my parents	1	2	3	4	5	6	7
12	I felt comfortable sharing my private thoughts and feelings with my parents	1	2	3	4	5	6	7
13	I was extremely frightened about losing my parents when we were out of the house	1	2	3	4	5	6	7
14	I always discussed any school problems with my parents	1	2	3	4	5	6	7
15	I felt confident that I could always rely on my parents to be there for me	1	2	3	4	5	6	7
16	I was confident that I could turn to my parents in times of need	1	2	3	4	5	6	7
17	When my parents were away from me I felt anxious and alone	1	2	3	4	5	6	7
18	I got frustrated when my parents were not there as much as I wanted	1	2	3	4	5	6	7
19	I preferred not to get too close to my parents	1	2	3	4	5	6	7
20	I was confident in my mom's ability to make me feel better when I was a bit sad	1	2	3	4	5	6	7
21	I needed a lot of reassurance that my parents loved me.	1	2	3	4	5	6	7
22	I resented it when my parents spent a long time away from me	1	2	3	4	5	6	7
23	I was confident that my parents would meet my needs	1	2	3	4	5	6	7
24	I had a warm and understanding relationship with my parents	1	2	3	4	5	6	7

Parental Bonding

Instructions: This questionnaire lists various attitudes and behaviours of parents. Please complete the questionnaire as you remember your mother /father /guardians during your first 12 years. Complete the column for your mother (or female guardian) firstly, by circling one number per statement, and then go through the same procedure regarding your father (or male guardian). If you grew up in a single parent family, simply complete the column for that parent. Use this scale for reference -

Very like	Moderately like	Moderately unlike	Very unlike
1	2	3	4

Example

1 2 3 4	Encouraged me in sporting events	0 1 2 3 4

Mother		Father
1 2 3 4	Spoke to me in a warm and friendly voice	1 2 3 4
1 2 3 4	Did not help me as much as I needed	1 2 3 4
1 2 3 4	Let me do those things I liked doing	1 2 3 4
1 2 3 4	Seemed emotionally cold to me	1 2 3 4
1 2 3 4	Appeared to understand my problems and worries	1 2 3 4
1 2 3 4	Was affectionate to me	1 2 3 4
1 2 3 4	Liked me to make my own decisions	1 2 3 4
1 2 3 4	Did not want me to grow up	1 2 3 4
1 2 3 4	Tried to control everything I did	1 2 3 4
1 2 3 4	Invaded my privacy	1 2 3 4
1 2 3 4	Enjoyed talking things over with me	1 2 3 4
1 2 3 4	Frequently smiled at me	1 2 3 4
1 2 3 4	Tended to baby me	1 2 3 4
1 2 3 4	Did not seem to understand what I needed or wanted	1 2 3 4
1 2 3 4	Let me decide things for myself	1 2 3 4
1 2 3 4	Made me feel I wasn't wanted	1 2 3 4
1 2 3 4	Could make me feel better when I was upset	1 2 3 4
1 2 3 4	Did not talk with me very much	1 2 3 4
1 2 3 4	Tried to make me dependent on her/him	1 2 3 4
1 2 3 4	Felt I could not look after myself unless she/he was around	1 2 3 4
1 2 3 4	Gave me as much freedom as I wanted	1 2 3 4
1 2 3 4	Let me go out as often as I wanted	1 2 3 4
1 2 3 4	Was overprotective of me	1 2 3 4
1 2 3 4	Did not praise me	1 2 3 4
1 2 3 4	Let me dress in any way I pleased	1 2 3 4

Close Relationships

Instructions: The following statements concern how you feel in romantic relationships. Whether you are in a relationship, or not, I am interested in how you generally experience relationships. Respond to each statement by indicating how much you agree or disagree with it. Circle one answer per statement, using the following rating scale.

Disagree strongly 1 2 3 Neutral/mixed 4 5 6 Agree strongly 7

1	I prefer not to show a partner how I feel deep down	1 2 3 4 5 6 7
2	I worry about being abandoned	1 2 3 4 5 6 7
3	I am very comfortable being close to romantic partners	1 2 3 4 5 6 7
4	I worry a lot about my relationships	1 2 3 4 5 6 7
5	Just when my partner starts to get close to me, I find myself pulling away	1 2 3 4 5 6 7
6	I worry that romantic partners won't care about me as much as I care about them	1 2 3 4 5 6 7
7	I get uncomfortable when a romantic partner wants to be very close	1 2 3 4 5 6 7
8	I worry a fair amount about losing my partner	1 2 3 4 5 6 7
9	I don't feel comfortable opening up to romantic partners	1 2 3 4 5 6 7
10	I often wish that my partner's feelings for me were as strong as my feelings for him/her	1 2 3 4 5 6 7
11	I want to get close to my partner, but I keep pulling back	1 2 3 4 5 6 7
12	I often want to merge completely with romantic partners, and this sometimes scares them away	1 2 3 4 5 6 7
13	I am nervous when partners get too close to me	1 2 3 4 5 6 7
14	I worry about being alone	1 2 3 4 5 6 7
15	I feel comfortable sharing my private thoughts and feelings with my partner	1 2 3 4 5 6 7
16	My desire to be very close sometimes scares people away	1 2 3 4 5 6 7
17	I try to avoid getting too close to my partner	1 2 3 4 5 6 7
18	I need a lot of reassurance that I am loved by my partner	1 2 3 4 5 6 7
19	I find it relatively easy to get close to my partner	1 2 3 4 5 6 7
20	Sometimes I feel that I force my partners to show more feeling, more commitment	1 2 3 4 5 6 7
21	I find it difficult to allow myself to depend on romantic partners	1 2 3 4 5 6 7
22	I do not often worry about being abandoned	1 2 3 4 5 6 7
23	I prefer not to be too close to romantic partners	1 2 3 4 5 6 7
24	If I can't get my partner to show interest in me, I get upset or angry	1 2 3 4 5 6 7
25	I tell my partner just about everything	1 2 3 4 5 6 7
26	I find that my partner(s) don't want to get as close as I would like	1 2 3 4 5 6 7
27	I usually discuss my problems and concerns with my partner	1 2 3 4 5 6 7
28	When I'm not involved in a relationship, I feel somewhat anxious and insecure	1 2 3 4 5 6 7
29	I feel comfortable depending on romantic partners	1 2 3 4 5 6 7
30	I get frustrated when my partner is not around as much as I would like.	1 2 3 4 5 6 7

31	I don't mind asking romantic partners for comfort, advice or help.....	1	2	3	4	5	6	7
32	I get frustrated if romantic partners are not available when I need them ..	1	2	3	4	5	6	7
33	It helps to turn to my romantic partner in times of need.....	1	2	3	4	5	6	7
34	When romantic partners disapprove of me, I feel really bad about myself.	1	2	3	4	5	6	7
35	I turn to my partner for many things, including comfort and reassurance..	1	2	3	4	5	6	7
36	I resent it when my partner spends time away from me.....	1	2	3	4	5	6	7

The D scale

Instructions: Below are a series of statements which describe how people can feel about themselves. Read each item carefully and circle the number to the right of the statement that best describes how you have felt in the last 7days. Use the scale below for reference. Please do not omit any item.

0=Never 1=Rarely 2=Sometimes 3=Mostly (a lot) 4=Always

1	I feel that I have not made it in life	0	1	2	3	4
2	I feel that I am a successful person	0	1	2	3	4
3	I feel defeated by life	0	1	2	3	4
4	I feel that I am basically a winner	0	1	2	3	4
5	I feel that I have lost my standing in the world. . . .	0	1	2	3	4
6	I feel that life has treated me like a punchbag . . .	0	1	2	3	4
7	I feel powerless	0	1	2	3	4
8	I feel that my confidence has been knocked out of me...	0	1	2	3	4
9	I feel able to deal with whatever life throws at me	0	1	2	3	4
10	I feel that I have sunk to the bottom of the ladder	0	1	2	3	4
11	I feel completely knocked out of action . .	0	1	2	3	4
12	I feel that I am one of life's losers	0	1	2	3	4
13	I feel that I have given up	0	1	2	3	4
14	I feel down and out	0	1	2	3	4
15	I feel that I have lost important battles in life	0	1	2	3	4
16	I feel that there is no fight left in me	0	1	2	3	4

Social Comparison

Instructions: Please indicate on the scale from one to ten whereabouts you see yourself in relation to other people. For example

Short 1 2 3 4 5 6 7 8 9 10 Tall

Circling 1 would indicate that you see yourself as shorter than most people, 10 indicates that you see yourself as taller than most people. If you see yourself as about the same as other people, circling 5 or 6 would indicate this.

In relation to others, I generally feel.....

		1	2	3	4	5	6	7	8	9	10	
1	*Inferior*											*Superior*
2	Incompetent	1	2	3	4	5	6	7	8	9	10	Competent
3	Unlikeable	1	2	3	4	5	6	7	8	9	10	Likable
4	Left out	1	2	3	4	5	6	7	8	9	10	*Accepted*
5	Different	1	2	3	4	5	6	7	8	9	10	Same
6	Untalented	1	2	3	4	5	6	7	8	9	10	**More Talented**
7	Weaker	1	2	3	4	5	6	7	8	9	10	Stronger
8	Unconfident	1	2	3	4	5	6	7	8	9	10	More Confident
9	Undesirable	1	2	3	4	5	6	7	8	9	10	More desirable
10	Unattractive	1	2	3	4	5	6	7	8	9	10	More attractive
11	Outsider	1	2	3	4	5	6	7	8	9	10	Insider

Mood

Instructions: Below is a list of problems and complaints that people sometimes have. Read each one carefully and select one of the descriptors that best describes how much discomfort that problem has caused you over the past 7 days INCLUDING TODAY. Tick that number in the appropriate box to the right of the problem. Do not skip any items and indicate your response clearly. If you change your mind, erase the first response completely.

		Not At All	A Little Bit	Moderately	Quite A Bit	Extremely
1	Loss of sexual interest or pleasure	☐	☐	☐	☐	☐
2	Feeling low in energy or slowed down	☐	☐	☐	☐	☐
3	Thoughts of ending your life	☐	☐	☐	☐	☐
4	Crying easily	☐	☐	☐	☐	☐
5	Feelings of being trapped or caught	☐	☐	☐	☐	☐
6	Blaming yourself for things	☐	☐	☐	☐	☐
7	Feeling lonely	☐	☐	☐	☐	☐
8	Feeling blue	☐	☐	☐	☐	☐
9	Worrying too much about things	☐	☐	☐	☐	☐
10	Feeling no interest in things	☐	☐	☐	☐	☐
11	Feeling hopeless about the future	☐	☐	☐	☐	☐
12	Feeling everything is an effort	☐	☐	☐	☐	☐
13	Feelings of worthlessness	☐	☐	☐	☐	☐

Thank you for your participation

Please seal your response in the large brown envelope provided and return it to me. Return your consent form in the small brown envelope provided. In a few months time, I may contact you to take part in the second stage of the research. I would really appreciate it if you could take part in both stages. If you have any questions regarding the research, please contact me.

Wendy Nicholls

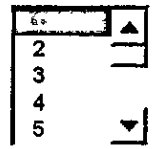
Appendix C

Web Page

(See accompanying compact disc to view this document in Web Format)

Instructions; Please complete the questionnaires in the order they are presented, and follow the instructions. Do not spend too long thinking about each question, usually your first instinct is best. Mark one answer per question. If you require further assistance in completing the questionnaires, at any stage, please contact me. If at any stage you wish to drop out, you are free to do so, just close the browser window. **Once you feel satisfied with your responses, click on 'submit' at the bottom**

What is your mother's maiden name? _____

What date were you born on? 

(E g. if your date of birth is 28/03/80, simply select 28 from the menu)

1. Age _____
2. What is your ethnicity? _____
3. Status
   - ○ Co-habiting / married
   - ○ Going out
   - ○ Single
4. Sex
   - ○ Female
   - ○ Male
5. Nationality _____
6. What is your occupation?
   - ○ Student - What is your subject? _____

Non student - What is your occupation? ⌜_____⌝

6a Have you ever had depression?

Yes

No - Scroll down to question 7

6b How many episodes of depression have you had? ⌜_____⌝

6c What was the longest you were depressed for? ⌜_____⌝ Years ⌜_____⌝ Months ⌜_____⌝ Weeks ⌜_____⌝ Days

6d How severe has your depression been for you? (choose one)

Feelings of unexplained sadness for less than 2 weeks

Severe sadness for less than 2 weeks

Severe sadness for longer than 2 weeks

Unable to feel happy or get any pleasure out of life

A visit to the GP was required

Therapy and/or medication was required

Therapy and /or medication was required long term

Hospitalisation was required

I have never recovered ○

6e How long ago was your depression? ☐ Years ☐ Months ☐ Weeks ☐ Days

7. Two questionnaires are asking about your relationships as you were growing up. Who did you grow up with up to the age of about 12?

Both parents ○ Single parent family ○ Guardians ○

Grandparents ○ Others ○ who were they? ☐

Childhood Attachment

Instructions: Please complete the questionnaire as you remember thinking about and behaving with your mother /father /guardians /carers during your first 12 years, indicate your agreement with the statement using the scale. Mark one answer per statement.

	Item	Disagree Strongly	Disagree	Disagree a Little	Neutral	Agree a Little	Agree	Agree strongly
8	I worried about being abandoned by my parents	○	○	○	○	○	○	○
9	I was never confident in my parents□ ability to meet my needs	○	○	○	○	○	○	○
10	When my parents disapproved of me, I felt really bad	○	○	○	○	○	○	○
11	As a child I kept myself to myself	○	○	○	○	○	○	○
12	I never relied on my parents for emotional support	○	○	○	○	○	○	○
		Disagree Strongly	Disagree	Disagree a Little	Neutral	Agree a Little	Agree	Agree strongly

13	I never felt comfortable talking to my parents about personal things	○	○	○	○	○	○	○
14	I was not confident in my parents return when I was left with a babysitter	○	○	○	○	○	○	○
15	Whenever I was sick, I wanted my parents to be near to me	○	○	○	○	○	○	○
16	I placed trust and confidence in my parents	○	○	○	○	○	○	○
17	I always allowed my parents to comfort me in times of distress	○	○	○	○	○	○	○
		Disagree Strongly	Disagree	Disagree a Little	Neutral	Agree a Little	Agree	Agree strongly
18	I did not worry about being abandoned by my parents	○	○	○	○	○	○	○
19	I felt comfortable sharing my private thoughts and feelings with my parents	○	○	○	○	○	○	○
20	I was extremely frightened about losing my parents when we were out of the house	○	○	○	○	○	○	○
21	I always discussed any school problems with my parents	○	○	○	○	○	○	○
22	I felt confident that I could always rely on my parents to be there for me	○	○	○	○	○	○	○

		Disagree Strongly	Disagree	Disagree a Little	Neutral	Agree a Little	Agree	Agree strongly
23	I was confident that I could turn to my parents in times of need	○	○	○	○	○	○	○
24	When my parents were away from me I felt anxious and alone	○	○	○	○	○	○	○
25	I got frustrated when my parents were not there as much as I wanted	○	○	○	○	○	○	○
26	I preferred not to get too close to my parents	○	○	○	○	○	○	○
27	I was confident in my mom's ability to make me feel better when I was a bit sad	○	○	○	○	○	○	○
28	I needed a lot of reassurance that my parents loved me	○	○	○	○	○	○	○
29	I resented it when my parents spent a long time away from me	○	○	○	○	○	○	○
30	I was confident that my parents would meet my needs	○	○	○	○	○	○	○
31	I had a warm and understanding relationship with my parents	○	○	○	○	○	○	○

Parental Bonding

Instructions: This questionnaire lists various attitudes and behaviours of parents. Please complete the questionnaire as you remember your mother /father /guardians during your first 12 years. Complete the column for your mother (or female guardian) firstly, by marking one number per statement, and then go through the same procedure regarding your father (or male guardian). If you

grew up in a single parent family, simply complete the column for that parent. Use this scale for reference - **1= Very Like 2= Moderately like 3=Moderately unlike 4= Very Unlike**									
		MOTHER				**FATHER**			
		1	2	3	4	1	2	3	4
32	Spoke to me in a warm and friendly voice	○	○	○	○	○	○	○	○
33	Did not help me as much as I needed	○	○	○	○	○	○	○	○
34	Let me do those things I liked doing	○	○	○	○	○	○	○	○
35	Seemed emotionally cold to me	○	○	○	○	○	○	○	○
36	Appeared to understand my problems and worries	○	○	○	○	○	○	○	○
37	Was affectionate to me	○	○	○	○	○	○	○	○
38	Liked me to make my own decisions	○	○	○	○	○	○	○	○
39	Did not want me to grow up	○	○	○	○	○	○	○	○
40	Tried to control everything I did	○	○	○	○	○	○	○	○
41	Invaded my privacy	○	○	○	○	○	○	○	○
42	Enjoyed talking things over with me	○	○	○	○	○	○	○	○
43	Frequently smiled at me	○	○	○	○	○	○	○	○

44	Tended to baby me	○	○	○	○	○	○	○	○
45	Did not seem to understand what I needed or wanted	○	○	○	○	○	○	○	○
46	Let me decide things for myself	○	○	○	○	○	○	○	○
47	Made me feel I wasn't wanted	○	○	○	○	○	○	○	○
48	Could make me feel better when I was upset	○	○	○	○	○	○	○	○
49	Did not talk with me very much	○	○	○	○	○	○	○	○
50	Tried to make me dependent on him/her	○	○	○	○	○	○	○	○
51	Felt I could not look after myself unless she/he was around	○	○	○	○	○	○	○	○
52	Gave me as much freedom as I wanted	○	○	○	○	○	○	○	○
53	Let me go out as often as I wanted	○	○	○	○	○	○	○	○
54	Was overprotective of me	○	○	○	○	○	○	○	○
55	Did not praise me	○	○	○	○	○	○	○	○
56	Let me dress in any way I pleased	○	○	○	○	○	○	○	○

Close Relationships

Instructions: The following statements concern how you feel in romantic relationships. Whether you are in a relationship, or not, I am interested in how you generally experience relationships. Respond to each statement by indicating how much you agree or disagree with it. Mark one answer per statement, using the following scale

	Disagree strongly 1	2	3	Neutral/mixed 4	5	Agree strongly 6	7
	1	2	3	4	5	6	7
57 I prefer not to show a partner how I feel deep down	○	○	○	○	○	○	○
58 I worry about being abandoned	○	○	○	○	○	○	○
59 I am very comfortable being close to romantic partners	○	○	○	○	○	○	○
60 I worry a lot about my relationships	○	○	○	○	○	○	○
61 Just when my partner starts to get close to me, I feel myself pulling away	○	○	○	○	○	○	○
62 I worry that romantic partners won't care about me as much as I care about them	○	○	○	○	○	○	○
63 I get uncomfortable when a romantic partner wants to be very close	○	○	○	○	○	○	○
64 I worry a fair amount about losing my partner	○	○	○	○	○	○	○
65 I don't feel comfortable opening up to romantic partners	○	○	○	○	○	○	○
66 I often wish that my partners feelings for me were as strong as my feelings for him/her	○	○	○	○	○	○	○
67 I want to get close to my partner, but I keep pulling back	○	○	○	○	○	○	○
68 I often want to merge completely with romantic partners, and this sometimes scares them away	○	○	○	○	○	○	○
69 I am nervous when partners get too close to me	○	○	○	○	○	○	○
70 I worry about being alone	○	○	○	○	○	○	○

71 I feel comfortable sharing my private thoughts and feelings with my partner	○	○	○	○	○	○	○
72 My desire to be very close sometimes scares people away	○	○	○	○	○	○	○
73 I try to avoid getting too close to my partner	○	○	○	○	○	○	○
74 I need a lot of reassurance that I am loved by my partner	○	○	○	○	○	○	○
75 I find it relatively easy to get close to my partner	○	○	○	○	○	○	○
76 Sometimes I feel that I force my partners to show more feeling, more commitment	○	○	○	○	○	○	○
77 I find it difficult to allow myself to depend on romantic partners	○	○	○	○	○	○	○
78 I do not often worry about being abandoned	○	○	○	○	○	○	○
79 I prefer not to be too close to romantic partners	○	○	○	○	○	○	○
80 If I can□t get my partner to show interest in me, I get upset or angry	○	○	○	○	○	○	○
81 I tell my partner just about everything	○	○	○	○	○	○	○
82 I find that my partner(s) don□t want to get as close as I would like	○	○	○	○	○	○	○
83 I usually discuss my problems and concerns with my partner	○	○	○	○	○	○	○
84 When I□m not involved in a relationship, I feel somewhat anxious and insecure	○	○	○	○	○	○	○
85 I feel comfortable depending on romantic partners	○	○	○	○	○	○	○
86 I get frustrated when my partner is not around as much as I would like	○	○	○	○	○	○	○

87	I don□t mind asking romantic partners for comfort, advice or help	○	○	○	○	○	○	○
88	I get frustrated if romantic partners are not available when I need them	○	○	○	○	○	○	○
89	It helps to turn to my romantic partner in times of need	○	○	○	○	○	○	○
90	When romantic partners disapprove of me, I feel really bad about myself	○	○	○	○	○	○	○
91	I turn to my partner for many things, including comfort and reassurance	○	○	○	○	○	○	○
92	I resent it when my partner spends time away from me	○	○	○	○	○	○	○

The D scale

Instructions: Below are a series of statements which describe how people can feel about themselves Read each item carefully and mark the number to the right of the statement that best describes how you have felt in the last 7days. Use the scale below for reference. Please do not omit any item.

		Never	Rarely	Sometimes	Mostly	Always
93	I feel that I have not made it in life	○	○	○	○	○
94	I feel that I am a successful person	○	○	○	○	○
95	I feel defeated by life	○	○	○	○	○
96	I feel that I am basically a winner	○	○	○	○	○
97	I feel that I have lost my standing in the world	○	○	○	○	○

98	I feel that life has treated me like a punchbag	○	○	○	○	○
99	I feel powerless	○	○	○	○	○
100	I feel that my confidence has been knocked out of me	○	○	○	○	○
101	I feel able to deal with whatever life throws at me	○	○	○	○	○
102	I feel that I have sunk to the bottom of the ladder	○	○	○	○	○
103	I feel completely knocked out of action	○	○	○	○	○
104	I feel that I am one of life□s losers	○	○	○	○	○
105	I feel that I have given up	○	○	○	○	○
106	I feel down and out	○	○	○	○	○
107	I feel that I have lost important battles in life	○	○	○	○	○
108	I feel that there is no fight left in me	○	○	○	○	○

Social Comparison

Instructions: Please mark on the scale from one to ten whereabouts you see yourself in relation to other people. For example

		Short	1	2	3	4	5	6	7	8	9	10 Tall

Checking 1 would indicate that you see yourself as shorter than most people, 10 indicates that you see yourself as taller than most people. If you see yourself as about the same as other people, checking 5 or 6 would indicate this.

In relation to others, I generally feel ...

		1	2	3	4	5	6	7	8	9	10	
109	Inferior	○	○	○	○	○	○	○	○	○	○	Superior
110	Incompetent	○	○	○	○	○	○	○	○	○	○	Competent
111	Unlikable	○	○	○	○	○	○	○	○	○	○	Likeable
112	Left out	○	○	○	○	○	○	○	○	○	○	Accepted
113	Different	○	○	○	○	○	○	○	○	○	○	Same
114	Untalented	○	○	○	○	○	○	○	○	○	○	More Talented
115	Weaker	○	○	○	○	○	○	○	○	○	○	Stronger
116	Unconfident	○	○	○	○	○	○	○	○	○	○	More Confident
117	Undesirable	○	○	○	○	○	○	○	○	○	○	More desirable
118	Unattractive	○	○	○	○	○	○	○	○	○	○	More attractive
119	Outsider	○	○	○	○	○	○	○	○	○	○	Insider

Mood

Instructions: Below is a list of problems and complaints that people sometimes have. Read each one carefully and select one of the descriptors that best describes how much discomfort that problem has caused you over the past 7 days INCLUDING TODAY. Mark that number he right of the problem. Do not skip any items.

		Not At All	A Little Bit	Moderately	Quite A Bit	Extremely
120	Loss of sexual interest or pleasure	C	C	C	C	C
121	Feeling low in energy or slowed down	C	C	C	C	C
122	Thoughts of ending your life	C	C	C	C	C
123	Crying easily	C	C	C	C	C
124	Feelings of being trapped or caught	C	C	C	C	C
125	Blaming yourself for things	C	C	C	C	C
126	Feeling lonely	C	C	C	C	C
127	Feeling blue	C	C	C	C	C
128	Worrying too much about things	C	C	C	C	C
129	Feeling no interest in things	C	C	C	C	C
130	Feeling hopeless about the future	C	C	C	C	C

131	Feeling everything is an effort	○	○	○	○	○
132	Feelings of worthlessness	○	○	○	○	○

Thank you for your participation.

Click submit to send your data to me. By clicking reset, all your data will be withdrawn from the study, and none will be sent to me, you are free to take this option.

Submit or Reset the form

Wendy Nicholls

Appendix D

Response Page

(See accompanying compact disc to view this document in Web Format)

Thank you for taking part. Your answers have now been sent. Please send me an email in order to let me know your email address (W.Nicholls@lboro.ac.uk) In a few months time, I may contact you to take part in the second stage of the research. I would really appreciate it if you could take part in both stages.

If you have any questions regarding the research, please contact me.

If this research has raised any issues with you, the following organisations may be of help, you may wish to see your GP (Physician) if you are worried that you may have depression.

Depression Alliance

The Mental Health Foundation

If you would like to take part in other online research projects take a look at Psychological Research on the Net.

Appendix E

Online Information Sheet

(See accompanying compact disc to view this document in Web Format)

Dear Participant,

Thank you for your interest If you want to participate in the research, please read the statement and then click the link to go to the questionnaire. Please note that only individuals over the age of 18 may participate.

This study is being conducted by a PhD student (Wendy Nicholls) at Loughborough University, supervised by Dr Duncan Cramer.

I am conducting a study to look at the connections between depression and relationships. The study takes place at two time intervals and involves completing 7 short questionnaires (which should take no more than fifteen minutes) on each occasion. I will invite you to complete a second questionnaire in about three months time, can you please send me a blank email with so that I can make a record of email address. This will not be connected to your response in any way.

Please click here to send the blank email

This study involves answering questions about your relationship with your parents or guardians as a child, your adult relationships, and your mood. You will also be asked for a few details, such as your age, sex, and status. If there are some questions you do not wish to answer, for any reason, you may leave them out.

All information to be used in this study is strictly confidential, you will not be identifiable from your response.

To reduce the risk of anyone seeing your responses you can exit the internet browser after you have sent your response. Some questions are quite personal, so you might want to complete the questionnaire in private. You are asked your mother's maiden name and your day of birth in order to match your responses at the two time intervals. You will not be identifiable to me by giving this information. Should you not wish to participate for whatever reason, feel free to withdraw at any stage, by clicking the 'reset' button. If you have any questions or wish to drop out of study after you have submitted your answers, please do so before June 2004, you can email me at W Nicholls@lboro ac uk.

Wendy Nicholls

Go to The Questionnaire **(by clicking this you are agreeing that you have read the above information, and that you are over the age of 18).**

Dear Participant,

Thank you for your continued interest. If you want to participate in the research, please read the statement and then click the link to go to the questionnaire.

This study is being conducted by a PhD student (myself) at Loughborough University, supervised by Dr Duncan Cramer.

I am conducting a study exploring people's relationships and depression. The study takes place at two time intervals.

If you have **already completed one questionnaire** a few months ago, please click on the below link to the second questionnaire.

If you have **not taken part in this research before**, please click on the below link for new participants.

Each stage involves completing 7 short questionnaires which should take no more than fifteen minutes.

All information to be used in this study is strictly confidential, I will not be able to tell who you are from your response.

To reduce the risk of anyone seeing your responses you can exit the internet browser after you have sent your response. Some questions are quite personal, so you might want to complete the questionnaire in private. You are asked your mother's maiden name and your day of birth in order to match your responses at the two time intervals. You will not be identifiable to me by giving this information. Should you not wish to participate for whatever reason, feel free to withdraw at any stage, by clicking the 'reset' button. If you have any questions or wish to withdraw retrospectively from this study, please do so before June 2004, you can email me at W Nicholls@lboro ac.uk.

Wendy Nicholls

Click here if you are a new participant

Click here to complete the second questionnaire

Appendix F

Standardised Email at Time 1

Thank you for taking the time to read this email. I am conducting some research on relationships and depression. If you are interesting in taking part in this research, you can do so online. Please click on the link below to access more information about this research and the questionnaire.

<link>

If you have any questions you would like to ask before taking part, please email me on w nicholls@lboro ac uk

If you find that the webpage contains a fault, please email me on w nicholls@lboro.ac uk

Many thanks,

Wendy Nicholls

Postgraduate Research Student
Department of Social Sciences
Loughborough University
Loughborough
Leicestershire
LE11 3TU
UK

Standardised Email at Time 2

Dear Participant,

Many thanks for taking part in the earlier stage of my research into depression and relationships. The results have been very interesting to look at. I am looking at how feelings and relationships change over time, so I am asking all those people who took part in my research to fill in a second questionnaire.

The second questionnaire is almost the same as the first one. It is confidential and anonymous. You will find it by going to this link

<link>

If you can, please take time to fill in this questionnaire within the next few days.

I am appreciative of everyone's continued support of my research.

Many Thanks,
Wendy Nicholls

Postgraduate Research Student
Department of Social Sciences
Loughborough University
Loughborough
Leicestershire
LE11 3TU
UK

<link>

Standardised Reminder Email at Time 2

Thanks to those who have already completed the second round of the questionnaire.
If you have not done so already, I would be grateful if you would complete the questionnaire in the next few days.

The original email is below, just in case you didn't receive it

Apologies if you receive this email more than once.

Many Thanks,
Wendy Nicholls

Postgraduate Research Student
Department of Social Sciences
Loughborough University
Loughborough
Leicestershire
LE11 3TU
UK

<link>

Appendix G

Information Sheet for Participants (paper and pencil participants)

Dear Participant,

This study is being conducted by a PhD student (myself) at Loughborough University, supervised by Dr. Duncan Cramer.

I am doing a study exploring people's relationships and depression The study takes place at two time intervals and involves completing six short questionnaires (which should take no more than fifteen minutes) on each occasion. I will invite you to complete a second questionnaire in about three months time, for this purpose, could you please write your email address on the consent form. The consent form should be returned in the smaller envelope, separately from your questionnaire, thereby keeping your information anonymous

All information to be used in this study is strictly confidential; you will not be identifiable from your response.

Some questions are quite personal, so you might want to complete the questionnaire in private You are asked your mothers maiden name and day of birth in order to match your responses at the two time intervals I will not be able to tell who you are from this information. If you do not wish to participate, you are free to withdraw at any stage If you have any questions or wish to withdraw from this study later on, please do so before June 2004, you can email me at W.Nicholls@lboro.ac.uk.

Instructions: Please mark only one answer per question. Please complete the questionnaires in the order they are presented, and follow the instructions in bold. Do not spend too long thinking about each question; usually your first answer is best. If you make a mistake, cross it out and correct it. Once you feel happy with your responses, put your questionnaire in the big envelope provided and give it back to me directly. If you need any help in completing the questionnaires, please contact me

Thank you for your participation,
Wendy Nicholls

Research Student
Dept of Social Sciences
Loughborough University
Loughborough
Leicestershire
LE11 3TU
Email W Nicholls@lboro ac uk
Phone 01213862845

PLEASE KEEP THIS SHEET FOR YOUR INFORMATION

Appendix H

Consent form

Consent Form

Before signing the consent form, please read the information sheet provided.

I acknowledge that I have read the information sheet provided and that I understand the nature and purpose of this study. I am at least 18 years of age and I freely consent to participate in this study.

Signed_____

Date_____

Email Address

_____@_____

Appendix I

Table I.1. Correlations between Childhood Experiences, Adulthood Attachment, Social Rank, and Depression.

	Dep	SC	Defeat	ECR An	ECR Av	Over	Care	Avoid	Con	Anxiety
Depression		- 464**	803**	.467**	.391**	.241**	-.384**	.387**	- 267**	258**
SC	- 625**		- 605**	- 210**	-.134	-.195**	.173*	- 276**	.214**	-.173*
Defeat	829**	- 643**		462**	377**	321**	- 407**	.422**	- 322**	251**
ECR An	300	- 073	348*		.114	.146	-.101	.205*	- 093	.241**
ECR Av	298	- 222	423**	337*		.219**	-.332**	.373**	- 237**	086
Over	404*	- 172	.361*	078	.375*		- 435**	.416**	- 388**	.148*
Care	-.388*	.166	-.440**	-.256	-.314	- 352*		- 629**	767**	-.186*
Avoidance	423**	- 274	456**	.213	228	.313	-.707**		-.661**	085
Con	- 461**	286	- 480**	- 051	-.279	-.312	.790**	-.680**		- 075
Anxiety	230	-.268	.417**	.415**	235	321*	- 322*	.193	- 112	
Mean (*sd*)										
Female	28 41 (11 58)	66 00 (15 24)	18.32 (12 69)	67 80 (22 09)	55 82 (23 94)	52.29 (13 87)	77.36 (14 92)	22.19† (8.28)	39 13† (9 67)	18 04 (7.89)
Male	28 33 (12.20)	70 33 (14 37)	17 84 (13.38)	69.74 (21 24)	57.44 (18 02)	52 05 (11 67)	71 64 (17 80)	26 38† (8 53)	34 62† (10 47)	17 08 (6 22)

Key.

[a] = Only those participants with complete data for all scales are included in this table. Females, reported on the top half of the matrix, $n = 179$; Males $n = 39$

* Correlation was significant at the $p < 05$ level

** Correlation was significant at the $p < .01$ level

† t-test significant at $p < .01$

Dep = Depression; SC = Social Comparison; ECR An = Anxiety Subscale of the ECR; ECR Av = Avoidance subscale of the ECR; Over = Overprotection subscale of the PBI, Care= Care subscale of the PBI; Avoid = Avoidance subscale of the CAM, Con= Confidence subscale of the CAM.

Appendix J

A Mediator Analysis. Predictors Are The Adult Attachment Dimensions Anxiety And Avoidance, The Mediator Is Defeat, And The Criterion Is Depression.

It was found that defeat mediated the relationship between childhood experiences with parents and depression experienced in adulthood. In order to test whether this effect was specific to childhood attachment, a mediator analysis was conducted to test the hypothesis that defeat would significantly mediate the relationship between adulthood attachment and defeat. The predictor variables were the two ECR subscales, avoidance, and anxiety. The criterion variable was depression, and the mediating variable, defeat. Data were screened for multivariate outliers. At the $p<.01$ level ($3df$; $\chi^2 = 11.345$) for Mahalanobis Distance, four multivariate outliers were detected and removed. A mediation analysis was conducted using the four stages recommended by Baron and Kenny (1986).

The aim of the first stage was to establish whether there is a relationship between the predictors (anxiety and avoidance) and the criterion (depression). A multiple regression was estimated. Adult attachment accounted for 30 9% of the variance in depression ($R=.56$; F [2, 237] = 52.95, $p<.001$). The zero order and partial correlations are displayed in table J.1. An examination of the zero order and semi-partial correlations shows that both variables make a significant unique contribution to the prediction of depression.

The aim of the second stage was to test whether adult attachment significantly predicted the mediator, defeat. Attachment accounted for 28 5% of the variance in defeat (R = .53; F = [2, 237] 47.26; p<.001). Both attachment variables made a significant unique contribution to the prediction of defeat.

The aim of the third stage was to demonstrate that the mediator (defeat) accounted for significant variance in the prediction of the criterion (depression). A regression equation was therefore estimated. Defeat accounted for 62.1% of the variance in depression (R=.79, F [1, 238] = 390.50, p<.001).

The final stage examined whether the predictors are still related to the criterion variable when the relationship with the mediator is controlled. The attachment variables were entered as predictors in the first block, the mediator defeat was entered in a second block. The criterion was depression. The final estimated model (including both the predictors and the mediator) accounted for 64.7% of the variance in the prediction of depression (R=.80, F [3, 236] = 144.03, p< 001). The second analysis, including the mediator accounted for significantly more variance in depression than attachment alone did (r-square change = 34 F change = [1, 236] 225.76, p<.001). Analysis of the semi partial correlations demonstrated that defeat partially mediated the association between adult attachment and depression. However, avoidance and anxiety retained independent and significant pathways to depression when defeat was entered into the model.

Table J.1. Zero order and partial correlations

Stage and Predictors	Criterion	Standardised β	*t*	*p*	Zero Order	Semi-Partial
Stage 1	**Depression**					
Avoidance		.29	5.31	001	.36	29
Anxiety		.43	7.92	.001	.48	.43
Stage 2	**Defeat**					
Avoidance		.28	5 05	.001	34	29
Anxiety		41	7 46	.001	47	41
Stage 3	**Depression**					
Defeat		.79	19 76	001	.79	-
Stage 4	**Depression**					
Avoidance		.10	2 36	.01	36	09
Anxiety		.15	3 40	.001	48	13
Defeat		.69	15 03	.001	.79	.58

Appendix K

The Non Significant Moderating Effect of Childhood Experiences on the Relationship between Social Rank and Depression

The second stage of the analyses for part two involved substituting childhood attachment into the model as the moderator, in place of adult attachment. The moderating effect of childhood attachment on the relationship between social comparison and depression was tested. Two measures of childhood attachment were tested (PBI and CAM). The analyses were therefore completed in two stages.

Parental Bonding

The PBI was used to group participants into one of four "bonding styles". Individuals with data missing in the PBI subscales were excluded from this analysis, consequently, n=218. Those classified as having optimal bonding had lower scores on depression. Those classified as having affectionless control had the highest scores on depression, those classified as having affectionate control had the highest score on social comparison.

Table K.1. Mean Scores and Correlations for Participants across the Four Subtypes of Bonding

	Optimal Bonding (n =156)		Affectionless Control (n =16)		Affectionate Control (n =21)		Absent or weak Bonding (n =25)	
Depression mean (sd)	25 83	10 21	39 19	12 57	32.09	10.11	34 44	14 27
Social Comparison mean (sd)	68.22	14 06	62.50	20.79	60 86	15 28	65 48	16.62
Pearson's correlation between SC and depression	- 424*		.-.636*		-.613*		- 521*	

Key

* = $p < .01$

Pearson's Correlations between social comparison and depression were examined in each subgroup of bonding style (table K.1). Correlations were significant in all groups, and a slightly higher correlation was observed for those classified as having affectionless control and a slightly lower correlation for those with an optimal bonding style. That the correlations were roughly equivalent across the other groups was an indication that parental bonding was not moderating the relationship between social comparison and depression.

The three steps were again followed to prepare the variables for the analysis. Dummy variables were created to describe the four bonding styles. The Dummy Variables were multiplied with centred social comparison scores to create interaction terms. Predictors were entered into the equation in two blocks; the first block comprised of the dummy variables describing parental bonding styles, and centered social comparison score; the second block contained the interaction terms. The criterion variable was depression. Using a $p<.01$ criterion for Mahalanobis distance ($df = 9$; $\chi^2 = 21.67$) fourteen multivariate outliers were detected and removed from the analysis, consequently, $n = 204$. Examination of the plots of the standardised residuals indicated that the regression assumptions of linearity, normality, and homogeneity of variance were not violated.

The first regression equation accounted for 26.1% of the variance in the prediction of depression; the multiple correlation co-efficient was .51 ($F = [4, 199]$ 17.58; $p<0$ 001). The second regression equation, including the interactions accounted for 26 6% of the variance, the multiple correlation co-efficient was .52 ($F = [7, 196]$ 10.14; $p<.001$). The moderating effect was not significant. No significant change in $r2$ was observed ($r2$ change = .005; F change = [3, 196] .426; *ns*). The analysis was repeated substituting defeat as the predictor. Using a $p<.01$ criterion for Mahalanobis distance ($df = 9$; $\chi^2 = 21.67$) nine multivariate outliers were detected and removed from the

analysis, consequently, n = 209. The moderating effect was not significant, no significant change in $r2$ was observed ($r2$ change = .008; F change = [3, 201] .1.458; *ns*).

Childhood Attachment

The moderator analysis was finally conducted with the childhood attachment measure as the moderating variable. Participants were assigned a childhood attachment style using their scores on the CAM subscales of avoidance and anxiety (this classification method is described in detail in chapter 6). Securely attached individuals had the lowest mean depression score and the highest social comparison score. The fearful subgroup had the highest mean score on depression, and the lowest mean score on the social comparison scale.

Pair-wise Pearson's correlations between social comparison and depression were examined within each attachment style grouping (table K.2). Within the four styles of childhood attachment, the correlations between social comparison and depression were the highest in the fearful subgroup (r = -.66, n=20, p = .002) and lowest in the preoccupied subgroup (r = -.24, n = 17, *ns*) This pattern may be due to the small number of participants allocated to the preoccupied subgroup. Within the dismissing subgroup, a correlation of -.49 (n=99, p<.001) was observed, and a correlation of -.25 (n=108, p<.01) was observed in the secure subgroup. Moderator analyses were conducted to test whether childhood attachment significantly moderated the relationship between perceived social rank and depression.

Table K.2 Mean Scores and Correlations for Participants Across the four Childhood Attachment Styles.

	Secure (n = 108)		Fearful (*n* =20)		Preoccupied (*n* =17)		Dismissing (*n* =99)	
Depression mean (sd)	24 53	(9.18)	38 70	(10 87)	29 82	(11 78)	31.43	(12 40)
Social Comparison mean (sd)	70.43	(13 54)	55.50	(17.15)	66.94	(12 68)	64.30	(15.58)
Pearson's correlation between SC and depression	- 25*		- 66**		- 239		-.493**	

Key

* = p < .05

** = p < .01

As with the other analyses, three steps were taken to prepare the variables for the moderator analyses. Dummy variables were created to describe childhood attachment style, the social comparison scores were centred, and interaction variables were created between each dummy variable and the centred score for social comparison. The predictors were screened for multivariate outliers at $p<.01$ of Mahalanobis distance (df = 9, $\chi^2 = 21.67$), ten multivariate outliers were detected and removed from the analysis. A multiple regression analysis was then conducted, with depression as the criterion. Predictors were entered in two blocks. The first block consisted of three dummy variables describing the four attachment styles, and the centered score for social comparison. The second block contained the interaction variables describing the interaction between childhood attachment and social comparison.

Two models were estimated, the first using dummy variables and the centered social comparison scale as predictors (R=.519, r2 = 269; F [4, 229] = 21.09, $p<.001$), and the second with the interactions as predictors (R=.537, r2=.289; F [7, 226] = 13.12, $p<.001$). The criterion for significance in this set of analyses was set at $p<.016$. No significant differences were observed between the two estimated models (r-Square change =.02, F change [3, 226] = 2.08, *ns*). The analysis was repeated substituting defeat as the predictor. Using a $p<.01$ criterion for Mahalanobis distance ($df = 9$; $\chi^2 = 21.67$) eleven multivariate outliers were detected and removed from the analysis, consequently, $n = 233$. The moderating effect was not significant, no significant change in $r2$ was observed ($r2$ change = 01; F change = [3, 225] .2.80; *ns*)

Appendix L

Figure L.1 The Reciprocal Model

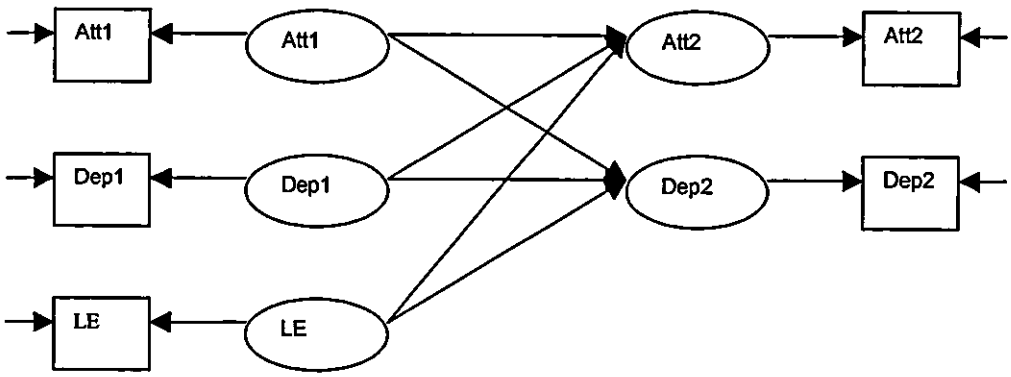


Figure L.2 The Life Events Model

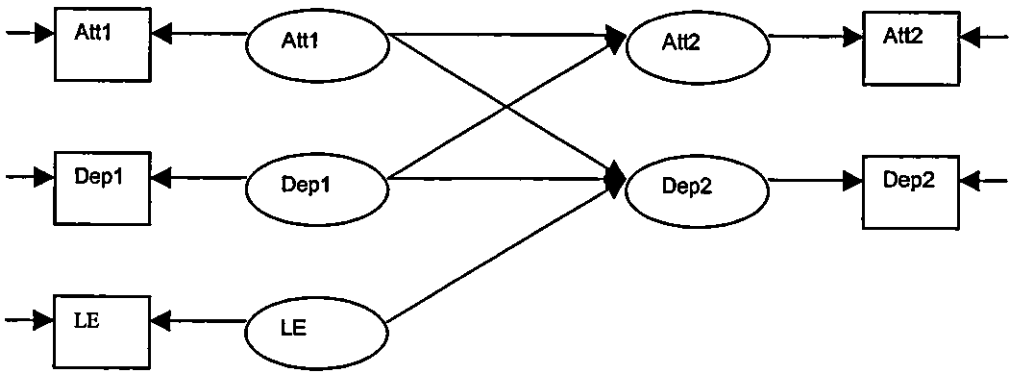


Figure L.3 The Depression Model

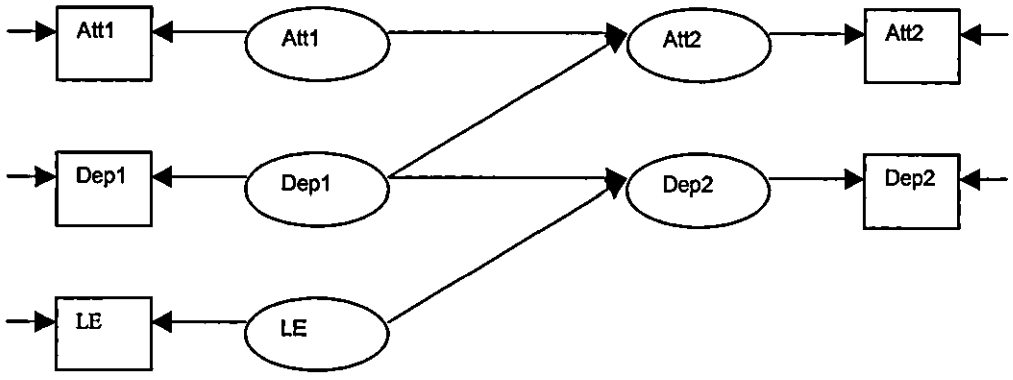


Figure L.4 The Attachment Model

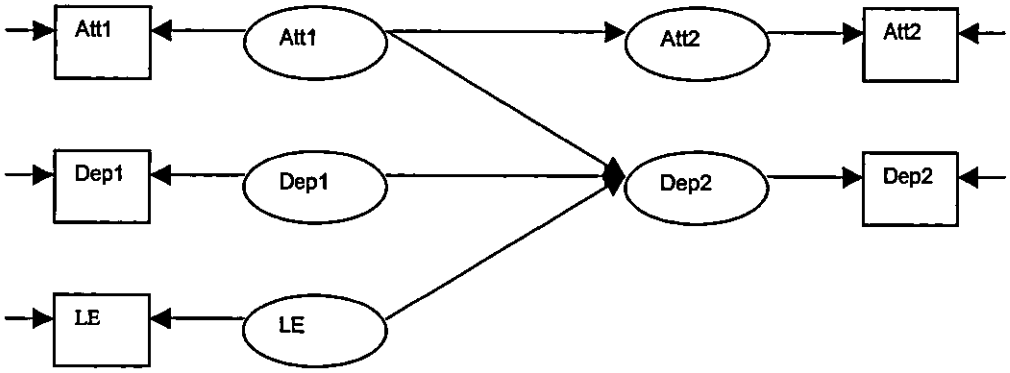
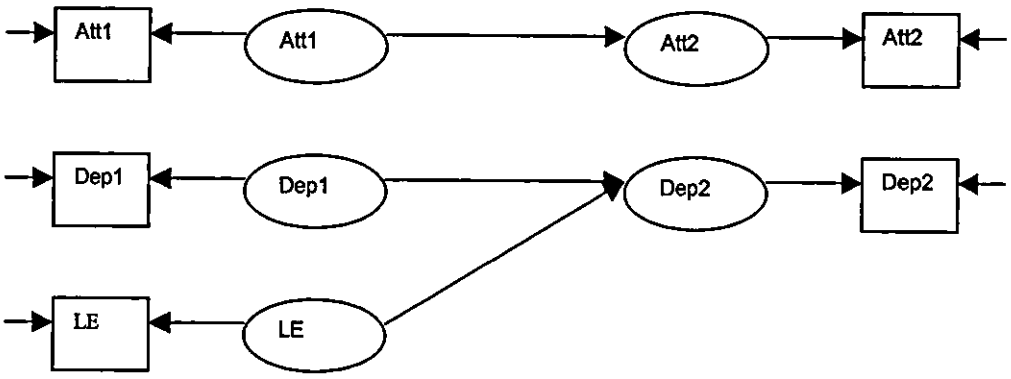


Figure L.5 The No Effect Model



Appendix M

Figure M.1 The Reciprocal Model

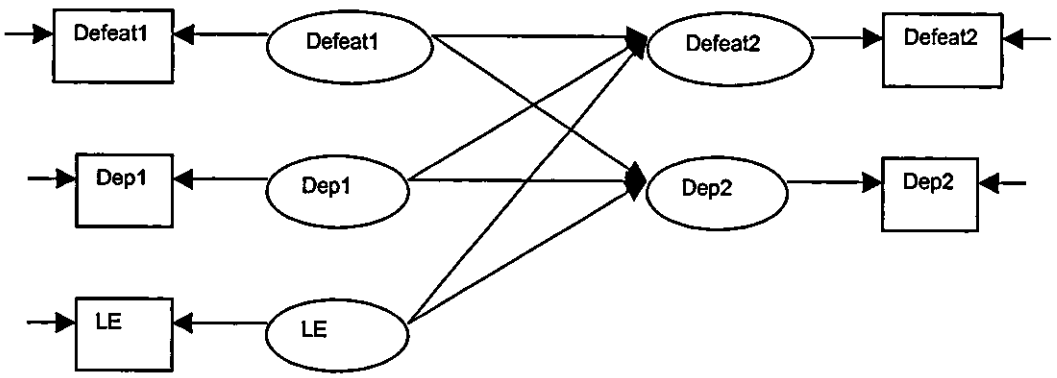


Figure M.2 The Depression Model

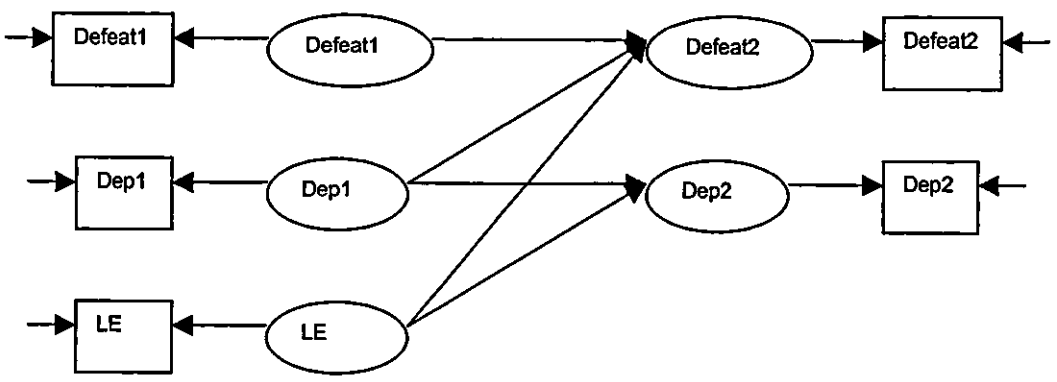


Figure M.3 The Defeat Model

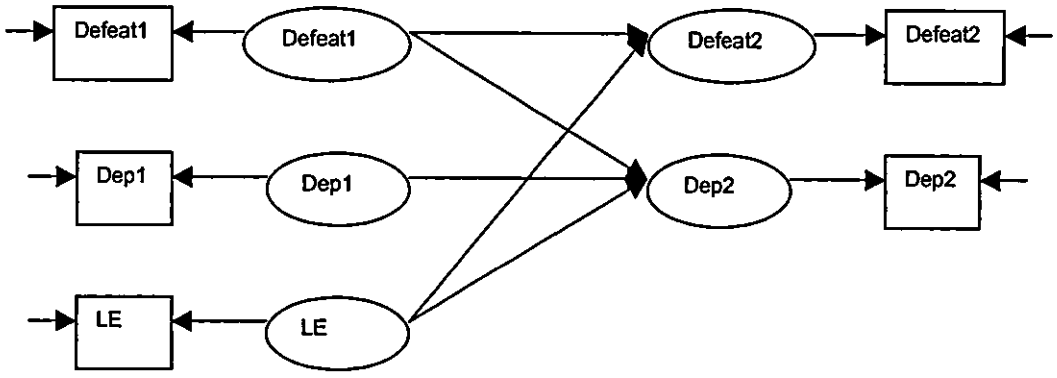


Figure M.4 The No Effect Model

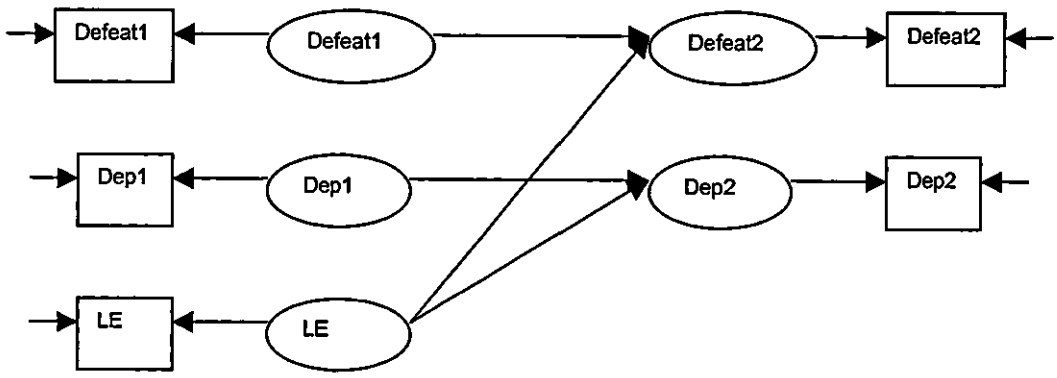


Figure M. 5 Modification 1

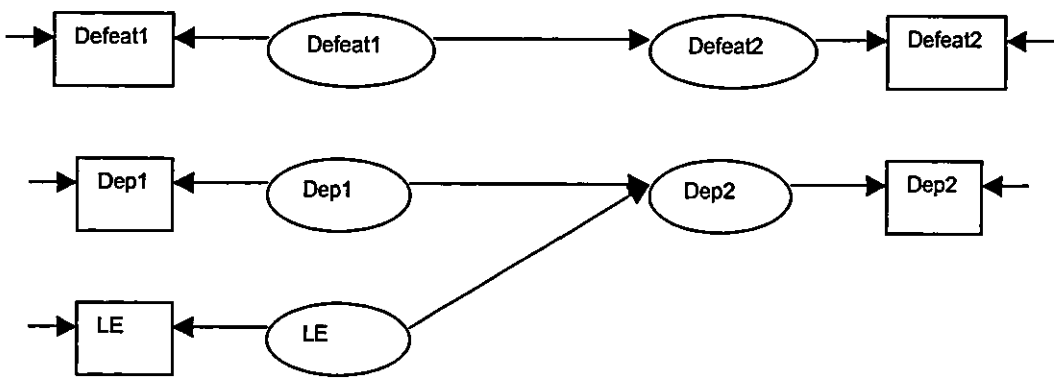


Figure M.6 Modification 2