Cognitive processes involved in the onset and course of postnatal distress from the antenatal period to six months postpartum: New findings, and implications for future research

Anne Pratt
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COGNITIVE PROCESSES INVOLVED IN THE ONSET AND COURSE OF POSTNATAL DISTRESS FROM THE ANTENATAL PERIOD TO SIX MONTHS POSTPARTUM: NEW FINDINGS, AND IMPLICATIONS FOR FUTURE RESEARCH

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This thesis is presented in fulfilment of the requirements for the degree of Doctor of Philosophy

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USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.
ABSTRACT

Although studies have explored the epidemiology of Postnatal Depression (PND) and other mood disorders occurring in the postnatal period, there is some evidence to support the argument that there may be different subsets of women suffering from low mood, around the time of childbirth (Warner, Appleby, Whitton, & Faragher, 1997). Some new mothers may be responding to the inherent, but often understated, stressors of the childbirth experience itself and the period that follows it, linked to dysfunctional maternal attitudes. Others may have pre-existing dysfunctional cognitions before the birth arising from other factors, and therefore already be vulnerable to a mood disorder. Another important factor linked to this, is the time of onset, and the impact of cognitive and affective changes that may occur in the overall process of becoming a mother for the first time. While there has been some research using prospective research methods, measuring cognitions both before, and after, the experience of motherhood to understand better the process by which women become depressed, has not yet been attempted (Boyce & Mason, 1996).

This study therefore investigates the role of cognition in new primiparous mothers longitudinally, in an attempt to further our knowledge on these issues. The research begins by following the recommendations of Patton (1990) to investigate the context in which the main study is to be performed. The literature on mood disorders following childbirth is then reviewed, and the questions arising are documented. The planning stage is then described. This involved both formal and informal interviews with a range of key stakeholders.

The main study is prospective, with a particular emphasis on investigating the cognitions of new mothers within a model that incorporates other factors known to be important in depression. The times selected for assessment were the second trimester prior to the birth (Time 1), 10-12 weeks after the birth (Time 2), and a final assessment at six months after the birth (Time 3).

In the main study, 158 participants completed a protocol in the presence of a researcher at Time 1. At Time 2, 141 participants remained in the study. At Time 3, 127 participants completed the final protocol. Importantly, the results indicate that women, who are more worried over everyday stressors prior to the birth, are more likely to have
higher EPDS scores postnatally. However, women who have higher EPDS scores early in the puerperium are less likely than others who have higher EPDS scores later in the postpartum period to have a past history of mental health problem, dysfunctional maternal attitudes and low self-esteem, prior to the pregnancy. Furthermore, these women are more likely to perceive they are more in control of their lives before the birth. These findings have practical implications for screening and intervention. The accumulation of knowledge that has resulted from this research, and the contribution made to the understanding of cognitive shifts in primiparous mothers, is discussed. Recommendations include review of times of assessment, instruments to provide a more holistic assessment, antenatal intervention, and early motherhood supports.
DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief

(i) incorporate without acknowledgment any material previously admitted for a degree or diploma in any institution of higher education;

(ii) contain any material previously published or written by another person except where due reference is made in the text; or

(iii) contain any defamatory material.

Signature.

Date
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I must also acknowledge my parents, Rita and George Hayes, who were committed to education and learning. Though they both died during the last two years of this research, I know they would be proud and happy that I finally achieved a goal they both helped to shape. It is also important to me to recognise my Godmother, Rose O’Neill, who first taught me to read and gave me a lifelong love of books. She also died during the last year, but was totally convinced that this work would be completed. Her faith in my ability was one of my greatest supports during the difficult times.

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Chapter 1

Introduction and Context

This first Chapter begins with an overview of the thesis structure and contents. It then provides an introduction to the relevance of this study. This is followed by a brief description of the local region, the development of the State of Western Australia and the context in which the study was conducted. The rates and incidence of mood disorders that occur around childbirth in the local region, identified under the label of PND, are also discussed. The Chapter then discusses the identification and management strategies that were implemented during the latter half of the 1990s to assist new mothers. Finally, the Joondalup Health Campus, where the women gave birth to their babies, is briefly described.
1.1: Overview of the Thesis Structure

This thesis addresses issues yet to be fully articulated regarding the role of cognitions in mild to moderate mood disorders that occur around the time of childbirth. As will be explained, these disorders are often grouped and described as the syndrome known as Postnatal Depression (PND). Following the overview, this first section of the thesis continues with a general introduction to the issues to be explored. This is followed by a brief definition of terms.

In order to examine the processes of cognitive factors in postnatal distress, PND, and related disorders, first-time mothers were recruited from a hospital that services a region of approximately 250,000 people. This population is from a range of cultural, social and socio-economic backgrounds. The area is typical of other similar outer metropolitan conurbations, both in Western Australia (WA) and other major cities of Australia. To provide a context to the cultural and historical background of the women, who participated in the study, the second section of Chapter 1 briefly describes the evolution of WA. A demographic profile of the Cities of Wanneroo and Joondalup is then presented. Until 1999 these two cities, where most of the women who participated in the study reside, were collectively known as the Shire of Wanneroo. Following on from this section, the role of women in the development of WA is described. The third section details initiatives that led towards formal recognition of PND and related disorders in Australia, and describes local screening and treatment services that have evolved in recent years, in response to the identified need.

Chapter 2 discusses the research relevant to the syndrome, commonly described as PND. It will first outline how depression was understood and managed prior to its formal recognition in the American Psychiatric Association (1994) Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV, 1994). It will then briefly review some of the preventative methods that have been tested, and some key studies that have examined the use of various interventions, to minimise the impact of PND and related disorders. The Chapter will also discuss four of the five main topic areas investigated by researchers, in the attempt to understand better the factors associated with depression, around childbirth. These are under the headings of demographic, biological, social and behavioural variables (O’Hara, 1995). Each will be
reviewed independently, as these are some of the main factors that have been identified as predictors and variables linked to PND and related disorders.

Chapter 3 discusses cognition, and some of the important theoretical frameworks that have attempted to explain the role of cognition in depression. This Chapter then specifically addresses the literature, examining various cognitive concepts, and their influence on PND and other mood disorders that have their onset around the time of childbirth. The gaps in the literature are discussed, and key questions arising from these are described.

In Chapter 4 the planning stage is described, highlighting consultations and interviews with key local stakeholders to inform the main stage of the research. Questions arising from the consultation and the review of the literature will be detailed in the final section of the Chapter.

Chapter 5 outlines the research design, and the method is described. In addition, the process of piloting of the questionnaires used for the main study is documented.

Chapter 6 gives the results of the analyses. For the purposes of clarity the results of each of the questions will be presented separately, and without further elaboration.

Finally, in Chapter 7, the findings are explained in detail and possible explanations for the findings will be discussed. A brief synopsis of the question and hypotheses of each of the questions will begin each section. Implications of the research will be highlighted, and the limitations of the research described. This last Chapter will also give an indication of future research directions leading from the research.

1.2: Significance of This Study

The next section discusses some key issues that have influenced the questions addressed in this study. The importance of these issues is highlighted in relation to the need for early identification of women who may experience a mild to moderate mood disorder around the time of childbirth.

1.2.1 Issues in Defining PND

Since the coining of the term of Postnatal Depression (PND) some 30 years ago (Dalton, 1971), researchers have attempted to determine whether PND is a distinct syndrome. Evidence for the concept of PND as one specific disorder has been
inconclusive (Whiffen, 1992). Nevertheless, researchers have continued to seek confirmatory evidence of a common constellation of symptoms to explain the psychological and emotional distress experienced by some women, following the birth of a child. As yet, there is little consensus (Brown, Lumley, Small, & Astbury, 1994; Green, 1990). One relevant issue in clearly defining PND is the varying times at which assessment has taken place, ranging from as early as one week after the birth to 14 months (Affonso, Anindya, Horowitz, & Mayberry, 2000; Dennerstein, Lehert, & Riphagen, 1989; Watson & Evans, 1986). There are important implications related to the inconsistency of these varying timeframes (Green, Coupland, & Kitzinger, 1990). In the early weeks following the birth, these include the potential for confounding of possible contributing factors, by other transient problems such as “The Blues”, or even possibly other disorders, such as Post Traumatic Stress Disorder (PTSD) (Ballard, Stanley, & Brockington, 1995; Czarnocka & Slade 2000). At the other end of the spectrum, new stressors, unrelated to the time around the birth, such as family death, loss of employment, or other life stressors (Kumar & Robson, 1984) may confound attempts to discover the true aetiology of the syndrome currently defined as PND.

The role that various factors play in the onset of distress around the time of childbirth, and when they have an influence, therefore requires further clarification. Some researchers have provided limited evidence for a biological basis to PND (Harris, 1994; O’Hara, 1995). Others have established that various social factors have some role in the onset, and prevalence, of this syndrome (Brown & Harris, 1978; Cutrona & Troutman, 1986). Various findings such as these highlight some uncertainty as to whether PND is a mood disturbance specifically related to the time around childbirth, or is a new or recurring disorder, linked to other previous life events (Cooper & Murray, 1995). Indeed, researchers continue to argue this question.

Some researchers have offered evidence to suggest that the months following the birth of a baby are the greatest risk period in the life of a woman, for the onset of a mental health problem (Brockington, 1996; Cooper, Campbell, Day, Kennerley, & Bond, 1988; Dennerstein et al., 1989). Others have claimed that mood disturbances in the ante and postpartum periods are no more common than at other stages in women’s lives (Cox, Murray, & Chapman, 1993; Kumar & Robson, 1984; O’Hara, Neunaber, & Zekoski, 1984). These opposing views highlight an important issue that may be related to differences in findings on PND causation, prevalence and treatment, that is yet to be fully enunciated. This is whether mood disturbances, occurring at different times during
the puerperium, have the same antecedents and associated factors (Kumar & Robson, 1984; Warner, Appleby, Whitton, & Faragher, 1997). This is an important issue that will be explored in this study.

1.2.2 The Myths of Motherhood

To some extent however, the problems in clearly defining PND are possibly related to women’s own perceptions and expectations (Williams, 1992). Due to the commonly held cultural myths associated with motherhood (Maushart, 1997) and the stigma of mental illness labels (Byrne, 2001), some new mothers have denied the possibility that they may be suffering from depression, or other mood disorder, arising during their puerperal period (Holden, 1994). New mothers, experiencing problems, have preferred to blame issues such as irritability, low mood, and ambivalence towards the child, on sleep deprivation, or a difficult baby (Brown et al., 1994; Righetti-Veltema, Conne-Perreard, Bousquet, & Manzano, 1998).

The denial, or hiding, of negative thoughts and feelings, such as frustration and anger, may be due to women’s beliefs that these are inappropriate, or unseemly, for new mothers to think or feel (Maushart, 1997). Furthermore, some women may avoid contact with others who they perceive to be coping and thus experience self-imposed isolation (Nicolson, 1998). This withdrawal may have important consequences, as the lack of contact with others may exacerbate the stressors, related to negative feelings about new motherhood, that are already present. As this is at a time when women most need support, isolation can create additional psychological issues related to being a new mother (Day, Kane, & Roberts, 2000). In effect, assessment of the real psychological state of women in western cultures, prior to and following childbirth, may have been confounded by the inconsistent responses of women, unwilling to report or discuss their symptoms (Righetti-Veltema et al., 1998). While there is a body of knowledge regarding the issues of western culture and motherhood, much of the research in this area has been anecdotal. Further systematic examination of cognitive and affective distress associated with dysfunctional maternal attitudes before, during, and following the birth is required (Warner et al., 1997).

Alongside these issues, the role of other factors with a strong cognitive component that have been linked to depression at other times in the life-cycle, are yet to be clearly explained in distress that occurs around the time of childbirth. This may be because the unique stressors, associated with becoming a mother for the first time lead
to a dynamic process of cognitive shifts, that are yet to be fully explored. It is argued that these are underpinned by cultural expectations of motherhood (Oakley, 1979). An attempt to assess systematically maternal attitudes, and other cognitive factors in new mothers, will be a focus in this study.

1.2.3 Cognitive Processes

There is some relatively strong evidence that cognitive factors play a role in low mood following the birth of a baby (O'Hara, 1995). However, a very important question to be answered is whether cognitive dysfunctions, such as higher dysfunctional maternal attitudes, precede, or follow, the onset of an episode of a mood disturbance in the puerperium (Williams, 1992). There appears to be some evidence for both possibilities, but more research is required. Further examination of the role of various cognitive measures, and other factors linked to mood disturbance, assessed at different times during the puerperium, may provide some clarity to this question.

For these reasons, amongst others, cognitive changes, associated with psychological and emotional distress around the time of childbirth, have emerged as needing further attention and investigation (O'Hara, 1995). With a clearer explanation of the role of some of these factors, interventions that may be useful before, during, and following the birth of a baby can then be determined more precisely. This is particularly relevant at this time, as one of the key questions to emerge from recent research, is whether PND can be prevented by intervention in the antenatal period (Brugha et al., 1998; Elliott, Leverton, Sanjack, Turner, Cowmeadow, Hopkins, & Bushnell, 2000). This would require some ability to detect more accurately women who may be at risk of distress following the birth, in the antenatal period.

1.2.4 Impact on the Family

Irrespective of the contrary views regarding the aetiology and classification of PND, it is agreed that it is critical to the health and well-being of women, and their families, to deal with the adverse psychological consequences, experienced by some women, during their adjustment to motherhood (Brockington & Kumar, 1982). This has become of more concern as the evidence has accumulated linking the effects of PND, and other maternal distress, to other members of the family, as well as the new mother. It is now clear that any relatively long psychological disturbance, in the new mother,
can have important ramifications for the family unit (Delmore-Ko, Pancer, Hunsberger, & Pratt, 2000).

One issue is that more marital difficulties are experienced by mothers suffering psychological distress around childbirth as compared to non-childbearing women with depression (O'Hara, Zekoski, Phillips, & Wright, 1990). Furthermore, there is some recent evidence that PND can affect the unborn child. Moreover, dysfunctional mother-child relationships are linked to later behavioural problems in the children (Sinclair & Murray, 1998). It is therefore seen as increasingly important to prevent, or minimise, affective and psychological distress in women around the time of childbirth (Thorpe & Elliott, 1998). This is because of the known potential for longer-term, as well as the short-term, consequences of depression and other mood disorders (Sherrington, Hawton, Fagg, Andrew, & Smith, 2001).

1.2.5 Summary

Researchers and clinicians are calling for a clearer understanding of mood change that occurs after the birth of a child (Thorpe & Elliott, 1998). This thesis aims to explain further the role of cognitive factors in the prediction, onset, and process of low mood and distress, in first-time mothers, at various times during the puerperium. In this study, symptoms will be measured using the Edinburgh Postnatal Depression Scale (EPDS). “Women with a higher EPDS score” will be the phrase used in this study, to describe the participants who experience higher depressive symptoms and more distress. The use of this idiom will avoid any potential for incorrect definition of the participants. However, the term PND will be used in context, when referring to the work of other researchers, who have used this term to describe their cohort of participants.

This research will provide information that may contribute to further defining the factors associated with distress and low mood at different times after the birth. Furthermore, a systematic assessment of variables that have been linked to the onset of depression at other times in the life-cycle, such as self-esteem, locus of control (LOC), and attributional style, will provide additional important knowledge on cognitive shifts related to mood change. From the literature to date, it is unclear whether cognitive changes, observed during episodes of depression and other mood disorders, are a function of the current state of the individual, or are actual precursors to the episode. Given more specific information on predictors and associated factors, practitioners may be able to design prevention strategies and interventions, to better target postnatal
distress, PND and related disorders. This may minimise the potential for longer-term, chronic depression, and its impact on the family.

1.3: Operational Definitions

It is important that all readers understand the concepts that are referred to in this thesis, from the perspective of the writer. For the purposes of clarity, the key concepts and terms are briefly described. As these descriptions are limited, references for further information are provided. Other concepts and terms are articulated, throughout the thesis.

1.3.1 "The Blues"

Maternity "Blues" and Postpartum Psychosis, are the other most commonly defined categories of emotional disturbance, that occur during the puerperium (Beck, 1991). The first of these "The Blues", is a common phenomenon, thought to affect as many as 80% of women (Cutrona & Troutman, 1986). The onset and brevity of the symptoms distinguish it from other postpartum disorders, as it occurs within days of the birth, and its impact is generally limited to a few weeks (Cutrona, 1982; Gotlib, Whiffen, Wallace, & Mount, 1991). The symptoms include tearfulness, melancholy and emotional lability. These are considered to be associated with rapid hormonal changes, following the birth (Gotlib et al., 1991).

1.3.2 Postpartum Psychosis

At the other extreme, Postpartum Psychosis is the most severe classification of disorder, occurring during this period, and affects 0.01-0.02% of all women (Steiner, 1998). It can involve debilitating symptoms, such as delusions and hallucinations (Brockington, 1997). The severity of this syndrome often requires medical management by a psychiatrist and other mental health professionals, and a period of hospitalisation may be recommended (Pitt, 1968).

1.3.3 Depressed Mood

The term "depression" is widely used in the common vernacular to describe an individual's mood. Many people feel sad, low or fed up from time to time. People often say at these times that they are "depressed" (Gelder, Gath, Mayou, & Cowen, 1996).
Depression is therefore familiar to most people, and describes a state in which an individual feels unhappy or distressed. Sometimes the onset of depression is clear and dramatic, resulting from a specific incident such as death of a friend or family member, or the birth of a child (Beck, 1976). Grief and loss of ability to function normally for a time in these circumstances is a natural reaction. Depressed mood is therefore a term used to describe a state where some symptoms of depression are present. It is also a syndrome, a diagnosis, and a psychiatric nosological concept (DSM-IV, 1994). In this thesis, it is not used to describe a classification of mood disorder, such as major depression, which has specific criteria.

1.3.4 Classification of Depression

Depression as it applies to the syndrome that occurs at other times in the life cycle, is well-documented (Beck, Rush, Shaw, & Emery, 1979; Williams, 1992). Depression as a nosological concept has several classifications or types, as outlined in the DSM-IV (1994).

Classified under mood disorders, the depressive disorders are described by clusters of symptoms that can significantly interfere with effective day-to-day functioning. They can require medical, psychological, and pharmacological intervention. The types include bipolar disorders, major depressive disorder and dysthymia.

The symptoms include low mood for most of the day, sustained loss of interest or pleasure, anxiety, sleep disturbance, loss of appetite, lack of energy, feelings of worthlessness or guilt, relatively continuous difficulty in thinking or concentration, and sometimes, suicidal ideation. There are many common signs and symptoms, although each individual experiences depression in his or her own way. The presence, or absence, of a specific number and range of symptoms classifies each type of depression. The syndrome sometimes has a minimum time of onset, or continuation (DSM-IV, 1994).

In major depressive disorder, an episode of depressed mood or loss of interest is present for at least two weeks, with significant distress or impairment. The onset may occur over days or weeks. However, there may be "a prodromal period" (p.325) of weeks or months, in which the individual may suffer from anxiety and mild depressive symptoms, before the onset of a full major depressive episode. A specifier notes the level of depression. Mild episodes are classified in the presence of five or six symptoms. There is also consideration of the ability to function, and level of distress. Severe
episodes, without psychotic features, have most or all of the nine symptoms, while moderate episodes are somewhere between the two other categories. Depressive disorders not otherwise specified (NOS) are characterised by episodes of depressed mood, with significant clinical impairment, that do not meet the criteria for severity, or duration of two weeks.

1.3.5 Postnatal Depression (PND)

PND is not given a discrete set of diagnostic criteria, but is described in DSM-IV (1994) as a specifier of a mood disorder, with postpartum onset. The postpartum onset is defined as depression that begins within four weeks of childbirth (p.387). PND is more profound than normal feelings of sadness, or the maternity blues. It is a severe mood disorder that pervades a person’s life, for a period of at least two weeks.

A woman with PND, as with other forms of major depression, will experience either “clinically significant distress” (DSM-IV, 1994, p. 320) or “a diminished ability to function normally; and exhibit uncharacteristic symptoms” (p. 320). These symptoms must include either depressed mood, or loss of interest or pleasure in activities. Five of the following symptoms must also be present:

Changes in appetite or weight, sleep, and psychomotor activity; decreased energy; feelings of worthlessness or guilt; difficulty thinking, concentrating, or making decisions; or recurrent thoughts of death or suicidal ideation, plans, or attempts (p. 320).

Symptoms must not be the result of drug abuse, medications, toxin exposure, general medical conditions or normal bereavement. During pregnancy and early parenthood women commonly experience some of the physiological symptoms noted above. For example, new mothers are likely to have “alterations in sleep, energy, libido, appetite, and body weight” (Stowe & Nemeroff, 1995, p. 639). Clinical assessment of PND, then, requires further qualification of such likely symptoms. Since this study is using a lower EPDS cut-off than that recommended for the identification of PND, this term will not be used to define the condition of the women who participated in this study.
1.3.6 Antenatal Depression (AND)

Antenatal depression refers to the experience of “depression experienced during pregnancy” (Stowe & Nemeroff, 1995, p. 640). It is recognised as a risk factor for PND (Areias, Kumar, Barros, & Figueiredo, 1996).

1.3.7 Adjustment Disorder (AD)

Adjustment disorder is characterised by the onset of clinically important emotional or behavioural symptoms. These must be linked to one or more psychosocial stressors, and be activated within three months of the onset. To constitute a diagnosis, the symptoms will cause extensive distress that is more than may be expected, in the presence of the stressor(s). It will result in significant impairment to the functioning of the individual. The stressor(s) can be either a single incident, or may be due to a recurrent or continuous situation. However, bereavement does not qualify as a reason for a diagnosis of adjustment disorder. Once the stressor, or its consequences, has ended, the symptoms should abate within six months. The episode is considered acute if its duration is less than six months, or chronic if it persists for six months or longer. The adjustment disorder category is determined by the predominant symptoms that present with the disorder. These may be depression, anxiety, mixed anxiety and depressed mood, disturbance of conduct, mixed disturbance of emotions and conduct, or may be unspecified. It is important to ensure that before giving this diagnosis, other specific Axis 1 diagnoses have been excluded (DSM-IV, 1994).

1.3.8 Higher EPDS Scores

The Edinburgh Postnatal Depression Scale (EPDS), as used in this research, measures the current mood of the individual. Higher EPDS scores reflect higher depressive symptoms, or subthreshold depression (Piccinelli, Rucci, Ustun, & Simon, 1999). However, higher EPDS scores do not necessarily indicate a discrete, diagnosed depressive disorder. In the original validation study of the EPDS with 84 participants (Cox, Holden & Sagovsky, 1987), it was found that a score of 12/13 identified all of the participants with a definite diagnosis of major depressive disorder, using the Research Diagnostic Criteria for depressive illness. This cut-off also identified two of three women assessed as having probable major depressive disorder. However, four of 11 participants with a definite diagnosis of minor depressive disorder were false negatives. Eleven participants were also false positives. Nevertheless, six of these were
experiencing some depressive symptoms. Where it is considered important for actual cases not to be missed, the 9/10 cut-off was recommended. Furthermore, Cox et al. (1987) also suggested this cut-off, for use in research purposes. In a later paper, Cox (1994) also recommended the 9/10 cut-off "for the first stage of screening in a community study" (p.121). Further support for the use of a cut-off of 9/10, to identify all women experiencing some distress, comes from the NHMRC systematic review of published literature on PND (2001). This stated:

Most authors suggest that 10 is the optimal threshold if the EPDS is being used as a screening tool in a two-stage assessment process, as this results in sensitivity rates of 91% to 100% and specificity of 80% to 84% (p. 86).

Lee et al. (1998) also used a cut-off of 9/10 in a validation study of the Chinese version of the EPDS. They asserted, "it has been shown that more than 50% of cases of first onset major depression, are associated with an earlier presence of minor depression" (p. 4). There is other evidence that subthreshold depression is as important as clinical depression and has greater public health implications (Piccinelli et al., 1999). This links to the point, highlighted in the DSM IV (1994), that subthreshold, or prodromal symptoms, might precede the onset of a major mood disorder.

For these reasons, a cut-off of 9/10 was chosen for this study, and "higher EPDS score" is classified as a score of 10 or more on the EPDS. However, for interpretation of the findings, it is important to be aware that some women with higher EPDS scores may not have a clinically significant depressive disorder. Nevertheless, they will be experiencing some distressing symptoms. This distress, though not necessarily severe, will require some acknowledgment and recognition by those assessing and caring for new mothers in the hospital and community setting. However, it is also important to note that more depressive symptoms, as measured by the EPDS, may be relatively short term (though more than one week). Furthermore, the level of distress experienced by some women with higher scores, may not require any specific intervention, depending on the individual and her circumstances (Holden, 1994).

This particularly applies to the antenatal period. A validation study for the use of the EPDS, in the antenatal period, found there were more false positives with the cut-off of 12/13 recommended for postnatal screening (Murray & Cox, 1990). This may be due to more women experiencing additional stressors during the pregnancy, as part of the normal process of adjustment. However, in the current study, the focus of the research is
on cognitive changes linked to postnatal, rather than antenatal, depressive symptoms and distress. Therefore, while the potential for more false positives was recognised, on balance it was determined, that a cut-off of 9/10 antenatally, would be more likely to identify those women who may be experiencing "prodromal" symptoms. Awareness of this would be important in assessing cognitive processes that may precede the onset of later depression. Furthermore, there were ethical considerations, related to the requirements of the hosting hospital complex (Joondalup Health Campus). One of their concerns was to ensure all women experiencing distress were offered further assessment and support. Therefore, it was determined that a consistent cut-off (9/10) should be utilised at each time in the study.

In summary, PND is recognised by the nomenclature as a specifier of mild to moderate depressive symptoms, occurring within four weeks of the birth. It is also the commonly used term to describe various constellations of symptoms occurring in the postnatal period. However, for the purposes of clarity and clear definition in this study, participants who were found to have "higher EPDS scores" at any of the times of measurement are described in these terms.

1.3.9 Past History of a Mental Health Problem

In this thesis, a past history of a mental health problem is defined as a mental health problem occurring prior to the pregnancy. Importantly, participants were asked to confirm whether a GP, Psychiatrist, or Psychologist diagnosed the episode. Personal reports of a previous mental health problem, without a formal diagnosis, are not included in this definition.

1.3.10 Family History of Mental Health Problem

A family history of a mental health problem is defined as a mental health problem experienced by another family member that was diagnosed by a GP, Psychiatrist or Psychologist. Again, anecdotal reports, without a formal diagnosis, are excluded.

1.3.11 Cognition

Cognition is a broad term used to describe mental behaviours that involve abstract concepts, and complex rules. The basic processes of thinking involve perceiving, attending, learning, and remembering. These processes occur mainly inside
the person’s head and are therefore “cognitive” (Reber, 1995). More complex cognitions include; concept formation, problem solving, reasoning, organising, perception, decision-making, language, intelligence, and creativity (Teasdale, 1996). Mental schemas, representations, and other concepts, based on personal and vicarious (observed) experiences, are encoded and stored as memories. They provide a shortcut for rapid assimilation of new information into previously identified and named categories. This assists the memory, in its processes of encoding, storage, and retrieval, of new and known information. Some cognitive schemas, regarding interpretation of the world, and assessment of self, are socially constructed. It is argued others may be linked to a genetic predisposition. This preconditioning may bias perceptions (Roy, Neale, & Kendler, 1995; Sullivan, Neale, & Kendler, 2000).

### 1.3.12 Cognitive Dysfunction

Cognitive dysfunction is the term used to describe distorted thinking, due to some malfunction of the normal cognitive processes. This may be chronic (Teasdale, 1996) resulting from long-term maladapted logic. It may be linked to inappropriate external reinforcement for behaviours that have led to the use of flawed concepts in problem-solving. In contrast, dysfunction may also be caused temporarily, due to stressors that trigger neuro-chemical disruption and interfere with normal cognitive functioning. It is argued that this occurs during periods of acute stress (Williams, 1992).

### 1.3.13 Emotions

Emotions are subjective internal states that have biological, cognitive and social components. The reciprocal relationship, between emotion and cognition, is not clear (Blackburn & Twaddle, 1996). It is thought that arousal may precede, or follow, appraisal. However, when something is appraised as stressful, emotions are invoked (Allen, 1983). For the purposes of this thesis, it is considered that emotion and cognition are intimately related (Teasdale, 1996) when responding to a stress-related situation.

### 1.3.14 Maternal Attitudes

There is no universally accepted definition of this concept (Olsen & Zanna, 1993). For the purpose of the thesis, maternal attitudes are measured, and thus, defined, using the Warner et al. (1997) measure. This assesses “cognitions relating to role change, expectations of motherhood and expectations of the self as a mother” (Warner
et al., 1997, p.351). High expectations are described as "maladaptive" (Warner et al. 1997, p.352).

1.3.15 Social Support

Social support is a measure of the quantity and quality of assistance available to individuals, from their various social networks (Areias et al., 1996; Pascoe, Loda, Jeffries, & Earp, 1981). A number of scales have been developed to measure social support (Perrin & McDermott, 1997). This may be assessed in terms of actual support received, perceived support available, or a combination of the two (Pascoe et al., 1981).

Social support has consistently been identified in the literature as being among the factors most commonly associated with PND and other mood disorders, around childbirth (Areias et al., 1996; Cooper & Murray, 1997; Stowe & Nemeroff, 1995). The type of social support that is available is also relevant. It has been found that support from the partner and mother are the most important, while more tangential or marginal support is not as critical around the time of childbirth (Stuchbery, Matthey, & Barnett, 1998). Social support, in this study, is defined as the combination of instrumental and emotional support that the woman perceives is available to her. It is therefore more related to the perceived quality, rather than the quantity, of supports.

1.3.16 Worrying Style

Worrying style is the term used in this thesis to describe the extent to which new mothers rate themselves as worried, over a combination of everyday stressors. These stressors included: worry over housing; debt; not having enough money for basic necessities; having too many responsibilities; concerns over the health of a family member; being married or single; difficulties with partners; feeling safe in the neighbourhood; worry over work; and not enough time to do what one wanted. In this study, higher worrying style was most strongly and significantly correlated, before the birth, with lower self-esteem and negative attributional style. In this thesis, a higher worrying style is defined as reflecting a cognitive process, involving worry or rumination over perceived stressors. This is measured by the Everyday Stress Index (ESI) (Hall, Williams, & Greenberg, 1985).
1.3.17 Feeling More or Less in Control

The concept of "control" is generally measured using instruments such as the Rotter LOC scale (Green et al., 1990). This scale has 23 items. However, there was some indication from previous research that women who were pregnant may have difficulty with instruments such as the LOC, or ASQ (D. Wilmoth, personal communication, May, 1999). Therefore, in this study a one-item question in a Likert-type format was included, to provide a general indication of women's perceptions of having more or less control over their lives, so that this could be compared across all participants. In the antenatal period, this was asked about the period since their pregnancy. After the birth, the same question was asked about the period since the birth.

The use of a one-item scale is increasingly being found to be a useful and simple way of identifying key issues. This is important for those, who, for various reasons such as severe physical or psychological illness, may have difficulty in completing more lengthy and complex instruments (Chochinov, Tataryn, Dudgeon, & Clinch, 2000). For example, single-item screening instruments for mood disorders, developed by Wilson et al. (2000) have been modelled on the SADS interview. These are easily administered to patients in the palliative phase of an advanced malignancy.

1.4: Social and Environmental Context

In order to present the local context, and to provide an understanding of the socio-economic, political, and cultural environment, of the women who participated in the study, the following section briefly describes Western Australia (WA). This will be followed by an overview of the local area, where the women participating in the study chose to have their babies. There are three sections. In the first, a brief overview of WA and its history and population will be provided. Secondly, the profile of the Cities of Wanneroo and Joondalup are highlighted, and an overview of the hospital campus where maternity services were provided to the participants is described. Finally, the role of women, in both the public and private domains during the development of WA, is also revealed.

1.4.1 Geographical Context

Australia is the largest island in the world and the smallest continent, with an area of 7,682,300 square kilometres. It is 32 times the size of the British Isles, one and a
half times the size of Europe, and roughly equivalent to the United States, without Alaska (Blackhall & Stubbs, 1990).

Figure 1. Map of Australia indicating the relative size of Western Australia, and location of Perth.

Australia is made up of six States and two Territories, of which WA is the largest, with an area spanning 2,535,500 square kilometres (32.9% of the total). While WA has the fourth highest population in Australia, numbering 1,726,095 (Codde, Roberts, & Mc Gill, 1997), it is still the least densely populated. This is mainly due to the terrain, as large tracts are desert that in places are uninhabitable. WA has the Indian Ocean to the west, with 12,500 kilometres of coastline, and the Gibson and Great Sandy Deserts to the east, where it borders the Northern Territory and South Australia (Dawson, 1990). The climate varies enormously in different parts of the State. The north is tropical, with a monsoon season in summer and a warm dry season in winter. The south of the State, where the majority of the population resides, has a Mediterranean climate (Blackhall & Stubbs, 1990).

Until recently WA was predominantly a very remote and sparsely populated region that was only settled by migrants from Britain in the 19th century, though there were known indigenous inhabitants as early as 30,000 years ago (Cockman & Daniel, 1979). Western influence is much more recent. While it is known that WA was noted and briefly visited by vessels from other countries as early as the 17th century (Dawson, 1990), the first documented settlement of non-indigenous people was in Albany, in the lower south-west of the State, in 1826. During the early years of settlement, WA was sparsely populated due to the isolation, rugged conditions and difficulties faced by the
early settlers. However, during the period 1850 to 1868, approximately 10,000 convicts were sent to WA to provide the labour required to begin farming and build basic amenities. Despite this support, development of the colony remained slow and almost stagnant, until the discovery of gold in the Kimberley region in 1886. This was followed by a find in Kalgoorlie four years later (Blackhall & Stubbs, 1990). These discoveries led to the gold rush, and the coining of the term "the golden west" (Blackhall & Stubbs, 1990, p.156). Unfortunately, the exploration and mining of gold was limited, due to the lack of technology available. Once the gold became difficult to obtain, in the early 1900s, the popularity of WA waned, with little further development until the end of the Second World War.

1.4.2 The Local Region

Perth, the capital of WA, is in the lower region of the State, and was originally developed by the British, alongside the Swan River. It lies close to the Indian Ocean, where it was proclaimed as a colony in 1829 (Dawson, 1990). Perth has many new beachside suburbs both to the north and the south. Many of these were developed over the last 20 years, in response to the availability of better roads and transport. Two of the new areas, 24 km north from the metropolitan centre, are the City of Joondalup and the City of Wanneroo. Both of these were formerly combined as one, and known, until 1999, as The Shire of Wanneroo.

The origins of Wanneroo date back to 1834, when John Butler led the first exploration to the area (Cockman & Daniel, 1979). The population of Wanneroo grew slowly at first, as there was little development during its first hundred years, with a population of just 527 in 1942. This grew to 1,311 by the early 1950s. However, as the beaches and quality of the soil became known, more roads were built for both market gardens and residential developments (Cockman & Daniel, 1979).

Recent changes to the local government structure, as well as the development of many other health and community services in the area, reflect the fact that the newly created Cities of Wanneroo and Joondalup are the fastest growing in Australia. The population of the Wanneroo district was approximately 51,000 in 1975 (Daniel & Cockman, 1979). This grew to 100,000 by 1982. While it took over 100 years to reach a population of 100,000, it was only another six years before the total population was 150,000 (Codde et al., 1997).
Since this region is one of the fastest growing in Australia, many of the suburbs have only been developed in the last 10 years. This is reflected in recent population growth. By 1995, the population of the Wanneroo Shire was 205,314, and this was projected to grow by more than 45,000, to 250,740 in 2002. These increases had a major impact on this relatively small region. Between 1986 and 1995 the population of the northern suburbs increased by 53%. Currently the population of the area is approximately 13% of the State total, and this is projected to increase to 14.1% by 2005 (Codde et al., 1999).

The area, therefore, has little history as a developed community prior to the 1980s. Many of the oceanside suburbs that now comprise the Shires of Wanneroo and Joondalup were formally pristine areas of natural bush and beaches. Many of the northern suburbs of Perth are inhabited by a comparatively large percentage of new residents from other parts of Australia and overseas (ABS, 1996). The demographic profile of the residents reflects this mobility. The median age of the population in 1995 was 31.1 years, with 26% under 15 years of age. Only 45.5 % of the people were at the same address as five years ago. Almost a third (34.9%) of the population was born overseas, with 23% predominantly from the United Kingdom and other English-speaking countries (Canada, New Zealand, South Africa and United States of America). The remainder originated from Non-English Speaking Backgrounds (NESB). Western Australia is also a common destination for migration by people from the Asian region, and 9.9% of residents do not speak English in the home (ABS, 1996).

In 1996, 94,327 people residing in the Shire of Wanneroo were employed. Of these, 31,901 were in professional, management or related occupations (34%) with total unemployment of 7.5%. However, almost half (46.2%) of the single-parent families (12.5% of the total families) were recorded as not working, or were unemployed (ABS, 1996).

The relatively recent development of Wanneroo has also had a positive impact on the quality and standard of accommodation. In the Shire of Wanneroo the vast majority of people reside in single detached dwellings (51,552 homes of the total of 55,268). Many of these would be less than 15 years old. In contrast to many other cities nationally and internationally, only a small percentage of the dwellings in the locality are flats, apartments or units. None of these unit blocks are more than three-storeys in height, due to local government regulations. The vast majority of people therefore live in privately owned detached dwellings, that they either own or rent (ABS, 1996).
1.4.3 The Role of Women During the Development of WA

This section provides a historical context to the taxonomy of motherhood in WA, as it evolved during the 19th and early 20th century. It is proposed that the impact of the values and mores, perpetuated by the Victorian society of that period, continue to have implications for the mental and physical health of new mothers. During the period of early settlement, WA was predominantly populated by men, at a ratio of almost 2:1. This male dominated culture was strongly patriarchal, and women had a subordinate position in society (Clarke & Spender, 1992). A woman's place was very much in the home, where she was required to serve her husband (Chase, Krantz, & Jackson, 1999). It is known that breaches of the very strong moral code that underpinned the societal norms of the late 19th century were often punished by the family, particularly husbands and fathers (Harman, 1993). During this period, it was claimed that women were incarcerated in asylums for offences such as drunkenness, prostitution and venereal disease. Most were from working class backgrounds, and as many as 30% were never discharged (Harman, 1993). The first institution for the insane was a warehouse at the port of Fremantle, used to house some of the first convicts to the colony in 1850. This was followed by the construction of the Fremantle Asylum, in 1865 (Harman, 1993).

With the constant threat of incarceration for contravention of the very strict standards, single women had few rights, and once married there was little chance of independence (Clarke & Spender, 1992). Women married young and most had a child every two years until menopause, with six being the average number of children per family in 1890 (Wallace, 1993). Most children were born at home, with few midwives to assist. The lack of hygiene, and puerperal fever, led to many problems, including the deaths of both women and babies. One female was recorded as having four babies and eight stillbirths in 10 years (Chase et al., 1999). Married women were not able to retain property, nor were they legally able to be the guardians of their children. They had less education, and were excluded from professions such as law, medicine and politics (Dugan & Gunter, 1996a).

Women recognised that they needed position power to achieve real change to their status and influence. As the colony grew, the views of a few strong women began to be felt in the public arena. In 1892, the Women's Christian Temperance Union (WCTU) was formed, with women such as Edith Cowan and Roberta Jull leading the group. Their aim was social reform, to improve the status and rights of women, particularly with regard to the vote (Chase et al., 1999). Some men of the time also
attempted to advocate for women’s political rights, but others, including the then Premier, Sir John Forrest, were not convinced (Chase et al., 1999). This was reflected at various times by comments from Members of the House. One MP used the counter argument that women were “weak, delicate and incapable of rational thought” whilst another believed:

*Women are not wanted in politics or on the platform... but I know where they are wanted – in their own homes and in the homes of the poor, because that is where women’s mission is and ought to be, instead of talking balderdash and seeking political prominence and positions for which they are not intended by nature* (Chase et al., 1999, p.5).

Despite many setbacks, women continued to pursue their goal of suffrage, holding meetings in main centres through the late 1890s, and gaining increasing public support for their cause. The Constitutional Amendment Act, giving women the vote, was proclaimed on 18th May 1900. WA was one of the first States in the world to recognise this right in law. Politically this was expedient, as it meant Western Australians would have more voices in the impending vote on the Federation of Australia (Dugan & Gunter, 1996b). However, it also provided the foundation for women to begin to assert their independence in other ways.

In the first few years of the 20th century, as documented records began to be systematically maintained, there was a noticeable decrease in the birthrate throughout Australia, including WA. This caused great concern to the authorities (Wallace, 1993). The sparsely populated State urgently needed an increase in population. However, there was some evidence that women were using contraception, obtained from overseas. In a State that desperately needed workers, this was regarded as “obscene” (Daniels & Murnane, 1989, p.76). The population in 1903 increased by only 1.07%, and with others leaving there was a population decrease of approximately 10,000 people. An Australia-wide Royal Commission into the fertility issue in 1903 concluded that the decline in family size was caused by “selfishness and materialism” (Wallace, 1993, p.113). The reason for the decrease of 1903 was later reviewed by government statisticians, who noted that lowered fertility, was at least partly due, to poor physical health of the women of the time (Daniels & Murnane, 1989).

In 1907, the introduction of the basic wage in Australia occurred, with women securing 54% of the amount awarded to the male population. This, and other continuing inequalities, prompted the Women’s Service Guild to be formed by Edith Cowan and
others in 1909. The aim of this group was equal rights and increased education for women. Over the next few decades, the influence of women, through their votes, made some inroads towards a more equitable society in WA (Chase et al., 1999). However, the underlying tension, between the rights of women in the public arena, and the collective societal concerns over the impact of increasing independence on population growth, continued (Wallace, 1993).

Throughout the first half of the 20th century, there were continuing underlying concerns about the population. The birth rate had fallen from 42 per 1000 in 1860, to just 18 per 1000 by 1940. In 1946, a study was undertaken by a medical practitioner to determine some of the issues linked to this decrease. It was concluded that the main causes were the conscious use of contraception and abortion, for reasons such as economic hardship, housing, space between children, war, and poor psychological or physical health (Wallace, 1993).

The Second World War had an impact on the population from another source, as displacement of many people worldwide, led to a resurgence of interest in WA by overseas migrants. This was partly facilitated by improved transport and communications, together with the discovery of oil in 1953 (Blackhall & Stubbs, 1990). Many of the people who came to WA during this period were from European countries, such as Greece and Italy and, with a new influx of migrants to stimulate the economy, financial circumstances improved and population rates again increased. This was sustained until the mid 1950s.

However, there was increasing recognition amongst migrants, as well as other established WA residents, that smaller families meant increased prosperity, and the use of contraception continued. For unmarried girls, in circumstance where contraception failed, abortion was widely used as a means of preventing motherhood outside of marriage (Murray, 1993). In a patriarchal society where single mothers, and many other young women, were still incarcerated for moral reasons, without having committed a criminal offence (Bosworth, 1993), discrimination between the sexes continued (Chase et al., 1999). Many key issues regarding equity and social justice therefore remained unresolved.

It was the availability of new forms of contraception, such as “The Pill”, in the 1960s that facilitated a new era of change, despite widespread opposition from religious organisations (Grayston, 1993). The maternal mortality rate began to be formally recorded around this time, and was found to be 41:100,000 in 1964-1966 (National
Health and Medical Research Council (NHMRC), 1987). Two new agencies, promoting women's rights and providing advocacy on issues, such as maternal health and contraception, were The Harvest Guild (1972) and The Women's Electoral Lobby (1975). International Women's Year in 1975 heralded the United Nations Decade for Women. This paved the way for further local, as well as international, initiatives over the next two decades.

However, women's rights regarding motherhood and personal choice were still strongly influenced by political and moral constraints. Many people openly expressed ongoing concern over the ever-decreasing family size, claiming this was linked to women exerting their rights to a career and independence (Murray, 1993). By the 1980s, fertility rates were 10% below replacement level, causing major consternation to policymakers, as well as the general public:

*If this continues we will end up a minor group in a coloured country... This situation is largely caused by the desertion of the home, and of mothering, for the workforce* (West Australian, 10th December, 1985, p.8).

As transport improved, WA became less isolated and migration from overseas and interstate increased, with a large influx from 1980 to 1985. This possibly weakened the influence of the very conservative patriarchal culture that had dominated the State. Moreover, the number of women gradually outnumbered men in WA (ABS, 1996). Societal values regarding women's rights were changing, and the establishment of the Women's Advisory Council to the Premier (1983) indicated women were finally to have a real voice close to the source of power (Chase et al., 1999). Furthermore, there were improvements in mortality rates, during this period of increasing feminism. In 1987, the mortality rate in Australia was reduced more than threefold. The rate decreased from the 1960s, when it was 41:100,000, to 12:100,000 (NHMRC, 1991).

In 1985, the policy of incarcerating females for moral reasons was stopped at last, largely as a result of a major review that included oral evidence of young women describing the treatment received in institutions (Carter, 1992). This caused a major uproar in the media, and other major changes soon followed. These included new legislation, such as the Equal Opportunity Act (1987), which finally legalised women's rights to equal pay, in comparable employment (Chase et al., 1999). This legislative ruling finally gave women the right to independent means, and more opportunities and choices.
Nevertheless, abortion has never been legalised in WA (Grayston, 1993). This highlights the point that, until very recently, WA has traditionally been a very conservative patriarchal State, with strong values and standards underpinning the traditional mores of motherhood. Arguably, with a small population that aspired to growth and development, these strong cultural motherhood norms were possibly even more embedded in this isolated society than other western cultures. The socially created pressures on women, through the generations, to have large families, may have been the basis for the lack of societal acknowledgment of some of the negative events, surrounding motherhood. This perpetuation of positive expectations around motherhood is known as "the myths of motherhood" (Maushart, 1998). For women in western cultures with little knowledge of the realities of motherhood, "negative" thoughts, feelings and behaviours, not in keeping with the idealised model of motherhood, may exacerbate guilt in new mothers. These thoughts and feelings are claimed to be the basis for some of the psychological issues experienced by new mothers (Nicholson, 1998).

1.5: Recognition of PND in Australia

As the population increased, through migration from overseas and interstate, concerns about childbirth rates, and the reasons for the decreasing population, were of less concern in WA. However, the issues related to childbirth, and women's health, continued to cause consternation to the more educated members of society. Until the 1980s, mild to moderate PND and related disorders were not known or understood as a problem in the medical, or general, community (Carter, 1992). However, overseas researchers seriously began to explore the possibility that this was a distinct syndrome in the 1960s (Brockington & Kumar, 1982). As the body of knowledge, on a range of physical and psychological problems linked to childbirth, began to grow, there were political ramifications in Australia. The late 1980s saw three Australian State Governments (WA, Victoria and New South Wales) commission reviews. These examined the health services, provided to women, during the time of childbirth (Carter, 1992). These investigations brought the mental health of new mothers into the public arena. The raised awareness brought the psychological problems of women to the attention of the funding bodies (Brown et al., 1994). In response, the Research and Development Grants Advisory Committee (RADGAC) under the auspices of the Australian Commonwealth Government, held a national workshop in 1992. The purpose of the meeting was to review and highlight the current research, and identify further
needs in the area of PND, as part of the development of a national mental health policy (Carter, 1995).

The outcome of this initiative was the first substantial amount of direct funding for education and training on PND. This commenced nationwide in 1994, and was allocated over three years, until 1997. The grant was provided to document the prevalence of childbirth stress and depression in WA, and make recommendations for the future (Pope, 1995). The outcomes of the funding included State-wide education in WA on PND and related mood disorders. An important goal was training on the use of the EPDS (Cox et al., 1987) as an assessment tool. However, treatment models were not included on the agenda.

This was a vital omission, as identifying interventions that may be effective in prevention is seen as increasingly important (Elliott et al., 2000). The early detection and management of the disorder is also now emerging as an issue of high priority (Cooper & Murray, 1998; Elliott, 1989; Thrup & Elliott, 1998). This has arisen as a result of studies demonstrating an adverse impact on the behaviour of children and even adults whose mothers may have suffered from PND (Raine, Brennan, & Mednick, 1997). These findings point to an urgent need to minimise the outcomes of mood disorders, such as PND, on women themselves. It is also important to acknowledge that it also affects relationships and attachment, and therefore impacts upon the mother-infant dyad.

1.5.1 Recognition of PND in WA

With few guidelines in the literature on useful models, available specifically for the management of disorders such as PND, the interventions provided in WA, prior to the late 1990s, were developed in a piecemeal fashion. They were limited, with no discrete funding to support their development (Pope, 1995). The services available were mainly provided by concerned generalist nurses, and allied health staff, located in small Women’s Health Centres in the suburbs (J. Leeman, personal communication, November, 1999). These practitioners dealt with mood disorders as part of a portfolio, covering the many issues that women initially presented with at various service centres. These ranged from domestic violence to premenstrual tension (PMT). During their work, experienced professionals began to recognise that new mothers, who often described their initial problem as an unsettled baby, were actually experiencing personal distress. The models of treatment, used to manage these emerging problems, were
generally those available for other forms of depression, such as basic counselling and support. Some GPs were also prescribing medication, should women agree to it (J. Forward, personal communication, 16th December, 2000).

However, in the 1990s, the literature on therapeutic groups as a treatment for depression gradually became available. This therapeutic approach was recognised, by women’s health practitioners, as a useful way to manage the issue of under-resourcing in the community. New group models were devised, specifically targeted to manage women suffering from PND, based on the work of Lewinsohn (1974) and others, including Beck (1976) (J. Leeman, personal communication, November, 1999). Eventually, these group models were shared across the women’s health network, and the content was modified, incorporating new components, as the needs of women became clear over time (J. Forward, personal communication, 2000). The success of these evolving management strategies was very difficult to gauge, as little work was conducted on evaluating their efficacy (NMHS, 1997).

Amidst the growing awareness of PND as a distinct issue, a small pilot project commenced in 1994/5, servicing women in the northern suburbs of Perth. This program, now known as “New Beginnings”, was the first dedicated service for the identification and treatment of PND to be funded by the Mental Health Division, under the auspices of the Health Department of WA (NMHS, 1996). Statistics, in the first full year, indicated approximately 24% of women, screened antenatally, scored higher than the 12/13 cut-off (NMHS, 1997). Following the precedent set by its inception, and a growing focus on the issues of PND, new funding, specifically for PND assessment and treatment services, was gradually allocated to a range of agencies in metropolitan and regional centres of WA. Finally, in 2001, PND was highlighted as a priority area, and allocated a discrete budget of $900,000 by the Mental Health Division. This was to be spent over the next four years (L. Byrne, personal communication, September 15th 2001).

1.5.2 Local Screening for PND Antenatally

As a result of these early attempts to support new mothers, further initiatives evolved. Since July 1999, women delivering their babies at Joondalup Health Campus (JHC), have been systematically screened, using the EPDS, at their first visit to the antenatal clinic. Women considered to be at risk (either because of the EPDS score or their medical history), are monitored during their confinement. They may be referred for further assessment or treatment by a psychiatrist, psychologist, or other relevant
For the purposes of the study, it was important to identify the number of potential participants who could be recruited to the study, and the size of the sample required. The recorded number of women found to have higher EPDS scores antenatally in 1999/2000 is not available in the public domain. However, it was reported that approximately 30% of women, screened antenatally in the JHC clinic, had scores of 12 or more on the EPDS (Manager, Mental Health Unit, Joondalup Health Campus, personal communication, January 29th 2001). This cut-off is slightly lower than that recommended from validation studies, and may be one of the reasons that the at-risk group appears larger than findings in some other studies (O’Hara & Swain, 1996). This discrepancy highlights the issue of reliable estimates of incidence, both antenatally and postnatally.

With approximately 1200 primiparous and multiparous women, attending the JHC antenatal clinic each year, these data would equate to approximately 400 women with scores above the cut-off in 1999/2000. Approximately 160 of these may have been primiparous. As well as the issue of predicting actual incidence of AND, it is possible that some women recovered spontaneously, between the antenatal and postnatal period. Some women may only experience depression before the birth, as noted by Green and Murray (1994). Moreover, since follow-up screening for PND was not conducted consistently after the birth, the actual incidence of PND is unclear.

**1.5.3 Local Screening for PND Postnatally**

As is the practice in other parts of Australia (Williams, 1992) and overseas (Holden, 1994), Child Health Nurses (CHNs) together with GPs are the key practitioners responsible for liaising with the mother and child in the community, during the early months of motherhood. Until recent times, Child Health services were the primary contact for new mothers. However, this service traditionally focused on the physical health and development of the infant and child, rather than the psychological well-being of the mother (Williams, 1992).

The focus in WA began to change following State-wide workshops on PND in 1995/96. These meetings raised the profile of the previously unrecognised problem
This initiative, together with the inception of a small discrete service, specifically for women with PND (New Beginnings), resulted in some CHNs in the northern suburbs screening women routinely, using the EPDS. However, screening was not mandatory, and there was little consistency in procedures to identify psychological or emotional disturbance in new mothers, until very recently (NMHS, 1999). Assessment processes varied widely from clinic to clinic, depending on a range of issues, including ethical concerns about where to refer women if identified.

However, as awareness of the issues grew, more practitioners began to use screening techniques to identify PND (NMHS, 1999). Sixty percent of CHNs participated in a survey (1999) on the use of the EPDS in the northern suburbs. Of those who responded, 83% stated that they regularly used the screening tool (NMHS, 1999). However, the use of the tool varied widely. The numbers of women identified as suffering from PND in 1999 ranged from 2 in one setting to 28 in another, with an average of 5-6 per clinic. Reasons for not screening included ethnicity and non-attendance of the women (NMHS, 1999).

1.5.4 The Role of General Practitioners in PND

The role of GPs, in the identification and management of PND, is a critical one (Williams, 1992). The policy of CHNs is to encourage women, suspected of having the symptoms of PND, to visit their own doctor (NMHS, 2000). Furthermore, some women prefer GP care for immunisation and routine screening of the baby. However, GP statistics on the numbers of women diagnosed as having PND are not maintained centrally. As well as having responsibility for medication, and any other treatment that the GP feels it is appropriate to prescribe, the doctor is also pivotal in linking patients to other specialist agencies, as well as coordinating the medical management (M. Jones, personal communication, June, 2000).

While GPs have a key role in referring to other agencies and encouraging women to utilise additional services, the level to which this occurs depends very much on the individual GP. This is related to his or her knowledge, expertise, and use of referral links. In a relatively recent initiative, a GP was appointed as the representative on PND for the Osborne Division of GPs. This gave formal recognition to this problem locally (Osborne Division of GPs Newsletter, September, 2000). Apart from the medical services outlined, there are few organisations, that are able to offer information, on the number of women requiring support for PND and related disorders.
1.5.5 The Role of Non-Government/Private Services in PND

Additional information on the numbers of women from the northern suburbs who may suffer from PND comes from two services in Perth that support new mothers. Womens Healthcare House (WHH), is located in Northbridge, close to the City of Perth. This service is widely used as a specialist service by practitioners in the community who identify or suspect PND. The service records indicated 287 occasions of service related to PND in the last six months of 1999. Approximately half of the women referred were predominantly from the catchment area of the JHC. Ten women had some extended group support in that period, accounting for approximately 100 occasions of service, with others mainly having telephone contact. More detailed statistics are unavailable (NMHS, 2000).

Ngala is a private organisation providing telephone contact, day-stay, and residential programs, for women having mothering issues. Approximately 35% of the 20,000 calls managed in 1999/2000 were from women residing in the northern suburbs. However, only approximately 2% of the recorded statistics identified PND as the presenting problem. Anecdotally, the staff reported that the low rate of reported maternal psychological disturbance is because women usually present with baby-related issues (Ngala Program Manager, personal communication, July 2000). Staff reported that 17 women, who resided in the northern suburbs of Perth, had participated in PND groups in 1999/2000 (NMHS, 2000).

The available evidence indicates that some women, identified as having higher EPDS scores antenatally at JHC, are not screened, or followed-up, postnatally, in the community. This issue relates to the traditional practice of multi-service involvement, that is uncoordinated. Those women who were assessed by hospital and community-based staff as having EPDS scores higher than the 12/13 cut-off, were mainly referred to their GP, New Beginnings, Ngala, or Women's Healthcare House. This was confirmed during the planning stage of the study.

The involvement by so many agencies in identification, referral and management, raises the possibility that some women who required assistance were missed by the gaps between the various systems. Yet, it is known that chronic depression is associated with the time delay before treatment is received (England, Ballard, & George, 1994). More specific and timely interventions are required. These will need to be informed from systematically collated data on the types of psychological processes that women are experiencing, both prior to, and following, the birth.
1.5.6 Mental Health Services Incidence Rates of PND

Statistics on the prevalence of PND, or even a clear picture of those identified and managed in the suburbs of Wanneroo and Joondalup by the Mental Health system, as opposed to the Child Health system, are currently very difficult to access. This is primarily because of the coding standards, used by the various departments in the HDWA, the diversity of professionals and organisations servicing the women, and differences in interpretation. This is a national, as well as a local, problem (Carter, 1992).

The statistics collected and collated for all known occasions of service provided through the Mental Health system, indicated that only two women were coded with a diagnosis of PND in 1999/2000. This seems to be very low, when compared to recent national and international rates. These ranged from 10-40% (Affonso et al., 2000; Carter, 1992). The recorded rate on the mental health system database in WA was unreliable, because of the limitations of the ICD 9. Moreover, PND did not have a discrete code in the system. “New Beginnings” is the only program that specifically services women with PND in the northern suburbs, under the direction of the Mental Health Division of the HDWA. Statistics, maintained manually by the staff, indicated that they had 88 referrals from July 1999 to June 2000. These figures are not centrally recorded or maintained (Coordinator, New Beginnings, personal communication, February 2001). The lack of recorded statistics highlights that the majority of women suffering mild to moderate PND continue to be identified and supported within the domain of the Community Health Services. This has been the case historically in WA, as well as in other parts of Australia (Williams, 1992).

1.5.7 North Metropolitan Health Service Incidence of PND

Research studies in the area of PND internationally have generally found that the incidence of this syndrome is approximately 15-20%. While an Australian study found symptoms of depression in as many as 39% of women screened (Barnett, Lockhart, Bernard, Manicavasagar, & Dudley, 1993), this was in a residential situation, where women presented with issues related to the child, or social circumstances. A recent local evaluation found a lower incidence (NMHS, 2000). During one month in 1999/2000, all pregnant women who attended an antenatal clinic in one of two public sector hospitals in the northern suburbs of Perth were screened, using the EPDS (123 participants). The screening was conducted as part of a pilot study, to evaluate the implementation of a
recent initiative for PND assessment, management and follow-up procedures in the hospital and community services managed by the NMHS. Antenatally, 20% (23) of the women scored higher than the EPDS cut-off score of 9/10, indicating some evidence of depressive symptoms. However, this cut-off is lower than recommended in antenatal assessment (Murray & Cox, 1990). When the EPDS cut-off was 12/13 (mild to moderate severity), 11% were found to have more symptoms of mild to moderate depression.

Postnatally, 55% of the sample of women was again screened sometime between 6-12 weeks by the CHNs at the community clinics (NMHS, 2000). Of these, only 15% had EPDS scores of 10 or above, and the percentage was 10% when the EPDS cut-off was 12/13. This is not consistent with other studies (Thompson, Roberts, Currie, & Ellwood, 2002) and appears lower than other similar cohorts. A recent Australian study, using the BDI and the EPDS, found the prevalence of PND was 23.3% at 14 weeks and 18.7% at 30 weeks postpartum (Stuart, Couser, Schilder, O'Hara, & Gorman, 1998). However, at the third and final stage of the local assessment (20-25 weeks postnatal), 25% of women screened had EPDS scores higher than 12/13. It may be that more of the women with higher scores responded at this stage because they were experiencing symptoms and were seeking some support.

In summary, the local evidence indicated that approximately 20% of pregnant women who attended an antenatal clinic in the northern suburbs of Perth had higher EPDS scores antenatally. Fewer were suffering the clinical symptoms of mood disorder. At 6-8 weeks postnatally the incidence was lower, with approximately 10% of new mothers experiencing EPDS scores higher than the recommended cut-off. However, five to six months following the birth, the incidence was again raised, with as many as 25% having higher EPDS scores.

Using international estimates and local reports as a baseline, it appears that in the northern suburbs of Perth, approximately 10-15% of women may experience PND. A further cohort of women will have an EPDS of 10 or more, during the antenatal and postnatal period.

1.5.8 The Local Community 1999/2000

There are two hospitals in the northern suburbs of Perth that service predominantly public patients. These are the Osborne Park Hospital, which generally services patients in the "lower" north, and the JHC, which predominantly provides...
services for people residing in the “upper” north. This study was conducted with a sample of participants, who had their first babies during the period between July 1999 and June 2000, at the JHC (formerly Wanneroo Hospital). The complex is located in the City of Joondalup. JHC has both public and private beds, and a catchment area encompassing all of the suburbs in both Wanneroo and Joondalup. Prior to 1996, the Wanneroo Hospital, built during the early 1970s (Cockman & Daniel, 1979), was a relatively small local public facility with 85 beds. The Hospital was managed under the auspices of the Health Department of WA, similar to other medical units. It had the only accident and emergency unit in the northern suburbs. However, other services were very limited, with few facilities for major surgery or the management of childbirth complications (JHC, 1999).

However, in 1996, there were 1,726,095 people living in WA, a growth of 8.8% in just five years (ABS, 1996). The growth in population in the northern suburbs, during the 1980s and 1990s, highlighted that the hospital required redevelopment and expansion. Following an open tender process, Wanneroo Hospital was contracted out for redevelopment and management to Health Care of Australia (HCOA), a subsidiary of Mayne-Nickless, in 1996. The hospital complex was rebuilt over the next two years, renovating the existing structure, adding wings, and incorporating a new range of private and public services, in the extensive grounds. The complex was renamed “The Joondalup Health Campus” and officially opened in January 1998 (JHC, 1999). The privately managed campus now has 365 beds. Seventy-seven of the beds are currently used for obstetrics and gynaecology. The obstetric ward has eight birthing suites, and an intensive care nursery that can house up to eight babies. New mothers residing in the area can therefore expect to deliver their babies in a modern facility, with new infrastructure, surroundings, furnishings and equipment.

There were 25,365 births throughout the State of WA, and 2,165 births to women residing in the northern suburbs of Perth, in 1999/2000 (ABS, 2000). Of these, 865 were primiparous. One thousand seven hundred and twenty-one (79.4%) of the total births in the northern suburbs, during 1999/2000, were at JHC. Approximately 40% (690) of those were primiparous. Official records on parity are not maintained and the actual number of primiparous births cannot be confirmed. Based on the figures available, it is estimated this study was conducted with 18.3% (approximately 1:5) of primiparous women, who gave birth in the northern suburbs of Perth, in 1999/2000.
Chapter 2

Review of PND: Treatments, Predictors and Associated Factors

To provide a context to the cultural and historical background of women who participated in this study, the first Chapter outlined the purpose of the research and the relevant contextual factors. It described the evolution of Western Australia (WA) that, until recent times, was a remote region. The Chapter then described the role of women, during the early period of settlement, and finally, provided an overview of the identification and management of PND and related disorders, in WA. The first part of this Chapter outlines the history of depression around the time of childbirth, and the time taken to acknowledge that PND required specific recognition in the nomenclature. It is followed by an overview of the findings on prevention and treatment options in Part two. Part three then highlights the debate on the definition of PND. This is followed by a review of the literature, focusing on some of the key predictors and associated factors that have been researched in relation to this, and associated mood disorders, occurring around the time of childbirth, in an attempt to inform the options for prevention and treatment.
2.1: Background to PND and Its Management

The first part of this Chapter describes how depression around childbirth was viewed prior to the last century. This is discussed in the context of the diagnosis and management of other mental health problems before the middle of the 20th century. This is followed by a brief overview of later developments, and the international recognition of mild to moderate depression around childbirth. The current research into prevention and treatment of these disorders is then briefly described.

2.1.1 History of PND

Hippocrates is said to have made one of the first references to the physical and psychological disturbances that can follow childbirth, and coined the term “milk fever” (Littlewood & McHugh, 1997). He proposed that this phenomenon occurred at 3-4 days postpartum, and was associated with episodes of weeping and hysteria. Hysteria at that time was thought to be a result of a displaced womb (Gelder et al., 1996). Further explanations of emotional disturbances observed around the time of childbirth were noted from as early as the 16th century, with a physician of the period describing case studies of puerperal melancholia (Wellburn, 1982). While less severe mental health problems associated with childbirth began to be documented at that time, they, like many other emotional disturbances, were generally thought to lead to permanent insanity. From the 18th century, when asylums were first opened in England and America, a diagnosis of insanity often meant admission to such a facility, and a long period of institutionalisation. In some cases this was for the lifespan of the individual (Gelder et al., 1996). In the 1850s puerperal disorders accounted for approximately 10% of hospital admissions for women in the UK (Brockington, 1996). Since it is now known that the incidence of psychosis in women following the birth of a child is approximately one to two per thousand, many of the women who were institutionalised during that period were not likely to have been suffering from such a severe disorder (Harman, 1993).

Although the institutionalisation of those considered insane persisted through the early part of the 20th century, European researchers gained some prominence in the effort to understand various psychological disorders. Galton, and others, began investigating twins as a way of identifying whether heredity or environment played a
more important role in the onset of disorders (Cooper, 2001). Freud, and his followers, proposed a new model for the onset of mental disturbance, with psychoanalysis proposed as the treatment for a range of disorders (Gelder et al., 1996). However, many writers considered the cause of mental illness to be either a physical disorder of the brain, or a genetic predisposition. Importantly, the underlying supposition was that madness resulted from evil actions, or misdeeds. This paradigm resulted in general pessimism about possible treatment and recovery. As a result, there were few changes, or developments in treatment in the mental health field in the western world, until the 1940s.

The Second World War was the landmark for many new initiatives in the mental health area. Well-educated conscientious objectors, who were assigned to work in institutions, publicised the terrible conditions they found (Levine, 1981). Additionally, psychiatrists, and others in the medical fraternity, were required to find new treatments, to manage conditions such as “shell-shock”, and other neuroses, in men returning from the war (Gelder et al., 1996). Recognition of these issues, ultimately led to a climate conducive to change in psychiatric illness management. Social attitudes began to alter, and psychiatry gained some credence as a discipline (Gelder et al., 1996).

The period that followed, through the 1950s and 1960s, witnessed a dramatic shift in the paradigms regarding mental health problems. New medications and therapies were developed, trialled and proved useful (Gelder et al., 1996). These included the major tranquilliser drug group known as the Phenothiazines. This greatly minimised some of the more severe symptoms of psychoses, such as delusions and hallucinations. Minor tranquillisers and anti-depressants also began to be developed, and prescribed around this time. These new compounds assisted in alleviating some of the more debilitating symptoms of depression and anxiety (Gelder et al., 1996). The main outcome of these initiatives was that mental health problems, that did not necessarily involve hospitalisation, gradually began to be studied more systematically. However, it was not until the 1970s and 1980s, that mild to moderate PND began to be highlighted as a problem. Wellburn (1986) noted “the only comprehensive book in world literature on psychiatric problems, associated with childbearing, was published in 1858; the milder forms of postnatal depression have hardly been studied at all” (p. 200).
2.1.2 PND as a Distinct Syndrome

An early and important research contribution to the identification and treatment of mild to moderate depression was made during the 1960s. In a comprehensive study by a GP, a sample of more than 700 mothers was followed up for two years in the community. During that period, a social and medical history was phenomenologically constructed. It was concluded that a comparatively large percentage of women experienced mild to moderate depression during the puerperium rather than rarer psychotic illnesses (Kumar, 1982). These findings gave a new impetus to the investigation of neurotic disorders occurring around the time of childbirth.

Pitt (1968) found more evidence to support the concept that mild to moderate depression may be a distinct syndrome, indicating that those with this disorder did not present with the cluster of symptoms generally found in other forms of depression. This was followed by other studies that demonstrated that PND was under-diagnosed, and under-treated (Fergerson, Jamieson, & Lindsay, 2002). These included seminal works by Brockington and Kumar (1982); and Dalton (1971; 1980) amongst others. PND was eventually acknowledged officially, appearing for the first time in the DSM-IV (1994), as a specifier of the mood disorders. The length of time taken for formal recognition of PND was not surprising, given that it was only in 1980 that “major depression” was first defined in the DSM-III (1980) (Parker, 2000).

2.1.3 Prevention and Treatment of PND

The accumulating evidence on varying types of mood disorder occurring at other times in the life-cycle and new ideas on management options also had something to offer, in pointing the way towards successful prevention and treatment for PND. As community-based treatment (Levine, 1981), rather than hospitalisation (Harman, 1993), became the new focus of mental health problem management, non-medical treatment methods gradually gained acceptance. Importantly, the emergence of more humane and sophisticated methods of treatment and care, for those with mood disturbances, also encouraged exploration into the concept of prevention (Levine, 1981).

2.1.4 Interventions to Prevent PND

As an understanding of the importance of mild to moderate mood disorders occurring around childbirth became recognised, longitudinal research was
recommended to provide better insights into the identification and management of this problem (Brockington & Kumar, 1982). The implementation of prospective studies, commencing in the antenatal period, led to two important discoveries that had an impact on prevention strategies. Some evidence emerged that AND was at least as prevalent as PND (Kumar & Robson, 1984). Furthermore, researchers began to note that AND predicted PND in some women (Dalton, 1971; Kumar & Robson, 1984). This gave a new impetus to consideration of prevention and early intervention in the antenatal period, in an attempt to minimise the impact of PND after the birth.

In a pilot study conducted by Elliott, Sanjack, and Leverton (1988), it was found that first-time mothers, in particular, benefited from a number of group sessions during the antenatal and early postnatal period. In this study, all women who attended an obstetric clinic, located in a hospital in England, were invited to participate. Those who agreed completed a questionnaire on their first visit. The questionnaire was designed to assess vulnerability to depression. Vulnerability was defined by four factors: poor marital relationship; past psychiatric history; poor social support; and a high anxiety level. Women with any of these issues were categorised as vulnerable. The participants were then either allocated to a control group or offered an intervention program. The results indicated that significantly fewer, of both primiparous and multiparous women who were considered vulnerable and had treatment, became depressed in the first two months after the birth (12% of the intervention group versus 33% of the control group). However, multiparous women appeared to benefit less by the third month, as there was no significant difference between the multiparous treatment group and the control group at this time.

Importantly, primiparous women in the treatment group, continued to benefit, with no new cases at three months postpartum. It was speculated that the differences in results between groups might have been due to the limited capacity of multiparous women to attend sessions. Indeed, the issue of attendance may be an important one, particularly as more first-time mothers continued to attend sessions postnatally. Ongoing contact with the group leaders, and other group members, after the birth, may be an important factor in minimising the onset of depression in first-time mothers.

Interestingly, another of the reasons posited for the success of the program with primiparous women was the group process. This engagement assisted new mothers to normalise many affects and cognitions that they may have otherwise perceived as unique and therefore inappropriate (Elliott et al., 2000). These findings suggest the
importance of antenatal identification of primiparous women who may be susceptible to depressed mood. It was also noted that multiparous mothers were less likely to benefit from a similar program, possibly because they were less committed to the process, for various reasons. It was speculated that they might already be cognisant of the reality of motherhood, and therefore require a different intervention. One of the suggestions was the provision of more instrumental support for multiparous women. This strategy may assist these mothers to cope with practical issues inherent in managing more than one young child.

Okana, Nagata, Hasegawa, Nomura and Kumar (1998) found some evidence to support the proposition that attendance at antenatal programs can be beneficial. In their study, they found that women who suffered from PND, and had attended antenatal classes, were less likely to have a major depressive episode after the birth. Furthermore, they were more likely to seek support earlier. Again, however, similar to the Elliott et al. (1988) study, primiparous women were much more likely to attend classes, with 73% of attendees being first-time mothers.

Brugha et al. (2000) also noted some problems with non-attendees of groups, They accounted for that issue in their analyses. Disappointingly, the intervention tested with a cohort of pregnant women failed to find any significant minimisation of PND. However, participants did indicate some personal benefits from the intervention. In summary, interventions implemented during pregnancy, to minimise the onset of PND, have had mixed results. More studies are required, before any clear indications of the universal benefits to all pregnant women can be claimed. However, it appears that primiparous mothers may benefit more from antenatal programs. Nevertheless, it is important to note, that the antenatal intervention, implemented by Elliott et al. (1988), did not appear to have long-term benefits. A significant difference was not found, between either primiparous, or multiparous groups, and the control group, one year after the birth (Elliott et al., 2000).

2.1.5 Interventions to Manage PND

Studies providing evidence for the relevance of specific interventions targeted to successfully managing PND are few (Elliott, 1989; Milgrom, Martin, & Negri, 1999; NHMRC, 2000). Several reported studies have focused on intensifying the role of the child health nurse, during the early period following the birth, in an attempt to minimise the onset of PND (Holden, 1994; Thome & Alder, 1999). One of these also found
differences in improvement, between primiparous and multiparous women. Armstrong, Fraser, Dadds, and Morris (1999) evaluated the impact of a structured home visiting program, compared to the usual visiting services offered. The new mothers were considered vulnerable, and at risk, for a range of reasons. These included abuse, poor social support, and drug abuse. The results indicated that the only significant differences in the EPDS at six weeks postpartum were for primiparous women. This lends further credence to the suggestion by Elliott et al. (1988) that first-time mothers benefit more from prevention and early intervention. Nevertheless, the intervention did profit both groups of women. Overall, more women improved, as a result of the intervention, on other important measures. These included improved maternal-infant interactions (Armstrong et al., 1999).

In looking at the benefits of child health nurse interventions in the postnatal period, other studies have found strong evidence of efficacy. In one study by Holden, Sagovsky and Cox (1989), 734 women, who were attending child health clinics in the United Kingdom, were screened for PND at their visit to the clinic. This occurred at approximately six weeks postnatal. A psychiatrist later interviewed new mothers scoring above 12 on the EPDS. The diagnostic assessment took place in the homes of the women, at around 12 weeks after the birth. Sixty women were diagnosed as depressed and offered treatment. Of these, 50 completed the full course of treatment. This involved approximately nine individual counselling sessions with the child health nurse. Thirteen weeks from the beginning of the intervention, participants were reinterviewed by the psychiatrist, who was blind to the group allocations. It was found that 69% of the treatment group was no longer diagnosed as depressed. However, only 38% of the control group had recovered from the episode. Nevertheless, the mean scores of the treatment group overall remained comparatively high (10.5 on the EPDS). This probably reflected the issue that a third of the women in the treatment group remained depressed after 13 weeks (Holden et al., 1989). Their higher scores would have influenced the overall mean. This may indicate that more sessions are needed to increase the benefits. In some cases, however, women may require more specialised support. Another interesting point of note was that more than 30% of the control group recovered spontaneously. This has also been found in other studies (Cooper & Murray, 1997).

Another example of the potential benefits to be gained from child health nurse interventions comes from a series of linked studies. These studies were undertaken by a
research team, as part of a major longitudinal project (Seeley, Murray, & Cooper, 1996). One study examined the mothers’ experiences of motherhood. Another study assessed the health visitor perceptions of using the EPDS, and measured their awareness of PND, pre and post training. An intervention with the women following the training of the health visitors, was also reported. The first wave of participants was recruited from a maternity hospital in Cambridge, where 90% of the total cohort were screened, using the EPDS, at six weeks after the birth. In addition, the women completed a sheet on their experiences, and noted any problems in managing the baby. The cohort also completed the EPDS, and the dyad relationship sheet, four months after the birth. Those with higher scores were then interviewed, using the mood disorders section of the Structured Clinical Interview for DSM-IV (SCID). Trained health visitors then provided support over nine sessions.

Following the intervention with 70 women, the data were analysed. It was found that there was a significant reduction in EPDS scores in women receiving support from the trained health visitors. However, before training, the EPDS scores of women increased on average. Furthermore, there was a statistically significant difference in reported problems with infant management at four months after the birth, between the health visitor intervention group and the control group. These studies demonstrate that symptoms of depression can be decreased using a relatively basic intervention. The findings also raise some important points in relation to the poor rates of detection of PND by health visitors, who are untrained in counselling. Furthermore, the studies provide some evidence that counselling can improve mothers’ perception of problems, related to managing the baby.

In a Swedish study, Wickberg and Hwang (1996) also examined whether a child health nurse counselling intervention was beneficial to women experiencing depression, three months after the birth. In this study, 1584 of 1874 women approached were screened. New mothers completed the EPDS at both two months and three months postpartum. Of these, 94 women, who scored 12 or more on the EPDS, were then interviewed at home. They were assessed using the MADRS, and diagnosed using DSM-111-R criteria. Those assessed as suffering from depression for more than four weeks, and with a score of 10 or more on the MADRS (41 women) were then alternately allocated to either a treatment or control group. The treatment group received six sessions of counselling at home, with the child health nurse. The control group received routine care. Eighty percent of the treatment group improved over the six-week
period, with a significant decrease in score on the MADRS. There was also a significant difference between the two groups, from the first to the second time of assessment.

Importantly, to control for the effects of medication, or other intervention, none of the women in the groups received any other treatment during that time. Women were asked why they felt they had improved. Some stated that the focus on them, rather than the baby, assisted them to normalise many of their fears and concerns. This provides some anecdotal evidence that women perceive many of their thoughts, feelings, and experiences to be shameful and not to be articulated. The outcomes of this study give further support to the involvement of child health nurses in the treatment of some forms of depression, occurring after the birth. However, this study was excluded from a Cochrane Review of “caregiver support” interventions, on the basis that women were not randomly allocated to the groups (Ray & Hodnett, 1998). Furthermore, it is important to note that women judged to be experiencing more severe mental health problems were referred to specialist services.

The use of various forms of counselling, as a primary strategy to manage affective disorders, is a contentious issue, in an area where the medical model has prevailed until very recent times. In the domains of psychology and psychiatry, an ongoing debate on this issue emerged in the literature (Seligman, 1996). One aspect to be reviewed was whether medication, or counselling, was more efficacious in treating mood disorders (Stravynski et al., 1994). However, it is claimed that the results of this debate remain inconclusive (Clark, 2000). Nevertheless, in relation to PND, some evidence for the comparable efficacy of therapeutic groups is emerging. In the first known study of this kind comparing pharmaceutical treatment with other approaches, Appleby, Warner, Whitton and Faragher (1997) evaluated the benefits of using Fluoxetine, compared to CBT. Both were found to be similarly efficacious in treating PND, leading to the conclusion that the individual should determine the treatment of choice. This was a very positive outcome, as many of the women who need assistance are very reluctant to take medication, particularly when breastfeeding (Olioff, 1991). Many other specialists in the field of PND have also recommended various forms of “group therapy” as useful interventions, for the prevention and treatment of non-psychotic PND (Holden, 1994; Steiner 1990).

However, there is still little evidence of rigorous assessment and evaluation of this therapeutic method (Milgrom et al., 1999). In a recent NHMRC publication (2000) reviewing the research into PND, only four studies were recorded. None of the studies
had a higher level of evidence that 111-1, indicating that none was a properly designed randomised controlled trial (p.126). For example, a small study by Morris (1987) found that seven women, who had been diagnosed as depressed following childbirth, benefited from a group intervention. Despite few participants, and no control group, this one study is widely discussed in the literature on PND (Albright, 1993; O'Hara 1995). This example is indicative of the lack of an evidence base, with little clinical research being undertaken before the last decade. However, the paucity of studies conducted in the clinical setting, on the efficacy of various treatments, is a global problem. This point has been highlighted, by some prominent theorists (Mintz, Drake, & Crits-Christoph, 1996; Geddes & Harrison, 1996;).

The last 10 years have seen more work published on interventions conducted in clinical settings, with mixed findings. Fleming, Klein and Corter (1992) reported that there were no differences in depressive symptomatology between a treatment and control group, following eight sessions of a therapeutic intervention. However, there did appear to be some positive effects on the mother-child interaction. The first published Australian research, describing the benefits of group therapy in the treatment of PND, was a pilot study conducted by Milgrom and Meager (1996). Their method incorporated social support and an educational component, as well as CBT, delivered over 10 weeks. Milgrom and Meager (1996) found a significant improvement in the participants following treatment, when compared to a waiting list control. Again, the number of women completing the intervention was small, and as such, further investigation is required to confirm the findings. Of interest, is that the outcomes from this study reflected the Appleby et al. (1997) findings. These were that cognitive approaches appear to be efficacious, as a component in the treatment of PND.

There have also been several studies evaluating the benefits of individual psychotherapy. A study conducted as part of the Cambridge project assessed and compared the efficacy of various treatment options (Seeley, Murray, & Cooper, 1996) Women were randomly assigned to one of four groups. These included non-directive counselling, cognitive-behavioural therapy and dynamic psychotherapy. The researchers also allocated some women to a routine primary care group. The treatment intervention consisted of weekly individual sessions, conducted from the eighth to the eighteenth week, after the birth. Of the 194 women who initially participated in the study, 171 completed the treatment. The outcomes indicated that all three treatments resulted in significant improvement in mood. The psychodynamic treatment results indicated most
improvement, with 75% of participants no longer meeting the criteria for major depressive disorder. However, improvements were no longer significantly different between the groups at nine and 18 months. One implication of these findings may be that the control group, who only received routine care, improved spontaneously by the time of the follow-up periods. Nevertheless, the therapies did have an immediate impact, which may have minimised the potential for ongoing dysfunctional affect to become chronic, at least in some of the participants (England, Ballard, & George, 1994).

Another recent study that investigated the efficacy of interpersonal psychotherapy recruited 120 depressed women from a sample of 20,620, who were sent invitations to participate. The participants selected were initially identified as depressed using the Inventory to Diagnose Depression (IDD). Potential participants were then interviewed by telephone, where a diagnosis of depression was confirmed, using the Structured Clinical Interview for DSM-IV (SCID), and the Hamilton Rating Scale for Depression (HRSD). Once women agreed to participate, they were assessed again in their own home, using the major depressive modules of the SCID and HRSD. The 120 women who met the criteria were then randomly assigned to either treatment, or control groups. All women in the treatment group received 12 individual sessions of therapy. They were also assessed at intervals before, during, and after the therapy, using the Beck Depression Inventory (BDI), the Social Adjustment Scale – Self-Report (SASSR), the Dyadic Adjustment Scale (DAS), and the Postpartum Adjustment Questionnaire (PPAQ). The times of the assessments were before the treatment commenced, and at four, eight and 12 weeks during the treatment. During the therapy, 12 participants withdrew from the treatment, and nine from the waiting list control group.

Some key findings from the intervention were that women receiving the therapy were significantly more likely to recover from the episode than the waiting list control group. They were also significantly less likely to meet the criteria for major depression, at the end of the therapy. Importantly, women who underwent therapy for 12 weeks, also experienced improvement in psychosocial functioning. This was both in their relationships with their partner, and other children (though there was insufficient comparative data to determine change in the relationship with the baby). It was speculated that these improvements may be linked to the women’s perceptions, rather than being the result of any changes in partner behaviours. This is a vital point to note,
as it implies women's perceptions of their relationships are linked to their affective state.

The success of this intervention is also important, because it provided further evidence for the efficacy of non-chemical interventions. However, it was not clear from this study whether longer-term improvement was maintained. Psychological strategies, and the rationale for their use, need further investigation (Elliott, 1989). In summary, the weight of evidence for various treatment models remains equivocal. Large randomised controlled trials are needed to determine which treatment methods are most efficacious. There is some evidence that CBT can have benefits for new mothers, who may be experiencing a mood disorder. There are also examples of the efficacy of interventions, implemented by child health nurses, following training. However, as highlighted by a recent review of PND, "there are major gaps in the treatment literature and much of the data remains equivocal" (NHMRC, 2000, p.123).

2.2: Classification of PND and Consequences for the Family

The relatively recent emergence of studies evaluating interventions to minimise the onset and prevalence of depression around the time of childbirth reflects the uncertainty surrounding what PND is, its causes, course and consequences. More information is needed to assist clinicians to develop preventative strategies and customise effective treatment models. The next section describes the ongoing debate on these issues, and elucidates evidence that has accumulated on various factors related to understanding and managing PND and related disorders.

2.2.1 Classification of PND

While it is clear that there is emotional distress and low mood in some women following the birth, and that this must be acknowledged, the issue of classification has not been fully addressed (Clement & Elliott, 1999). PND is difficult to categorise definitively, as the term is used to describe what seem to be different constellations of symptoms (Brockington & Kumar, 1982; Gotlib et al., 1991) or even possibly different disorders (Barclay & Lloyd, 1996; Treloar, Martin, Bucholz, Madden, & Heath, 1999; Whiffen, 1992). For example, certain clusters of symptoms experienced around childbirth are indicative of a post-traumatic stress disorder (PTSD) (Allen, 1998; Ballard et al., 1995; Czarnocka & Slade, 2000).
In a study conducted by Ballard et al. (1995), case material was used to describe and analyse four incidents, where the onset of PTSD was in close proximity to the birth, and was directly related to the birth experience. The women’s anecdotal reports indicated that three of the four had major difficulties with attachment. In another, more systematic assessment, Allen (1998) recruited 145 mothers from child health centres, approximately eight months following the birth. Using a screening questionnaire that included the Revised Impact of Event Scale (RIES), she found that a cohort of 26 women had very traumatic birthing experiences. Twenty-three women agreed to participate in a second stage of the study, which involved an interview using a semi-structured questionnaire format. It was found that six women had scores indicating clinically significant levels of PTSD, with a further two women who were assessed as borderline.

Others have alluded to links between adjustment disorder (AD) and PND (Hopkins, Campbell, & Marcus, 1987b). It has even been suggested that PND is used to describe any maternal distress, particularly the stress, anxiety and frustration experienced by first-time mothers (Barclay & Lloyd, 1996). Each of these perspectives has some support, so it is not surprising that women are not consistently described as suffering one distinct set of symptoms, when assessed as having PND. Symptoms of PND have been variously classified as including feelings of sadness, hopelessness, guilt, an inability to cope, a lack of motivation and low mood. These are usually present in clinical depression. Other women, described as having PND, appear to have symptoms such as excessive worry, compulsive thoughts or behaviours, fear, frustration, helplessness, and feelings of inadequacy (Barclay & Lloyd, 1996; Pitt, 1968). These are more common in anxiety disorders (Dalton, 1971; DSM-IV, 1994). This has led recent researchers to propose that PND is likely to be predicted by a range of factors, rather than one distinct cluster (Brugha et al., 1998; O’Hara, 1995). Furthermore, it has been suggested that the label of PND may even be used as an umbrella term for more than one disorder (Green & Murray, 1994).

Alongside this lack of clarity over definition, the incidence of PND is also unclear (Najman, Anderson, Bor, O’Callaghan, & Williams, 2000). Reports of the range vary between 10 and 30 % of women (Cox et al., 1987; Grazioli & Terry, 2000; Warner et al., 1997). Some of this difference can be attributed to what is being measured, and in what time-period. In a large study of 738 mothers, recruited in child and maternal health centres, Hiscock and Wake (2001) used the EPDS to assess depression in mothers 6-12
months after the birth. The researchers analysed the EPDS scores in three different cut-off categories (less than 10, 10-12, and more than 12). They identified 15% of mothers had "probable" clinical depression, with scores of 13 or more. The researchers also found a further 18% with scores of 10-12, which they stated to be "possible" clinical depression (p.1317). In another study, Fergerson et al. (2002) used the EPDS to assess women at their postnatal assessment 4-6 weeks after the birth. They used a cut-off of 10 or more. They found 30% were considered "at risk" (p. 901). Australian reports are even higher, with the incidence of mood disorders claimed to be around 40% of all women giving birth (Barnett, Lockhart, Bernard, Manicavasagar, & Dudley, 1993; Carter, 1992). Again, however, what constitutes the syndrome under discussion is not always consistent (Clement & Elliott, 1999). Furthermore, the settings for data collection vary greatly. For example, Barnett et al. (1993) were describing a sample that included women who were in a residential setting. In contrast, the Fergerson et al. (2002) study assessed the women early in the puerperium, and used a lower cut-off. Nevertheless, Fergerson et al. used the term PND in the title of the report of their study. Some of these differences in reported rates of incidence may also be linked to the instruments used. Self-assessment methods, for example, appear to result in more reported depression (Green & Murray, 1994).

A related point is that studies on PND and related disorders have been conducted within a wide and diverse range of timeframes. The times at which assessment has taken place, range from as early as one week postnatal, to 14 months (Affonso et al., 2000; Dennerstein et al., 1989; Gotlib et al., 1991; Watson & Evans, 1986). One issue related to these varying timeframes is the potential confounding of symptoms relevant to PND by other problems. These include "The Blues", possibly PTSD (Czarnocka & Slade, 2000) or even elation experienced after the birth (Lane, Keville, Morris, Kinsella, Turner, & Barry, 1997). Further along the time spectrum, researchers conducting longitudinal studies have found some evidence to indicate, that there are new occurrences of PND as late as six months (Kumar & Robson, 1984) or even longer after the birth (Dalton, 1985).

Several longitudinal studies monitoring women following the birth of a baby have found that there are new cases of mood disorder throughout the period of the study. In one study, 26% of 128 women, who were interviewed systematically during the first year after the birth, experienced some form of clinical disorder, measured by the Goldberg standardised psychiatric interview (Watson, Elliott, Rugg, & Brough,
A third of the women, depressed at six weeks postnatally, were also depressed in the antenatal period. In another study, 49% of new mothers were assessed as having a clinical depression, during the same timeframe of one year postnatal (Areias et al., 1996). The diversity in times of measurement, together with the tendency of some researchers to label all mood disorders experienced by new mothers under the umbrella term of PND, may be critical to any consistent constellation of symptoms being identified. Furthermore, new stressors, unrelated to the time around the birth, may render some of these findings on predictors of later onset PND to be questionable. In fact, there is speculation that later PND may be more similar to depression occurring at other times in the life cycle and may be caused by different factors (Cooper & Murray, 1995; Kumar & Robson, 1984).

Using the term PND to describe a mood disorder experienced in the initial weeks in the puerperium, as well as one that occurs up to six months or more following the birth, requires more consideration and clearer definition. Nevertheless, any mood disorder occurring in the early months following the birth of a child requires due recognition and consideration (Clement & Elliott, 1999). This may be particularly important if the longer-term impact of unrecognised emotional distress is to be avoided (England et al., 1994). England et al. (1994) noted that factors linked to chronicity of mood disorder following the birth included older age, severity of illness, and delay in obtaining appropriate treatment. Their research involved the use of the archival method to review case note material of 100 out-patient females who were referred to a mother and baby service. Each of the case studies examined was included in the study, if it met the criteria for minor or major depression, using the RDC criteria, and had sufficient information documented on outcomes (84 cases). They found that 18.8% of women with major depression, and a further 9.7% of women diagnosed as suffering from minor depression, had an illness lasting longer than two years. The most important factor associated with chronicity was length of delay before treatment. There is, therefore, some evidence that PND and related disorders may continue for years, without appropriate support and intervention (Boath, Pryce, & Cox, 1998). These findings further emphasise the need for early identification. Furthermore, it is important to recognise that women may experience prodromal symptoms before the onset of a clinical depression (DSM IV, 1994).

Improved understanding of the onset and progress of mood disorders, occurring in the period around childbirth, may assist practitioners to understand fully the range of
issues. This would underpin the development of more targeted interventions, to prevent or minimise the range of problems, associated with distress around childbirth. A table documenting the prevalence of PND, the time of assessment, and the various instruments used to assess PND in some key studies, can be found in a recent review by the NHMRC (2000, pp. 68-73).

2.2.2 Family Issues

The question of whether depression, and other emotional disturbances that occur around the time of childbirth, differ substantively from depression at other times in the life cycle, is important to understanding symptoms and treatment options. However, another major focus in research is the impact of PND on the mother, and her relationships with the child and partner (Sinclair & Murray, 1998).

The effects of PND on the development of the child have received some attention, and recent studies conducted longitudinally are providing new insights into this issue (Raine, Brennan, & Mednick, 1997; Sharp et al., 1995). Several important behavioural problems were observed by Murray, Sinclair, Cooper, Ducournau, Turner and Stein (1999). They assessed mothers and their babies at two months, 18 months and five years postpartum. During this timeframe, management problems were observed, both at school and at home. Furthermore, ongoing problems with the mother-child interactions were observed in 5-year-olds whose mothers had suffered from PND. The research team concluded that the issues appeared to be linked specifically to PND occurring in the early postpartum months. Furthermore, poor maternal attachment observed at 18 months adversely affected the mother and child relationship at five years (Murray et al., 1999).

Other research teams have also linked PND to longer-term issues for the dyad. Radke-Yarrow, Nottelmann, Belmont and Derby-Welsh (1993) investigated the expressed affect of 118 dyads, when the children were between 18 months and 42 months of age. A psychiatric interview, using the SADS-L, identified that 45 mothers had never had a mental health problem. Forty-nine of the mothers were suffering from unipolar depression, and 24 met the criteria for a diagnosis of bipolar affective disorder. Severity and chronicity were also defined. The Global Assessment Scale (GAS) was administered to establish severity, and the number and duration of depressive episodes experienced by the mother, during the child's lifetime, indicated chronicity. The participants were then observed and videotaped in a laboratory setting devised to be
similar to a home environment on two half days. There was a two-week break between the observations. Current mood at each observation time was assessed using the Profile of Mood States (POMS). Interestingly, it was found that patterns of affect were stable over the two time points of observation.

The findings indicated that the control group differed significantly from the two depressed groups on their total negative affect. They were also significantly different on specific affective states, coded by the research team as “anxious-sad” and “downcast” responses. However, the three groups did not differ significantly from each other on hostile responses or irritability. The affective responses displayed by the children were significantly more negative in children of women with unipolar depression, when compared with the children of the control mothers. Interestingly, although there were no overall gender differences in negative affect, boys were significantly more likely to display an irritability-anger affect, whereas girls showed significantly more sad-anxious affect. Furthermore, there was a significant relationship between periods of negative mood between the group of depressed mothers, and the control mothers, and their daughters. However, there was no significant difference in affect between depressed mothers and their sons, and control mothers and their male offspring. This study highlights the propensity for depressed mood in mothers to be associated with increased low mood in their children at an early age. This appears to be particularly relevant for female children and their mothers.

There is also some strong evidence that fathers may suffer from emotional disturbance around the time of childbirth (Boath et al., 1998; Deater-Deckard, Pickering, Dunn, & Golding, 1998) though to a lesser degree than women (Areias et al., 1996). Areias et al. (1996) interviewed 54 first-time mothers and 42 of their partners in the first trimester, and assessed their mental state using the SADS. At this time in the pregnancy, they found that 16.7% of the women (9) had clinically significant depression, although only 4.8% (2) of the men were experiencing depression. At three months postnatally, 31.5% of the new mothers were found to have a clinically significant depression, while the percentage (4.8%) and number of men experiencing depression (2) remained the same in the early postpartum period. Over the remainder of the first year following the birth, more men appeared to experience clinical depression, with a further 10 men and 12 women being diagnosed. In the full year period after the birth of the first child, the prevalence was 53.7% of women, and 28.6% of men.
It has been noted elsewhere that some men are less likely to display overt symptoms of depression, possibly because they prefer not to reveal their issues or because they are experiencing more stress and anxiety than depression (Matthey, Barnett, Ungerer, & Waters, 2000). In the Matthey et al. study, 157 couples were followed up over four time-periods, from the second trimester of pregnancy, through to 12 months after the birth. Of these, 146 completed all of the components of the assessment, though some did not complete every item at each time. Depressed mood was assessed in the fathers by administration of the BDI at all four times (second trimester antenatally, six weeks, four months, and 12 months postnatally). Male partners also completed the GHQ-28 antenatally and at one year after the birth. The women completed the BDI, at four and 12 months after the birth, and the GHQ-28 antenatally, and at the 12 month time periods. In addition, new mothers completed the EPDS at six weeks after the birth. Risk factors were also assessed. The level of perceived partner support was measured, using the Intimate Bond Measure (IBM). This instrument measures the mother's feelings of being supported and valued, and her perceptions of the partner's need for control over her life. Perceptions of bonding with their own parents, prior to the age of 16 years, were evaluated in both partners using the Parent Bonding Instrument (PBI). The dyads also completed a version of the Eysenck Personality Inventory (EPI) and an Interpersonal Sensitivity Measure (IPSM). This measure assesses a range of factors including need for approval, separation anxiety and fragile inner self. One of the key findings of the Matthey et al. study (2000) was that men were much more likely to score high on the BDI after the birth if they experienced distress in the antenatal period. This was also found in the cohort of female partners.

Another important finding, which may cause under-reporting of depression in fathers, is that men are more likely to become depressed later in the puerperium (Areias et al., 1996). This is perhaps linked to the additional compounding stressors of managing a new baby, and may be particularly relevant when the mother is also depressed. Areias et al. found the most important risks for later depression in men appeared to be depression in their partners, during pregnancy, and the first three months postnatally, and a past history of a mental health problem. These findings are vital, and highlight that any significant mood change during the pregnancy and puerperium, in either partner, has the ability to affect the other partner in the relationship (Boath et al., 1998; Kumar & Robson, 1984). Matthey et al. (2000) also noted that there was "increasing couple morbidity" by the first year after the birth (p.83).
For the reasons outlined, particularly in relation to the impact on the family unit, researchers over the last two decades have endeavoured to identify the most important groups of predictors of PND and related mood disorders, in an attempt to facilitate improved identification and early intervention.

2.3: Research on Predictors and Associated Factors Linked to PND

This section firstly discusses predictors considered unique to PND and related mood disorders. It then briefly profiles factors associated with AND and enunciates its importance in the onset of PND. This is followed by a review of the overarching predictors, and associated factors, explored in relation to PND.

2.3.1 Unique Predictors of PND

With the increasing interest in researching PND as a distinct syndrome in recent times, a number of researchers have examined factors thought to be salient to its onset. Specific predictors, and subsets of variables that have some validity, are now emerging. These include antenatal depression (Cox et al., 1993), a poor relationship with the woman's own mother (Murray, Cox, Chapman, & Jones, 1995) and endocrine influences (O'Hara, Schlechter, Lewis, & Varner, 1991). However, the evidence for real differences between the predictors of PND, and other forms of depression, is still tentative. Some variables that appear to be important to the onset of PND are also common in depression occurring at other times during the lifespan. These include additive and compounding stressors during the antenatal or postnatal period (Brown & Harris, 1978); a past history of psychiatric illness (Whiffen, 1988); perceived lack of positive reinforcement (Brown et al., 1994); and attributional style (Cutrona, 1982; O'Hara, 1995).

These studies have been conducted amidst a growing interest in biopsychosocial explanations of psychological well-being. This approach is rapidly gaining credence in the general mental health literature (Halperin & McKay, 1998). Reviews on research into PND have also reported increasing evidence of a multifactorial model (O'Hara, 1995; Stowe & Nemeroff, 1995). This multidisciplinary approach provides a useful vehicle for an understanding of mood disturbance in new mothers. Certainly, consideration of the impact of all the potential factors in the onset of this syndrome,
rather than focusing on one particular orientation, seems more likely to provide a comprehensive explanation.

Nevertheless, few of the constructs have been linked theoretically or empirically to describe the cognitive process by which women become depressed around the time of pregnancy and childbirth (Boyce & Mason, 1996). This has been partly due to the many problems inherent in conducting prospective studies. Yet, these research methods have the potential to provide important longer-term data. This includes the physical and psychological shifts and changes that may occur during the antenatal and postnatal periods (Carter, 1992).

2.3.2 Factors Associated with Antenatal Depression

As more longitudinal studies have been attempted, there has been a growing awareness that AND is prevalent in expectant mothers (Cooper & Murray, 1997; Matthey et al., 2000; Righetti-Veltema et al., 1998). Pregnancy is generally viewed as a time when women should feel positive and optimistic about the future (Nicolson, 1998; Stamp, & Crowther, 1994). However, it now appears the antenatal period, as well as the postnatal period, is associated with emotional disturbance (Green, 1990; Green & Murray, 1994). Enormous changes in a relatively short period (Areias et al., 1996) result in great demands on pregnant women and, in particular, first time mothers. This major life-event requires internal resourcefulness in order to adapt to the new and unfamiliar situation. Cognitions, as well as feelings and behaviours, therefore play an important role. It is proposed that they are key factors in the process of a positive or negative experience of previously unknown conditions, such as pregnancy and new motherhood (Beck, 1976). While many women cope well with the enormous physiological and psychological changes, others find adjusting to pregnancy, and the resulting transition to motherhood, a particularly stressful time (Arizmendi & Affonso, 1987; Green, 1990).

Several factors have been found to be of some importance in AND. These factors included possible genetic influences, such as a family history of emotional disorders (Stowe & Nemeroff, 1995) and personal vulnerability, due to a past history of mood disorders, including depression (Klein & Essex, 1994). A history of premenstrual syndrome (PMT), amongst other factors, was also found to be significantly associated with AND (Brugha et al., 1998). In contrast, there have been some findings that AND is not associated with a past history of a mental health problem (Kumar, 1982; Pitt, 1968). However, terminology and definitions may again be an issue. For example, Pitt (1986)
specifically explored anxiety in pregnancy, and found relatively high levels in both the depressed and control groups. He also categorised “previous psychiatric illness” separately from “dismennorrhoea” (p.1329). However, Brugha et al. (1998) included both phenomena within their definition of a past history of mental disturbance. The disparity in criteria used to define “past history” may be why there was no significant difference found by Pitt (1968) when assessing depressed mood antenatally.

Social factors are likely to be very important during the transition through such a unique life event. A lack of social support (Areias et al., 1996; Stowe & Nemeroff, 1995) and additional stressful life events (O’Hara, Rehm, & Campbell, 1982) have been found to impact significantly on pregnant women experiencing depressed mood at this time, as well as after the birth (Stuchbery et al., 1998). Green and Murray (1994) described a study by Green et al. (1990) who administered a postal questionnaire to 1272 women, during each trimester of the pregnancy, and again at six weeks after the birth. The participants completed the EPDS during the last trimester, and at the postnatal period of data collection. For the purposes of analysis, women were divided into four groups, according to their EPDS score. These were women who always scored below the cut-off of 12/13 postnatally and 14/15 antenatally, women who always scored above the cut-off, and women who were above the cut-off either antenatally or postnatally. The participants who were high scorers both antenatally and postnatally tended to be unemployed at the first time of contact, did not have a partner, or had an unemployed partner. They were less likely to be happy about the pregnancy, and were more socially disadvantaged. However, others failed to find the same level of evidence, for the importance of these factors (Kumar & Robson, 1984). This may be because the issue of the quality of the support is at least as important as the quantity of support. These distinctions are not necessarily explored or explained consistently.

Partner problems, as highlighted by Green and Murray (1994), are certainly thought to be relevant to AND (Areias et al., 1996; NHMRC, 2000). One factor linked to relationship tensions may be because the pregnancy was unplanned (Seguin, Potvin, St-Denis, & Loiselle, 1999). One thousand two hundred and eighty-nine women, who were less than 12 weeks pregnant when recruited, participated in a Japanese study. All participants completed a questionnaire by mail on three occasions during the pregnancy. Women identified as depressed were significantly more likely to indicate that the pregnancy was unplanned, and was not wanted by themselves, or their husbands (Kitamura, Sugawara, Sugawara, Toda, & Shima, 1996). There may also be additional
issues because of an unplanned pregnancy. The anticipated financial impact, resulting from the impending change to income, where both partners are employed, may cause additional stress and negative feelings (Warner et al., 1996).

Alongside the immediate impact on the woman and her partner, there is also growing evidence that stress and anxiety experienced during the antenatal period can have long-term effects on the developing child (Glover, 2000; Green & Murray, 1994). It therefore seems important to identify cognitive constructs, and other factors, that are associated with AND. As yet, there appears to be relatively little research exploring the associated cognitive factors and relationships that lead to this condition, and its potential long-term effects on the foetus during the antenatal period (Areias et al., 1996; Seguin et al., 1995). A recent review of the literature noted “the risk factors are predominantly social and environmental, and such risk factors represent a continuing risk that is unlikely to be improved by the birth of an infant” (NHMRC, 2000, p.42). Monitoring shifts over time, beginning in the antenatal period, may provide more evidence of the role of these, and other factors, in the onset of PND following the birth.

2.3.3 Antenatal Depression as a Predictor of PND

There is some strong evidence that AND is a predictor of PND in some women (NHMRC, 2000). For example, Watson et al. (1984) found that one third of women, depressed at three months postnatally, had also been depressed antenatally. In another study, Dennerstein et al. (1989) found that higher depressive symptoms during pregnancy were the most important predictor of later depressed mood following the birth. Atkinson and Rickel (1984) reported similar outcomes. Supporting these findings, Wilson et al. (1996, p. 2) found that there was Class A evidence for a “good level of association” between AND and PND, when conducting a review of the literature. O’Hara and Swain (1996) aggregated effect sizes from 13 studies, and found that there was a strong relationship between the mothers’ mood during pregnancy and later depression. The effect size indicated that AND was one of the most important risk factors for later PND. Studies where self-report measures of depression were administered were more strongly linked to AND as compared to those where interviews were used.

Nevertheless, Kumar and Robson (1984) and O’Hara et al. (1984) are amongst researchers who did not find a statistically significant relationship between AND and PND. As highlighted in a review (O’Hara & Swain, 1996), differences in these findings
could be due to the method of assessment and variation in recruitment methods. Other factors may be the diagnostic criteria used to determine the presence or absence of AND, in different studies (Stowe & Nemeroff, 1995). Parity may also be an issue.

As would be expected, given the relationship between AND and PND, many of the factors linked to AND were also found to be of some importance by researchers when examining issues that may contribute to PND. The possible predictors and associated factors most often investigated can be classified into five macro or overarching factors. These are demographic, biological, social, behavioural and cognitive (O'Hara, 1995). The first four of these are discussed in the next section.

2.3.4 Demographic Predictors and Associated Factors of PND

Few researchers have found any demographic differences that can consistently be attributed to the onset of PND (Cutrona, 1982; O'Hara et al., 1991). Nevertheless, some researchers have claimed low socio-economic status, age, or lower levels of education may be important (Cooper, Murray, & Stein, 1993). There has also been a suggestion that issues related to a lack of employment following the birth (Warner et al., 1996) or work-related problems (Cox et al., 1993) may be relevant. Warner et al. (1996) recruited 2375 women from two maternity units who agreed to participate in a short screening interview. Information was collected on socio-demographic details, obstetric complications, and social class. Participants also completed an EPDS. An initial analysis, using logistic regression, found that younger age, amongst other variables, was associated with depressive symptomatology. However, when the variables were entered into a stepwise regression, age was no longer significant. The most important variables were unplanned pregnancy, bottle-feeding and unemployment in the new mother and her partner.

Evidence for the influence of these demographic factors is still unclear, however, with many other studies finding contradictory relationships (Boyce & Todd, 1992). Two major reviews of the literature found little evidence for the role of demographic factors in PND. Age of mother, education and occupational status during pregnancy were not found to predict PND in one recent meta-analysis (O'Hara & Swain, 1996). Nevertheless, the type of occupation and family income were found to have a small but significant impact. The other major review also found little evidence for age. The importance of environmental influences, such as rural and remote location, was also unsupported by the evidence (NHMRC, 2000). The weight of evidence is
therefore weak for the role of demographic factors in the onset of PND and related disorders.

2.3.5 Obstetric Factors and PND

Researchers over the last two decades have tried to identify the most salient predictors of PND and related disorders, in an attempt to facilitate identification and early intervention (Cooper & Murray, 1997; Kumar & Hipwell, 1996). However, there is little consistent evidence for the influence of any specific factors. Although the obstetric and biologically based research into the causation and onset of PND has been extensive and varied, it has had mixed results (Pritchard & Harris, 1996). Several research groups have focused on examining the issue of emergency versus planned interventions in the birthing process, and the resulting effects on the incidence of PND (Fisher, Astbury, & Smith, 1997; Garel, Lelong, & Kaminski, 1988). These were very illuminating, as they linked obstetric intervention with the cognitive concept of control. Boyce and Todd (1992) collected data from 188 primiparous women. Of these 11% had an emergency Caesarean, 26% a forceps delivery, and the remainder a normal vaginal delivery. Using the EPDS as a screening tool, with a cut-off of 12.5, it was found that those who had an emergency Caesarean were six times more at risk of PND, at three months postpartum, than those who had a forceps or normal delivery.

One of the arguments emerging from these findings is that PND, following an emergency Caesarean section (as opposed to a planned intervention of this nature), may result from a perceived loss of control and failure as a woman, reported by some individuals in these circumstances. These negative thoughts and feelings impact upon self-esteem. It is also suggested that the ability to adapt in the following months, is adversely affected by negative changes in self-esteem (Boyce & Todd, 1992). Importantly, this associates obstetric difficulties with cognitive attributions of control, and the affective feelings of loss. Fisher et al. (1997) found that a Caesarean delivery was linked to lower self-esteem and mood, and symptoms similar to those of a grief reaction or PTSD. Lawrie, Hofmeyr, deJager, Berk, Paiker and Viljoen (1998) also found higher depression scores in women who had experienced a Caesarean section. However, other researchers have not found any specific link between obstetric difficulties, and PND (Nielsen-Forman, Videbech, Hedegaard, Dalby-Salvig, & Secher, 2000; Warner et al., 1996).
These mixed findings are possibly related to the method of assessment used. O'Hara and Swain (1996) indicated that PND assessed using interview methods was only weakly associated with obstetric problems. However, when assessed using self-report, PND was more strongly linked to such difficulties. An important issue to note, however, when interpreting the outcomes from this meta-analysis, is that the pregnancy and delivery complications were aggregated. This method may confound evidence for the importance of some interventions, such as emergency Caesarean. A useful point for consideration, in reviewing retrospective findings, is that the time of assessment did not affect the outcomes.

The weakness of the evidence found to support a strong link between obstetric difficulties and PND has led to speculation that other physiological factors, and their associated role in mood control, may be more important in the process of PND and related disorders.

2.3.6 Physiological Changes and PND

Some researchers have focused their efforts on investigating the hormonal and neurochemical changes that take place, during the antenatal and postnatal period (Joffe & Cohen, 1998). Halbreich (2000) noted that the role of oestrogen in PND is very complex, and therefore, as yet, it is unclear. He argued that though there appeared to be a link, the inability to directly associate this hormone with depression could be due to alterations in homeostasis, and the sudden changes in levels, rather than actual levels in the system. Bloch, Schmidt, Danaceau, Murphy, Nieman and Rubinow (2000) conducted an experiment in which they simulated two of the hormonal conditions, in eight women who had suffered from PND and a similar control group. It was reported that both lower progesterone and oestrogen influenced PND.

Progesterone has been widely investigated by other researchers, with some interesting results. Harris, Lovett, Newcombe, Read, Walker and Riad-Fahmy (1994) also found a link between progesterone fluctuations and mood. They discovered that steep increases in progesterone levels, antenatally, were linked to more severe blues, postnatally. On days when the ratings of this condition peaked, postpartum progesterone levels were at their lowest. Harris et al. (1994) confirmed that naturally occurring progesterone, has some role in the onset of “The Blues”. A recent review, however, has cautioned against the use of synthetic progesterone as either a prophylactic, or in the
treatment of PND. There was a more favourable report on the use of oestrogen (Lawrie, Herxheimer, & Dalton, 1999).

The endocrine system also experiences change following childbirth that potentially affects the psychological state of women in the early postnatal period. O’Brien and Pitt (1994) highlighted the importance of thyroid activity, which can be reduced in some women following the birth. The depletion of this function is known to induce symptoms that are also relevant in depression. This was demonstrated in several studies by Harris et al. (1996), measuring the effects of thyroiditis following childbirth. Nevertheless, the accumulative evidence for the role of thyroid dysfunction, and hormonal function, in PND, is relatively weak. However, as noted in a recent NHMRC review of the published literature (2000), this may be because the complexity inherent in the physiological interaction of various hormonal influences, occurring during the antenatal and postnatal period, is yet to be fully understood.

Support for specific neurochemical influences in PND and related disorders comes from Schmeelk, Douglas, Granger, Susman and Chrousos (1999). They measured levels of corticotropin-releasing hormone (CRH) and Interleukin–1B in 58 pregnant adolescents, at 9 to 21 weeks of the pregnancy. Findings indicated that lower levels of CRH were associated with low mood antenatally, but not postnatally. Nevertheless, maternal complications appeared to mediate between endocrine changes and postnatal mood. Unfortunately, it was not clear in the study at what time point PND was measured. Maes et al. (1999) recently published findings that lower serum Clara Cell Protein, previously linked to psychoses and major depression, was also more prevalent in women whose depression or anxiety rating increased in the puerperium (Maes, 2000).

Steiner (1990) summarised the main points in the argument that biological factors contribute to PND. He claimed that though many of these substances were known to be important to the onset and control of depressive tendencies generally, no direct evidence of their involvement in PND has been found. Steiner concluded, however, that there was some indirect evidence that required further research. While the existing evidence provides some tentative support, the lack of clear findings to substantiate the theory, that biological factors have a major impact in the development of PND, led O’ Brien and Pitt (1994) to conclude that:
all women experience these profound postpartum changes in endocrine function, probably to much the same degree, yet only a minority suffer PND. Other differences therefore must be present (p.110).

This view contributed to the increasing evidence, that PND has a complex etiology (Boyce, 1994; Pascoe, Chessare, Baugh, Urich, & Ialongo, 1987).

2.3.7 Hereditary and Premorbidity Factors in PND

Following the argument for a multifactorial aetiology, there is some evidence that hereditary factors (Treloar, Martin, Bucholz, Madden, & Heath, 1999) and a past history of a mental health problem make a relatively strong contribution to the occurrence of emotional disturbance around the time of childbirth. This has already been noted in relation to AND. Similar to findings on depression occurring in the antenatal period, a family history, and past history of a mental health problem have emerged as possible antecedents of PND and related mood disorders. O’Hara et al. (1984) found the presence of a depressed first-degree relative (i.e., parent) was predictive of PND, whilst Brugha et al. (1998) also found that PND was associated with a family history of mental health problem. However, there is evidence in other studies that a family history may not consistently predict PND. A large NHMRC review noted that only approximately 40% to 60% of the studies examined found a significant relationship between this variable and PND (NHMRC, 2000).

The weight of evidence for a significant association between a past history of a mental health problem and PND is more convincing. Using NHRMC clinical practice guidelines to classify the quality and level of various studies, a recent systematic review of published scientific literature found that approximately 75% of the studies evaluated confirmed that a past history of a mental health problem was associated with PND (NHMRC, 2000). These included a study by Paykel, Emms, Fletcher and Rassaby (1980). Other studies that found a significant relationship between a past history of a mental health problem and PND in all parous women, include Appleby, Gregoire, Platz, Prince and Kumar (1994), Hannah, Adams, Lee, Glover and Sandler (1992), Holden and Phil (1991) and Zajicek and Wolkind (1978).

Not all reviews have found such strong evidence however. Wilson et al. (1996) conducted a review of 118 articles to determine antenatal predictors of PND and other negative outcomes that impact on the family. After classifying the articles, using a framework adopted from the Canadian Taskforce on Health Examination, the
researchers allocated a final rating to each psychosocial risk factor (A to C). This was based on the strength of the association between the variable and PND. The incidence of a history of psychiatric disorder in the new mother was rated as fair (Level B). Again, as alluded to earlier, differences in findings of levels of evidence may be linked to the varying definitions of a past history of a mental health problem, the measures used in different studies, and the methods used to assess the level of evidence.

An important consideration is that there is some evidence that a past history of a mental health problem can have a significant impact on the mother-child dyad relationship. Carter, Garrity-Rokous, Chazan-Cohen, Little and Briggs-Gowan (2001) investigated the relationship between 69 mothers and their babies, in a longitudinal study over 30 months following the birth. The measures used to diagnose the type and severity of lifetime disorder were the Centre for Epidemiological Studies-Depression Scale (CED-D), and a structured clinical interview using the Structured Clinical Interview for the DSM-111-R-Non-Patient Version (SCID-NP). Contact with the mothers occurred at four months and 14 months postpartum, in a laboratory setting. The women also completed postal questionnaires antenatally, and at 30 months postnatally, in addition to the personal contact points. To increase the understanding of the impact of various conditions on the dyadic relationship between the mother and the child, the cohort was assessed for co-morbidity, as well as depression.

During the period of the study, 48% of the women were assessed as having no diagnosis during their lifetime and 23% were diagnosed as having met the criteria for lifetime depression. Nineteen percent were found to have suffered a mixed episode of depression and another condition such as anxiety or substance abuse. The health of the relationship of the dyad, and the impact on the child, was assessed using a range of observation and questionnaire methods. These were the Emotional Availability Scale (EAS), the Infant-Toddler Social and Emotional Assessment (ITSEA), and the Child Behaviour Checklist/2-3 (CBCL/2-3). The level of risk for insecure attachment of the child was significantly associated with either lifetime depression, or a mixed diagnosis in the mother. However, higher insecurity of the child was also found, where women had a history of a mixed diagnosis. In addition, there was evidence that the play-interaction of the mother and child was adversely affected by a previous history of a mental health problem. These findings highlight the importance of early identification of a previous history of a mental health problem in pregnant women.
However, the evidence for a past history of a mental health problem is less clear in primiparous women. This may impact upon the ability of clinicians to identify, antenatally, an important risk factor for attachment issues in the postpartum period. Kumar and Robson (1984) found no significant association between PND in first-time mothers and a past history of a mental health problem. Other researchers found that the incidence of risk for PND appeared higher in multiparous women (Bebbington, Dean, Der, Hurry, & Tennant, 1991). To some extent, differences in findings may be due to age, rather than parity, as Kumar and Robson’s (1984) study assessed only primiparous women, who are often younger. Another point is that women are only entering the period of greatest risk for emotional disturbance after becoming first-time mothers (Whiffen, 1992). Furthermore, multiparous women may have already experienced their first episode of mood disorder, following the birth of a previous child (Elliott et al., 2000). Clearly, a past history of a mental health problem is an important factor that can highlight the potential for future difficulties for the mother and her child. However, there is some evidence that first-time mothers with PND are less likely to have experienced a previous mental health problem. This highlights that, the issues linked to early identification of PND, particularly in first-time mothers, are complex, diverse and wide-ranging. A vital point is that assessment methods may need to vary, according to parity. Moreover, support needs for primiparous and multiparous women may differ.

2.3.8 Social Factors and PND

Certainly, those who are isolated appear to be more at risk of being vulnerable to PND. In reviewing the literature, Barnett and Gotlib (1988) identified few social networks to be a consistent predictor of PND. This may be linked to the concept that, in functional systems, female family members and friends provide appropriate modelling of motherhood skills. Furthermore, they offer important information and other supports that are critical to the new mother, in the first few months following the birth (Fowles, 1996; Lee 1997). Female family relationships may therefore be very influential in the mental health of a new mother. Findings by Cox et al. (1993) give support to the need for functional female relationships at this critical time. They found that a poor relationship, between postnatally depressed women and their mothers was significantly correlated with PND. Interestingly, a poor maternal relationship was not significant in a control group of women with non-postpartum depression. Kumar and Robson (1984) also found that women experiencing current difficulties with their mothers were more likely to experience depression after the birth. However, the issue of social support, and
its contribution to the onset of depression in women following the birth of a baby, is a complex one. This is because of the unique circumstances inherent in the puerperium. In fact, as highlighted by Cox et al. (1993), though social support is generally very important during this period, some social contact can also be stressful for some women (Hall, Schaefer, & Greenburg, 1987; Murray et al., 1995). Consequently, it appears the quality of support, as perceived by the mother, rather than the quantity of contacts, may be significant (Sheppard, 1994; Stuchbery et al., 1998).

This issue of the perceptions of the mother, rather than objective external assessment of social support, is very important to note (Leathers, Kelley, & Richman, 1997). Brugha et al. (1998) interviewed 507 women in the antenatal period and conducted a second assessment with 427 of the women, at three months postpartum. During pregnancy, the Interview Measure of Social Relationship (IMSR) was administered. This measures the quantity and perceived quality of social supports, in proximity to the time of measurement. Adverse major life events were ascertained, using a modified version of the List of Threatening Experiences (LTE). A structured interview also assessed the negative and positive aspects of the pregnancy. These included the instrumental and emotional support available, perceptions regarding the pregnancy and financial issues. The impact on the relationship with the partner, and her mother, in relation to the pregnancy, was also assessed. The Eysenck Personality Questionnaire (EPQ-N) was also administered antenatally. It was found that the woman's satisfaction with her support system was an important predictor of PND, while the size of the network was not significant (Brugha et al., 1998).

The impact of additional life-stressors, either pre, during, or post delivery, resulting from perceived or actual problems, is readily acknowledged by most researchers as making some contribution to the incidence of PND. Brown and Harris (1978) as well as Cutrona (1982) proposed an additive model of stress, arguing that women who were subjected to additional stressors during the puerperium, over and above those associated with this life event, were more likely to be susceptible to PND. Paykel et al. (1980) supported these findings, noting that there was approximately three times more likelihood of suffering from PND if another significant stressful event had occurred. However, they also pointed out that only 36% of the women who had undergone a recent stressful event became depressed following childbirth. Similar percentages have also been found in general depression (Kendler, Karkowski, & Prescott, 1999).
Primiparous women may be more likely than multiparous women to experience psychological distress as inexperienced first-time mothers. Two hundred and sixty-four women, who had recently delivered a healthy baby, were recruited and assessed using a self-administered questionnaire during the first three days postpartum. The purpose of the study was to identify the prevalence of symptoms indicative of post-traumatic stress, and potential predictors of this disorder, in mothers who had very recently given birth. The measures included the trait anxiety section of the State-Trait Anxiety Inventory (STAI), a six-item scale, measuring perceptions of control, and a further 24 questions, assessing the women’s perceptions of the labour and delivery. At six weeks postpartum, the participants also completed several inventories. These were the Post-Traumatic Stress Disorder Questionnaire (PTSD-Q), the Impact of Events Scale (IES), and the state anxiety section of the State-Trait Anxiety Inventory (STAI). The EPDS was also administered to assess depressive symptoms, using a cut-off of 12/13. When compared with multiparous women, primiparous women felt less in control of the situation during labour and delivery, and felt less prepared. Indicating increased anxiety, they were significantly more fearful for their baby. They perceived the childbirth experience, and procedures used, to be worse than expected (Czarnocka & Slade, 2000). First time mothers, it appears, may be predisposed to suffer from more anxiety around the time of childbirth, perhaps due to their lack of knowledge about the birth, and the period that follows it (Whiffen, 1992).

Arizmendi and Affonso (1987) found the events that caused most intense anxiety were perceptions of the impending childbirth and associated fear and concerns about the baby. In this study, 221 women were recruited from an obstetric out-patient clinic. They were interviewed during the first and third trimesters, and at six weeks postpartum. Women under 18 years were excluded, as it was considered they might have unusual stress that was not representative of the total population. Participants were asked to list all stressful events occurring since the pregnancy, and rate these from 1-100 in terms of stress caused. The most often reported stressors were physical stressors, such as nausea, vomiting, and other comfort issues. Body and self-image tensions, such as feeling fat and unattractive, were the second most often listed. Expectations about the baby, and stress caused by changed routines and patterns of living, such as moving or rearranging the home, were also primary concerns. Another category of external events, that caused major stress across all points of assessment, was the partner relationship. This links to other findings, that some primiparous women may have insufficient, or inappropriate, information on what can happen in the period around childbirth (Dalton,
Furthermore, this may be exacerbated if women have either ineffective or inadequate social support at this critical time (Brown & Harris, 1978). Increased anxiety antenatally, particularly when first-time mothers have less perceived social support, may also precipitate increased emotional disturbance, postnatally (Arizmendi & Affonso, 1987).

Clearly, additional stress is an important factor for some subsets of women. However, not all women who are exposed to some form of additional pressure during the puerperium develop PND (Brown, Craig, & Harris, 1985; Kumar & Robson, 1984). Again, as with the support network, other factors, such as the perceptions of women, need to be considered alongside the presence or absence of potential stressors. Hall, Kotch, Browne and Rayens (1996) assessed everyday stressors or “daily hassles”, and found that daily hassles were significantly associated with depression in mothers. In this study, 738 women were recruited who met the criteria for high-risk. This was related to factors such as problems with the baby, or personal factors such as younger age, substance abuse or past history of a mental health problem. Participants were interviewed in their homes, during the first four to eight weeks postpartum. Various measures were then used to assess factors, associated with high depressive symptoms. These included the Center for Epidemiological Studies-Depression Scale (CES-D). The Everyday Stress Index (ESI) was administered to measure daily hassles and a modified version of the Life Experiences Survey assessed whether women had experienced a significant life event during the past 12 months. The quality of the partner relationship was evaluated using the Autonomy and Relatedness Inventory (ARI). The Rosenberg Self-esteem Scale measured self-worth and self-acceptance. The findings were analysed, using a range of statistical tests, including multiple regression, multiple logistic regression, and path analysis. Marital status, race, employment status, education, and infant risk were included in all of the analyses, to control for their influence on self-esteem and depression.

As may be anticipated when assessing an at-risk cohort, it was found that 42% of the women had depressive symptoms. Surprisingly, the overall level of infant risk did not strongly affect the mother’s depressive condition. However, both biomedical and social issues were related to the severity of depressive symptoms in new mothers. The most important factors associated with depression in mothers were everyday stressors, and self-esteem. Unfortunately, as this study was cross-sectional, the direction of the relationships was unclear. Self-esteem was found to mediate the quality of the partner
relationship and depression, but not the quantity of supports and depression. As found in a previous study, with mothers of 5 and 6 year old children, everyday stressors were most strongly associated with depression (Hall, 1990). However, it was noted that the extent to which stressors are reported may well be more a reflection of the mothers’ perceptions, related to their levels of anxiety or low mood at that time (Arizmendi & Affonso, 1987; Hall, 1990). This reflects the importance of the perceptions and mood of women, when using self-report instruments to measure factors, such as stressors. This is similar to findings on social support factors, where the perception of the mother seems more important to mood than the quantity of supports available.

A related aspect, which has been explored as a potential additional stressor, is the stability of the partner relationship at the time of the puerperium (Cutrona, 1982). Marital status, and the perceived quality of partner relationships during the months following childbirth, has therefore been the focus of some attention. Again, the results are not clear-cut. Some research suggests that women who are single, separated, or divorced are more likely to suffer PND, possibly because the lack of a partner can mean fewer supports (O’Hara et al., 1984). On the other hand, Mauthner (1998) argued that not all intimate partnerships offer a supportive caring relationship. This may be one reason for findings reporting no correlation between lack of a partner and PND (Hayworth et al., 1980).

For those who do have a partner, stress arising from marital discord during the puerperium has consistently been found to be an issue (Barnett & Gotlib, 1988; Whiffen, 1992). Furthermore, a perceived lack of partner support for the new mother has been found to be salient (Cutrona, 1982; Matthey et al., 2000; Stuchbery et al., 1998). Partner tensions may be one reason why some women may be more likely to be depressed as long as two years following the birth (Brown et al., 1994). However, the evidence from a meta-analysis indicated that the evidence for a direct association between PND and partner support was not significant. Nevertheless, the severity of symptoms experienced by women suffering from PND was strongly linked to the relationship (O’Hara & Swain, 1996). The complexity surrounding the partner relationship is clear and it has been argued that marital tension alone does not predispose a woman to suffer from PND. It is only an issue if there are other additional stressors during the postnatal period (Paykel et al., 1980).

Another view, linked to this point, is that the stress of parenthood itself has consequences for the relationship. This creates or exacerbates dissatisfaction in one, or
both, of the partners (Delmore-Ko et al., 2000). This may be particularly relevant when
the new mother has expectations of both instrumental and emotional support from her
partner that are not met. Belsky (1985) found that 25% of tension in relationships was
due to unmet expectations of shared responsibility, following the birth. One way to
minimise some of the additional stressors and tensions for new mothers may be the
provision of external support systems that can support women in the first weeks after
the birth. Thompson, Roberts, Currie and Ellwood (2002) conducted a large study, with
1193 women who gave birth in the Australian Capital Territory over an eight month
period. One of their findings was that 40% of women said they would have liked more
help and advice during the first eight weeks after the birth. Most also felt the same need
up to four months after the birth.

However, some of the findings also indicated that first-time mothers experienced
many more physical difficulties, and interventions, compared to multiparous mothers.
This negatively affected their sexual relationship with their partner. The researchers
proposed that one reason for low mood, was that first time mothers had unrealistic
expectations for early recovery. They may also experience more difficulty, because of
adjustment issues.

The findings on relationships, and other cultural and social stressors, give further
support for the view that PND is likely to have a multifactorial aetiology. A
comprehensive table, summarising the evidence for risk factors in the onset of PND, can
be found in the NHMRC systematic review of published scientific literature (NHMRC,
2000, pp. 68-73). Furthermore, the importance of perception, and interpretation, again
emerges strongly. This indicates that how women think about, process and perceive
their circumstances is salient, and is therefore crucial to their positive or negative
experiences of motherhood (Matthey et al., 2000). This is related to cognitive factors
(Boyce, 1994; O’Hara et al. 1982). The role of cognition in PND and related mood
disorders is discussed in Chapter 3.
Chapter 3

Cognitive Factors and Their Role in Mood Disorders Around Childbirth

The last Chapter described the history of depression around the time of childbirth, and the time taken to accept that PND required specific recognition in the nomenclature. It was followed by an overview of the findings on prevention and treatment options. Finally, the Chapter highlighted the debate on the definition of PND, and reviewed the literature on some of the key predictors and associated factors that have been researched in relation to this syndrome, and related mood disorders.

This Chapter explains the role of cognitive factors in three of the more developed theories of depression. It then goes on to discuss the concept of dysfunctional maternal attitudes, and the theories postulated by some feminist writers related to this issue. It is claimed that these attitudes are the result of cultural norms and expectations, and that these "myths of motherhood" (Oakley, 1981) exacerbate the potential for low mood, in some new mothers. This is followed by an overview of cognitive factors, researched in relation to PND and other mood disorders, occurring around childbirth. The findings are described. Finally, the Chapter provides an overview of the gaps in the literature on cognition and PND and other mood disorders occurring around childbirth, and summarises the rationale for the study.
3.1: Cognition and Depression

Cognition can be considered as all of the mental content and processes that result in what is commonly call “thinking” (Reber, 1995). These include perceptions, categorising, abstracting, reasoning, problem solving, organising and planning. Various researchers have suggested that cognition and emotion are constantly interacting, to the point that they are inseparably part of the same process (Teasdale, 1996). The view adopted more widely in the last 20 years is that affect is mediated by perceptions and abstractions. Therefore, cognition is considered to be a critical component to the onset of any affective disorder. Based on evidence accumulated from studies conducted in recent years, it is claimed that maladaptive cognitions, such as appraising events negatively, and internally attributing such events, are an integral part of the presentation of depression, and other affective disorders (Blackbum & Twaddle, 1996).

A recent review from a different perspective provided some important evidence for this argument. Harrison (2002) reviewed a significant body of knowledge that emerged from studies using relatively new procedures, such as MRI screening. He claimed that there is comparatively strong evidence that changes occurring to the structure of the brain, in the presence of mood disorder, may impact upon cognition and affect. These changes are predominantly characterised by the presentation of fewer, or altered, glia and neurons. Distorted functioning has also been noted in the synaptic terminals and dendrites. These physiological changes have been found in unipolar, as well as bipolar, depression. Based on these findings, Harrison (2002) postulated that there is sufficient evidence to claim that changes in brain structure are concomitant factors in mood disorders. Furthermore, it is argued that the altered physiological structures, found to exist in the presence of mood disorders, are intimately involved in the faulty regulation of mood and cognitions, linked to mood disorder (Harrison, 2002). Dysfunctional cognitions, therefore, play an important role in current theories of depression occurring at other times in the lifecycle. These cognitions include negative thought patterns, linked to feelings of guilt, sadness, hopelessness, helplessness and low self-evaluation, or self-esteem, amongst others (Williams, 1992). Another recent study, that appeared to support this view, investigated changes in cognition, in 80 people. The team assessed whether there were differences in cognition between groups of people with a range of affective diagnosed disorders. These included schizo-affective, bipolar, dysthymic, and unipolar depression. They also compared the sub-groups with 62
healthy controls. All sub-groups had more negative cognitions than the control group, both at the time of admission, and even when their symptoms had decreased (Nue, Kiesslinger, Schlattmann, & Reischies, 2001).

Williams (1992) described four ways that maladaptive, or dysfunctional cognitions, are commonly defined. The first is as negative or intrusive thoughts. These may be fleeting, but are known to the individual as self-talk. The second is related to expectancies, arising from past experiences and outcomes (outcome-contingency). The third is linked to attributions, assumptions, and beliefs that may be covert or dormant, but are often triggered by stress. The fourth is related to biases in information processing. Given the range and complexity of the cognitions that are purported to be involved in affective disorder, it has been suggested that it is important to consider the various types of cognitive influences that may be linked to a depressive disorder (Teasdale, 1996).

The role of cognition in depression has predominantly been understood and examined through constructs embedded in three key theoretical frameworks. These are firstly, the role of reinforcement, embedded in social learning theory (Bandura, 1977). The impact of rewards on thinking styles, and the relationship between general expectations of internal or external control, are considered fundamental to this framework (Rotter, 1975; 1990). The second is the reformulated learned helplessness theory, which incorporates the concepts of attributions and uncontrollability (Abramson, Seligman, & Teasdale, 1978). Finally, Beck’s cognitive-behavioural model of depression (Beck, 1976) has evolved over recent times. This is now widely utilised as a basis for therapeutic interventions, and includes loss as a key component of the framework (Teasdale, 1996). All of these theories incorporate various aspects of the four types of dysfunctional thinking, described by Williams (1992). Each one is briefly outlined below.

### 3.1: Rotter's Locus of Control

Linking effort to reward is a fundamental tenet of Locus of Control (LOC) theory (Rotter, 1966). Simply stated, this theory asserts that LOC measures the degree that individuals attribute outcomes in life to their own efforts, skills and abilities (Internal Locus Of Control - ILOC) or to factors outside their control, such as fate, or powerful others (External Locus Of Control - ELOC) (Rotter, 1966; 1990). LOC is not a
reflection of whether people are actually controlled from within or without, but whether or not they believe their own behaviour, disposition, or skills determine the reinforcement that follows (Rotter, 1966). This implies a significant cognitive component to the process. Since its inception, many studies have linked this construct with various personality types. In one study, 259 people, with ages ranging from 17 years to 66 years, completed a range of inventories. These included the Rotter’s Internal-External Locus of Control Scale (LOC), the Beck Depression Inventory (BDI), the State-Trait Anxiety Inventory (STAI), the Eysenck Personality Inventory (EPI), the Internal Control Index (ICI), and the Self-Esteem Inventory (SEI). The LOC scale results indicated that internals were less likely to be depressed or anxious and had higher self-esteem than externals (Meyers & Wong, 1988).

Importantly, LOC is not necessarily a permanently fixed trait or type. It is thought to be a comparatively stable personality trait that develops from an individual’s previous reinforcement patterns (Joe, 1971). Rotter (1990) defined it as a “relatively stable cross-situational individual difference” (p. 490). Nevertheless, Rotter also noted that the LOC has the potential to change, depending on the stage of maturity of the individual, and various contextual factors and circumstances. There is some evidence that cohorts of people have become more external over time, particularly relatively young people. Importantly, this appears to be linked to suicidal activity.

In a study exploring changes in LOC, college students studying in the United States of America (USA) completed the LOC annually, between 1966 and 1973. These were compared with the annual variations in suicide rates for the total population of the USA, over the same period. The I-E scores of this cohort increased during the period (became more external) and were correlated with higher suicide rates among comparatively young people (in and below the 35-44 year age group). However, suicide rates among older people decreased overall, during the same period. It was suggested that the older cohort did not become more external, because they were less influenced by changes in cultural and environmental factors that may affect the perceived control of younger people (Boor, 1976). In addition, it may be that people in the younger age group are more likely to be experiencing major life events during this period. This may cause additional stress and affect their perception of personal control. In support of this proposal, there is some evidence that LOC can modify in those with a more external LOC, following a major life transition such as childbirth (Little et al., 1981). Furthermore, treatment interventions have also been demonstrated to influence LOC.
There is some evidence to suggest that a preference towards an external orientation of control can be modified to a more internal conceptualisation of control (Joe, 1971). This may be important in prevention of PND and related disorders, as well as general depression.

Although researchers have mainly focused on the implications of an ELOC and depression, there is also the issue of an extreme LOC in the other direction (ILOC), and the resulting impact on thinking (Rotter, 1975). Rotter (1990) proposed that people with high expectations of self (ILOC) may be susceptible to psychological trauma in certain situations, particularly when confronted by uncontrollable events. This explanation may be crucial in understanding why LOC has not been found to be significantly different in women with mood disorder, in some studies measuring this concept, before and after the birth (Dimitrovski, Perez-Hirshberg, & Itskowitz, 1987).

3.2: The Reformulated Learned Helplessness Theory

What is not clearly articulated in Rotter’s (1966) theoretical framework is the differentiation between functional and dysfunctional LOC and contextual influences, “it collapses good and bad events and mushes different domains” (Peterson & Stunkard, 1971, p.3120). In effect, the LOC is a broad construct that measures limited contextual responses. The additional components that are involved in the cognitive processes of attribution and perceived control in varying circumstances were more explicitly articulated in the revised learned helplessness model (Abramson et al., 1978). The model of depression incorporating learned helplessness was developed by Seligman (1975). Experimental research generally found some support for the theory, that those exposed to uncontrollable events (uncontrollability) failed to learn and adapt functionally and became passive or helpless (Abramson et al., 1978). These studies highlighted the importance of control over one’s life (Sweeney, Anderson, & Bailey, 1986).

The importance of control, and the relationship to stressors, cognition and depression, was demonstrated in a study by Mazure, Bruce, Maciejewski, Jacobs and Selby (2000). Forty-three people with a current diagnosis of unipolar major depressive disorder were recruited, and compared with a control group of non-depressed people. The groups were matched for age, sex and race. Participants were assessed at the initial contact time, and again after those who were depressed had undergone treatment for a
six week period. Prior to the intervention, adverse stressful life events were assessed, using the Structured Event Probe and Narrative Rating Interview. The constructs of sociotropy and autonomy were also assessed, using the Sociotropy-Autonomy Scale. It was found that depression was three times more likely in people who had experienced a significant life event during the past six months, and three times more likely in those with a higher need for personal control.

The relationship between factors that cause psychological distress and depression was also discussed in a study by Hall (1990). Mothers of 4-year-old and 5-year-old children, who had been at-risk infants because of low weight, were recruited by reviewing kindergarten enrolments. Six hundred women were identified and contacted by mail. Of these, 196 agreed to participate in the study, and completed all of the data sets in individual interviews. Depressive symptoms were assessed using the CES-D. Everyday stressors were also assessed using the ESI. Women were also asked about socio-demographic factors, using a structured questionnaire format. As may be anticipated in women with at-risk children, the incidence of high depressive symptoms was 49%. Furthermore, women reporting a high level of everyday stressors (a score of 15 or more) were three times more likely to be depressed than mothers reporting low scores. An important point was that the direction of the relationship between higher depression score and more perceived stress was not able to be determined, due to the retrospective nature of the study.

However, simply being exposed to situations that are stressful, and that appear to be uncontrollable, is not enough to induce helplessness, according to later research on the theory of attributional style (Abramson et al., 1978). Seligman’s theory (1975) was revised several years later to incorporate the important cognitive concept of social reference. This also has a role in the process that leads to depression. It was theorised that when individuals find that they are helpless in a situation, they compare themselves to others in similar circumstances. If individuals perceive (correctly or incorrectly) that others are coping well with similar adverse events, they may blame themselves, rather than the situational factors. This self-blame can lead to a decrease in self-esteem and motivation, resulting in fewer attempts to operate on the environment, and a sense of personal helplessness (Seligman, 1975).

Causal attribution to self for negative events (internal) determines the chronicity and generality of helplessness, resulting in lower self-esteem. The other specifiers of severity are; the extent to which the attributions are global (I fail at everything I try),
and stable (I always fail when I do this) (Abramson et al., 1978). In summary, this model of attribution style links a diathesis or predisposition, towards a more pessimistic attribution style, with a stressor or stressors. This trigger results in negative connotations, leading to self-retribution, a lowered self-esteem and depression. Furthermore, the need for control over one's environment is a fundamental underpinning of the theory (Sweeney et al., 1986).

Sweeney et al. (1986) conducted a meta-analysis, in which they reviewed 104 studies on attribution style. They found that the literature generally supported the theory. As attribution for negative events became more stable, global and internal, depression levels increased. In contrast, attributions for positive events on the dimensions of stable, global, and internal were negatively associated with depression. Furthermore, the composite score was also be negatively associated with depression, as was anticipated. However, the effect sizes were small to medium. An interesting discussion point was that people appear to make more attributions linked to negative, rather than positive, events and tend to ruminate more on unexpected, rather than expected, events. This may have some important implications for women, experiencing childbirth for the first time.

An investigation on the relationship between attribution style and depression, in pregnant teenagers, has also provided some support for these links (Wagner, Berenson, Harding, & Joiner, 1998). However, others have indicated there are mixed findings, when teenagers are differentiated by disorder (Gotlib, Lewinsohn, Seeley, Rohde, & Rednar, 1993). Gotlib et al. (1993) recruited 1,710 adolescents, who were then interviewed using a modified version of the SADS, and the Schizophrenia for School-Aged-Children (K-SADS). All participants also completed the CES-D. The teenage cohort was then categorised into four sub-groups. These were currently depressed adolescents, previously depressed adolescents in remission, adolescents with a disorder other than depression and never-depressed adolescents.

At the first point of contact, participants also completed various inventories. These were nine items from the Dysfunctional Attitude Scale; 10 items from the Subjective Probability Questionnaire (SPQ); The Frequency of Self-Reinforcement Attitudes Questionnaire; three questions from the Rosenberg Self-Esteem Scale; three items on perceived control; and The Kastan Attributional Style Questionnaire. Factor analysis indicated two factors. These were negative cognitions, and attributional style. The findings indicated that both cognitive factors and attributional style were more
dysfunctional in depressed adolescents, when compared with others who had been previously, or never, depressed. The research team proposed that negative cognition is more likely to be associated with, rather than a predictor of, depression. However, a vital point was that those with a previous diagnosis of depression had more dysfunctional cognitive and attributional styles than the never-depressed group. This led to speculation that cognitions and attributions may continue to be dysfunctional following an episode of depression, even though the acute symptoms have remitted. Attributional style did not differ between those with a current diagnosis of other disorder, and currently depressed participants, indicating that a negative attributional style is likely to be present in any form of current disorder. However, only the depressed group had more cognitive dysfunction, leading to the proposal that dysfunctional cognitions are more likely in depressive disorders than other psychological disturbances.

Whether attributional style changes prior to, and during, the onset of PND, is yet to be fully explored. An interesting point raised by Williams (1992) is that, while some studies have failed to find a direct proximal relationship between attributional style, a stress-invoking event, and depression, there is some evidence for the possibility of a negative attributional style preceding a longer and potentially more severe depressive reaction to stress.

According to the learned helplessness theoretical framework, another important component of the attributional process in the development of depression, is low self-esteem. The attitude towards oneself (self-concept) and confidence in one's ability to perform (self-efficacy) are the key components of self-appraisal. This appraisal comes from interactions with one's external world, which result in a higher or lower self-esteem (Bednar et al., 1989). The revised learned helplessness model incorporates the idea that lowered self-esteem results from self-attribution for negative events, which in turn contributes to feelings of depression. Compelling evidence by various researchers has contributed to recognition of the link between low self-esteem and depression, in the DSM-IV (1994).

3.3: Beck's Cognitive Behavioural Model (1976)

Cognitive theories of depression state that attitudes are a learned predisposition to respond in a positive, or negative, manner to a particular person, object, or idea.
Cognitive dysfunction, according to Beck (1976), is a distorted way of thinking. This theory incorporates some aspects of social learning theory (Bandura, 1977). It is claimed that distortions in thinking are learned during development towards maturity, and that these have a strong impact on feelings and behaviour. As purported in other behavioural models of development, learned responses are initially generated by a combination of personal experiences, modelling the behaviour of others, and formal education (Bandura, 1977).

However, whereas early behaviourists asserted that reinforcement directly determined the subsequent actions, Beck (1976) claimed that cognitions, such as appraisal of events, play a key role in determining the reaction. Furthermore, it is claimed that affective disorders result from impaired thinking, with individuals systematically misconstruing experiences. These thoughts can range from minor inaccuracies to gross misinterpretations. Beck (1976) asserted that specific vulnerability to depression is triggered by a precipitating event, or events, with the resulting stresses underpinning a process that ultimately result in depression. This is similar to the process described in the learned helplessness model.

The precipitating event may not necessarily be discrete, but can be a chronic recurring series of events that are a continual source of dissatisfaction. One pertinent example, described by Beck (1976) is a woman’s negative perception of her performance as a mother, or wife. It is claimed that this can eventually lead to a strong and significant sense of loss to the person. The sense of loss may result from pre-existing, unrealistically high goals, and grandiose expectations of motherhood, or a poor relationship with the partner. Importantly, the impact of the loss will depend on the meaning attached to it. Therefore, more extreme and rigid pre-existing beliefs, cause more extreme explanations, conclusions and self-blame. The repeated recognition of a gap between what is expected and what is received from an important person, relationship or other activity, may further precipitate pessimism. This will impact upon the psychological well-being.

Beck (1976) denoted some of the other events that may cause the individual to experience a sense of loss:

- The loss of a concrete object that was the source of gratification and valued such as money or property;
- The loss of an intangible object, such as personal control or affection;
- Lower self-esteem as a result of insult or disparagement;
• Something originally perceived as a positive asset becoming negative;
• A disappointment between what is expected and that received – unfulfilled expectations;
• An expectation of future loss experienced prospectively;
• Hypothetical loss, pseudo loss.

Once triggered, Beck claims that distorted thinking eventually involves all aspects of the person’s life; a negative perception of self, interpretation of events (the world) and a nihilistic view of the future. The disturbances in logical, rational ideation can include arbitrary inference, selective abstraction and over-generalisation. As specific negative attributions regarding the loss are linked to individual capabilities, outside of the original precipitator, global negative attributions increase. This “chain reaction” (p. 115) becomes circular, and results in a downward spiral of negative thoughts and feelings, “The depressed person moves from disappointment to self-blame and to pessimism” (Beck, 1976, p. 115).

In summary, Beck proposed that “depressogenic schemata” consist of extreme, concrete and immature responses that occur without a logical base. They are learned during development, and are usually dormant or latent (Boyce & Mason, 1996). However, they are evoked during very stressful situations, when depressogenic-prone individuals begin to differ in the way they construe their surrounding circumstances. These individuals tend to blame themselves, and perceive a more negative meaning to the event or situation.

Importantly, a consistent distortion in appraisal, and the associated responses, results in some important loss to the individual. If individuals attribute the reason for the loss to themselves, they become more self-critical (Beck, 1976). The preoccupation with deficits, and lack of abilities, causes negative responses to relatively innocuous stimuli. This leads to self-blame, rather than more obvious, plausible explanations that would not involve self-attribution for negative events. The tendency to compare oneself and one’s own performance with others, further exacerbates negative self-evaluation and self-criticism (Abramson et al., 1978)

Ultimately, these faulty attributions of self-blame differentiate psychological disorder from so-called normal response. Negative appraisal of events, and self-blame, results in low self-esteem Beck, (1976). Once depressed, the person uses “selective abstraction” to focus on negative events, rather than positive ones, and becomes overly
aware of internal processes. These individuals are attentive to certain negative cues. This “tunnel-vision” eventually causes negative interpretations of outcomes, for both current and future situations (Beck, 1976, p.115).

3.4: The Role of Self-esteem in Models of Depression

All of the theories outlined infer an important role for self-esteem, in the onset of depression. Watson, Suls and Haig (2002) found that self-esteem is one of the most widely studied constructs in psychology. In a search of the PsycINFO database (from 1967 onwards) they found citations to more than 20,000 relevant studies. Many of these (more than 11,000 studies) have been published since 1990.

The idea of self-esteem evolved from the examination of self by a range of early theorists who explored how the sense of self evolved from interactions with the environment. Smith (1813, cited in Bednar et al., 1989) asserted that individuals are impartial spectators of their character and conduct. He believed that when individuals judged their performance they used two perspectives; that of both the external examiner, and the person who was examined (Bednar et al., 1989).

William James also explored the possibility of a subject-object distinction (1981). He described the self as having two parts, both the knower (I) and the known (me). According to James, the self contained four components that are important to self-esteem. These are the spiritual self, the material self, the social self and the bodily self. He postulated that that how individuals view themselves (self-feeling) depends to a large degree on how they perceive themselves in relation to others (self-regard) whose skills are similar to theirs in particular domains (Bednar et al., 1989). These ideas of social comparison link in to the revised model of attributional style.

Cooley (1902) was another early theorist who expanded the concept of self, believing that society and self have an interdependent relationship. In effect, he indicated that self and society mutually define each other, acting as points of reference. He also noted that subjectively interpreted feedback provided a main source of data about the self, highlighting that the self-concept is significantly influenced by what the individual believes others think of him, “the looking glass self”. This connection between self-awareness and the imagined opinions of others has three key elements:

The imagination of one’s appearance to another person;

The imagination of the judgement of that appearance;
A self-feeling such as pride or shame.

In effect, self and society mutually define each other, acting as points of reference for further self-evaluation (Cooley, 1902). Rogers (1951) also linked the self with the external world. He argued that the concept of self is based on perceptions about one's characteristics and abilities, self in relation to others, and goals and ideals, which are perceived as having positive or negative valence. However, depending on the relationship to the structure of the self, experiences may be ignored, denied or distorted. Perceptions are therefore idiographic. The self-concept determines the kind and quality of the experiences perceived. Therefore, according to Rogers (1951), behaviour is the outcome of individual perceptions, gained from interactions in one's own personal subjective world.

Using a very different paradigm, Goffman (1959) explained the self in a dramaturgical metaphor. He conceived the self as moving from one role to another, similar to the concept of an actor who plays to one audience, and then moves on. This theatrical description explained the adaptation of the individual to changing social scenes and pressures. The implication was that the world is a stage, and individuals act out roles they believe people expect them to take, rather than necessarily being themselves, as they wish to be. In this theory, the individual subjectively interprets the environment. Each person must develop considerable skill in reading and interpreting the social cues, so that the correct social identity is chosen. With correct interpretation, positive reinforcement is received, and self-esteem is maintained.

Bednar et al. (1989), in a more recent theory of self-esteem, have posited that self-esteem may be a dynamic or static attribute that can change. Alongside other theorists, they postulated that self-esteem is strongly influenced by feedback from others in the environment. However, an additional dimension to their model is that internal self-evaluation and appreciation of oneself are more important than external reinforcement. They propose that coping skills have a role in the development and maintenance of self-esteem. When faced with psychological threat, the extent that individuals use avoidance as a form of coping has an indirect influence on self-regard. Those who cope with psychological threat by risk-taking, confronting and managing threatening situations can develop and grow. They are more likely to self-appraise in a positive way. In contrast, those who use avoidance to detract from fear, anxiety and conflict are more likely to display self-disapproval, impacting upon their self-esteem. Furthermore, as self-esteem increases, psychological threat decreases. As such, positive
self-esteem enhances the ability to cope with stress. The converse also applies (Bednar et al., 1989).

Self-esteem has become a prominent and influential concept in a range of discipline areas. These include personality, forensic psychology and sociology. Self-esteem has been studied as a state or as a trait, and as primarily cognitive or affective (i.e., with an emphasis on the extent to which the individual thinks about himself or likes himself or herself). It has also been evaluated in relation to domain-specific competencies, such as academic self-esteem and social self-esteem. The Rosenberg Self-Esteem Scale is the most commonly used measure in published studies (Watson et al., 2002).

An argument regarding the stability of self-esteem has been canvassed in the literature for some time, leading to other examinations of this construct. In a recent meta-analysis, Trzesniewski, Donnellan, and Robins (2003) reviewed 50 studies that met six criteria for inclusion. They found that stability of self-esteem was greatest in early adulthood, and stability gradually declined from adulthood to old age. However, there was a level of continuity across the lifespan that led the researchers to conclude that self-esteem is probably a trait, but one that can be impacted on, in the short term, by circumstances.

Support for poor self-esteem as an important factor in the onset and maintenance of affective disorders such as major depression comes from a study by Kendler and Gardner (2001). They studied 72 pairs of monozygotic twins who were raised together. It was found that if one twin had a major depressive disorder, they were significantly different to their sibling on self-esteem, measured using the Rosenberg Self-esteem Scale. Another series of studies also highlighted the role of low self-esteem in depression. In one of these studies, the participants were 287 students (141 men, 145 women, 1 unspecified). The cohort was assessed on two different measures of self-esteem. These were the Rosenberg Self-esteem Scale and the 25-item Adult Form of the Coopersmith Self-Esteem Inventory. The two different measures of global self-esteem (the Rosenberg and the Coopersmith) were examined against a wider range of measures, including two measures of depressive symptoms. These were the Mood and Anxiety Symptom Questionnaire (MASQ), and the trait version of the Positive and Negative Affect Schedule (PANAS). Global self-esteem, as measured by the Rosenberg Self-esteem Scale, was significantly correlated with the two depression scales. The strength of the relationship was such that the authors proposed that depression and self-esteem
are a single bipolar continuum, represented by measures such as the Rosenberg on one end, and by trait measures of depression on the other (Watson et al., 2002). These studies provide further evidence for the importance of the construct of self-esteem in depression and other disorders.

Since PND and related disorders around childbirth have become the focus for a body of research, the feminist movement has taken a particular interest in this area. Self-esteem is viewed as an important concept in models of depression posited by feminist writers on this topic. Feminist literature has also drawn on many of the other cognitive and social learning theoretical concepts described earlier, to explain the process of depression occurring in women around the time of childbirth.

3.5: The Role of Maternal Attitudes in PND

Generally, women are more susceptible than men to depressive tendencies (McGrath, Keita, Strickland, & Russo, 1990; Oakley, 1981). This has led feminist researchers to speculate on the socialisation processes that may contribute towards the differences between the sexes (Riger, 1992). Some consider upbringing important, particularly when underpinned by conventional, western social norms. It is argued these create pressures on women to be passive and self-sacrificing (Maushart, 1997). Cultural expectations can lead women to believe they are inferior, and have a negative impact on their experience of motherhood and self-esteem (Fowles, 1996).

Additionally, although pregnancy and early motherhood are the time when women most need the support of their partners, new fathers may also make similar social comparisons, based on their own knowledge and idealised perception of the childbirth event. Due to the prevailing socially constructed norms about motherhood, they may also attribute any psychological problems in the new mother as being unique to their partner. The myths of motherhood, then, are arguably further perpetuated by men, “who have their own childhood memories of mothering, with all its inconsistencies and misunderstandings” (Price, 1988, p.2).

The issue of conflict in the partnership, brought about by traditional sex-role expectations, was recently highlighted in a longitudinal study of 105 women (Steinberg & Bellavance, 1999). Participants were those diagnosed as suffering from major depression (65), adjustment disorder (31) and other disorders such as anxiety (9). Those in the last category were not included in the analysis. Forty-five healthy women were
also recruited as a reference group. Women entered the study when they were 24 to 26 weeks pregnant. A psychiatric interview was conducted at the first contact point, using the SCID, and a detailed family history was taken. Further assessment was made at approximately 36 weeks antenatal, and one, six, and 12 weeks postnatal, using various self-report questionnaires. The depression measures used were the EPDS, and the Hamilton Rating Scale for Depression. Participants also completed the Dyadic Adjustment Scale (DAS), the Child Stress Inventory (CSI), the Life Events Scale (LES), and the Interpersonal Sensitivity Measure (IPSM).

All participants diagnosed as having a disorder were offered an eclectic treatment approach. The treatment model was based on the judgement of the therapist, convenience, and compliance issues. Some took medication, while others were given CBT or other interpersonal therapy. Some participants also had marital therapy. Of the total cohort of participants, 55% had medication at some time in the period of the study. Participants were contacted every week for three months, and then bi-monthly, for a further three months. The treatment component of the study was terminated at this point. The researchers found that the issue of partnership tension persisted throughout the study, at levels significantly different to non-depressed women. Clear gender differences in understanding of the roles of the other partner and concerns over lack of partner involvement were two of the reasons cited as reasons for a decrease in marital satisfaction, following the birth (Steinberg & Bellavance, 1999).

There is some qualitative evidence that the socio-cultural context underpins the cognitive-affective perceptions of some new mothers about how motherhood will be (Brown, Small, & Lumley, 1997). This socially created vulnerability may be triggered in the postnatal period, when some women feel unable to meet the perceived expectations of their husbands, families and the broader society, to take the role of “dedicated mothers”. This expectation may be particularly difficult at a time when they are feeling at their lowest ebb physically, emotionally and psychologically (Marshall, 1993; Olioff, 1991). The view that socio-cultural pressures following motherhood contribute to the onset of increased distress, is also argued by Thurtle (1995). She proposed that neither bio-medical nor psychological approaches were likely to be the only contributors to PND or other mood disorders. Thurtle asserted that the feminist perspective should be incorporated in any explanatory model of PND, and should have a role in its identification and management.
Oakley (1981) is one of many feminist writers who have described what are termed as "the myths" surrounding the concept of mothering and motherhood. The perspective posed by Oakley (1979) is that fundamental societal values and norms, based on a patriarchal framework, have led to women being totally unprepared for the physical, social and psychological stresses of the new role of motherhood. Oakley (1981) claimed that societal norms made it impossible for women to express feelings of irritation or anger following the birth. Furthermore, it was proposed that women are reluctant to disclose any feelings that may indicate failure and inability to cope, because they do not perceive that others have similar issues (Elliott, 1990). Additionally, the common understanding that motherhood will be rewarding leaves few opportunities for new mothers to express negative thoughts or feelings.

This was demonstrated in a follow-up study of depressed women, 18 months after the birth of a child (Brown, Lumley, Small, & Astbury, 1994). In this research, 90 women were interviewed on a range of issues, using a structured interview. Prior to the interview, women were sent a protocol to be completed and returned by mail. This included the EPDS, the Social Support Questionnaire (SSQ), The Life Experiences Questionnaire (LEQ), and the Toddler Temperament Scale (TTS). The research team found that women who had higher EPDS scores often reported feeling isolated and alone. Importantly, they rarely knew other women who were prepared to admit they were suffering negative feelings. Thompson, Roberts, Currie and Ellwood (2002) examined a range of issues associated with motherhood, and highlighted that women did not discuss their feelings and problems with others. The issue of secrecy around negative feelings may cause women to blame themselves, rather than circumstances, for any perceived failures in the new role of mothering. Maushart (1997) proposed that secrecy is one of the key issues that can lead to self-blame, "For most contemporary women, then, the transition to motherhood is like some arcane initiation rite to a secret society, to which the price of admission is ... an oath of silence" (Maushart, 1997, p.150).

In summary, the idealisation of the role of motherhood is reflected in cultural norms that include implicit expectations of happiness, immediate bonding, self-fulfilment, and above all, silence if this is not the case (Maushart, 1997). This societal failure to prime women to expect a difficult period of adjustment during pregnancy, and early motherhood, may therefore be a triggering factor for dysfunctional attributions. The cognitive-affective process of comparative analysis that the new mother undertakes
when facing uncontrollable difficulties that are inevitable in such a major transition period, is potentially flawed. When trying to find the answer for negative feelings arising from uncontrollable circumstances, women who are ill-informed about the realities of motherhood are more likely to attribute blame to themselves, judging that other women are coping. Rather than being primed to expect a very difficult period of adjustment and loss of control, women expect to cope and assume others are coping too (Elliott et al., 1988). This faulty logic, where some women attribute responsibility to self for negative outcomes, inevitably leads to lower self-esteem, and eventually, depression, according to several theorists (Abramson et al., 1987; Beck, 1976).

3.6: Cognition as a Predictor and Associated Factor of PND

The role of dysfunctional thinking in predicting PND and related mood disorders has been explored and examined by a small number of researchers, drawing upon the various aspects of the three main theoretical frameworks described previously. Areas targeted include perception of personal control (Hayworth et al., 1980), anxiety, attribution style, LOC and self-esteem (Connelly, 1998). A perceived lack of control over one’s life is viewed as a critical component in depression (Seligman, 1975). There is some evidence for the validity of various aspects of control, such as perception of control and the need for control, in PND (O’Hara et al., 1984). Anxiety is consistently reported as a common symptom that is present during episodes of PND (Dalton, 1971) while attribution style and LOC appear important in some studies but not others (Cutrona, 1983; Hayworth et al., 1980; O’Hara et al., 1982). The role of self-esteem in PND has had little direct consideration, but there is some evidence that it is important to an individual’s current affective state (Rosenberg, 1965) and is significantly associated with depression (Abramson et al., 1978). Depression strongly affects functional behaviour (Rosenberg, 1965). Evidence for the presence of these factors in PND is discussed in this section.

Though anxiety is a common symptom in the presentation of emotional disturbance around the time of childbirth (Whiffen, 1992), it does not appear to be a permanent, or stable trait, in new mothers (Boyce, 1994). It has been suggested that anxiety is present when the self is threatened, or the outcome is unclear or unknown (Beck, 1976). This may be why there is a significant relationship between pregnancy and anxiety, especially during the third trimester (Brockington, 1997). Furthermore, there is evidence that anxiety is also a strong predictor of PND (O’Hara & Swain,
1996). Anxiety was also found to be evident during episodes of PND (Dalton, 1971; Hayworth et al., 1980).

Worry is perceived to be a significant component of anxiety (Borkovec, Robinson, Pruzinski, & De Pree, 1983; Boyce, 1994). However, it has been found that worry is only problematic when it is uncontrollable and excessive (Borkovec & Costello, 1993). Cox et al. (1982) found that women who described themselves as worriers antenatally were more likely to suffer from PND. Interestingly, Cox et al. (1982) also found that anxiety did not predict PND. It may be that there is a need to separate the concepts of anxiety and worry, as there is some indication that worry may have different implications in pregnancy. It has been proposed that worry may be a form of cognitive avoidance. Worrying or rumination may minimise the intrusion of other types of negative thoughts that are more closely associated with depression, such as self-blame (Beck, 1976; Billings & Moos, 1981; Borkovec & Inz, 1990). Nevertheless, Gotlib et al. (1991) found that women who used an avoidant coping style in early motherhood were more likely to be depressed postnatally than women who used an active assertive style. It may be that the type of worry, and contextual factors, are also important to the role of worry in PND, as well as other forms of depression (Ruscio, Borkovec, & Ruscio, 2001).

Other cognitive variables that have been examined in relation to PND are depressive self-schema and dysfunctional attributional styles (O’Hara, 1995; O’Hara, et al., 1991). O’Hara et al. (1982) assessed a range of cognitive variables antenatally, including attributional style, for their ability to predict PND after the birth. Attributional style, measured using a modified Attributional Style Questionnaire (ASQ), was the most significant cognitive antenatal predictor. Nevertheless, the amount of variance contributed by the ASQ was small. Another issue was that the postnatal assessment time covered a relatively long period, ranging from five to 20 weeks. This is particularly important, as there is an argument that the presentation of PND may differ across those times (Kumar & Robson, 1984). This factor may have confounded their findings.

O’Hara et al. (1984) tested a cognitive vulnerability hypothesis, in which they asserted that individual perceptions, collated from interpretation and evaluation of potential stressors, affected the level of stress and negativism felt as a result of the event, leading to depression. In this study, 99 women were recruited from public and private obstetrics and gynaecology practices in the USA. The instruments used to assess depression were the BDI, and the SADS. The RDC criteria were also used to diagnose
depression. Women were also asked to complete the BDI at home, at six weeks before the birth, and three and six weeks postpartum. Measures were also used to determine cognitive vulnerability prior to the birth. These were the Self-Control Questionnaire (SCQ), which determines the degree that people hold attitudes and beliefs regarding self-control behaviours, and a modified version of the ASQ. Women also completed the Pilkonis Life Events Schedule (PLES) to assess the level of stressful life events experienced by the individual. After the birth, two obstetricians assessed the stress levels experienced during labour and delivery using the Peripartum Stress Scale (PSS). A further interview was conducted at nine weeks by the research team to assess and diagnose depression. Women also reviewed and updated their PLES, and completed a BDI and the Childcare Stress Inventory (CSI) after the interview. Three of the four factors that the research team predicted would indicate depressive symptomatology at nine weeks postpartum, based on their stress-diathesis model, were significant. These factors broadly reflected the potential predictors that they considered important: socio-demographic characteristics (age, work status, years of marriage); personal vulnerability (previous personal or family incidents of depression); life stress (general life events, child-care stressors, obstetric problems); and cognitive vulnerability (attribution style, self-control attitudes). Only the socio-demographic factor was not significant.

Interestingly, cognitive-affective symptoms were highest immediately before and after the birth, as were somatic symptoms, which may be expected. The changes in cognition during the time of highest stress are worthy of note. They may reflect important cognitive shifts that are part of the process of adjustment, to both childbirth and the period that follows it. Again, these studies support the growing body of evidence that no one of the wide-ranging variables, examined in relation to their influence on the onset of PND, individually account for a large percentage of the variance. Nevertheless, it has been shown in this study that some groups of variables, including cognitive factors, are clearly important to the onset and maintenance of PND, in some subsets of women. Other evidence, systematically reviewed in a meta-analysis, confirmed that cognitive dysfunction is a likely predictor of PND (NHMRC, 2000). Still, as yet, no comprehensive theoretical framework explains the cognitive processes that lead to dysfunctional cognitions and low mood in some women.

An ILOC is one factor that has been reported to indicate a range of coping skills that are important to positive functioning (Brissett & Norwicki, 1973; Rotter, 1990). However, the evidence for a role for either extreme form of LOC in depression around
childbirth, is comparatively weak (O'Hara & Swain, 1996). Field, Sandberg, Garcia, Vega-Lahr, Goldstein and Guy (1985) conducted a study where they recruited 24 women from a group who were referred for an ultrasound, during the third trimester of pregnancy. Women were assessed for depressive symptoms, using seven questions from a simple yes/no questionnaire developed by Braverman and Roux (1978). Twelve women, who scored at least three questions positively, were determined as more likely to be depressed. A further 12 women, who scored negatively to all questions on the protocol, were allocated to a control group. Approximately four months after the birth, the two groups of women were invited to attend a session, where their interactions with their babies were observed, and taped for 10 minutes. After the intervention, women also completed a range of other inventories. One of these was an LOC scale, devised by Nowicki and Duke (1974). Depressive symptomatology was measured using the BDI. The researchers found that higher BDI scores were associated with a more external LOC. However, the research was only able to assess the association between ELOC and depression, as the LOC measure was not administered before the birth.

Other researchers also found some relationship between PND and ELOC. However, they were inconclusive in their findings on the process of LOC in depression (Hayworth et al., 1980; Little et al., 1982). This implies that some new mothers with an ILOC are also likely to experience this form of depression. The process by which new mothers who do not have a pre-existing cognitive vulnerability become depressed during the puerperium is unclear. However, there is indirect evidence that the experience of having a baby can modify the relationship between LOC and depression, after the birth. Dimitrovsky et al. (1987) reported an interaction of LOC and cognition in the puerperium, when they administered the LOC and The Self-Rating Depression Scale in a study of primiparous women. Fifty-four first time mothers, living in middle-class locations, were recruited from child health clinics. They were interviewed on two occasions, during the last trimester of the pregnancy and again between the first and second month postnatally. On the first occasion, they completed the Rotter LOC Scale and the Zung Self-Rating Depression Scale. In the postnatal interview, participants only completed the Zung Self-Rating Depression Scale. The mean score of the cohort, on the LOC scale, was used to categorise the participants as either internal (eight or less), or external (nine or more). There were no significant differences between either internal or external LOC and depression following the birth. However, there was a tendency for more women with an external LOC to be depressed antenatally, with the research team finding a low but significant correlation between AND and ELOC.
The stability of mood differences between internals and externals was very interesting. The correlation between antenatal and postnatal scores was significant, for those with high ILOC, but not for those with ELOC. As such, those with internal scores were less likely to experience significant mood change from the antenatal to the postnatal period. This is similar to findings in other studies (Little et al., 1981). Women with a tendency to a more external LOC (ELOC) had significantly different scores on the depression scale between the times of measurement, whether this was becoming more, or less, depressed over the time. It was proposed that this may be because external women are likely to be more emotionally labile and are more easily influenced, by major life events. However, women with an ILOC were less likely to change in either direction, over the same period. Interestingly, more women with internal scores became depressed following the birth, compared to those with an external score on the LOC. This may be linked to a felt loss of personal control in the tumultuous period following the birth. These findings suggest that some women with an ILOC profile, who are considered less likely to be associated with depression, become depressed in similar numbers to women considered more vulnerable. This may be due to pre-existing characteristics in some women. However, for some new mothers, low mood may be a result of the inherent and unanticipated stressors, linked to the puerperium, that lead to unanticipated poor reinforcement, and ultimately, loss of control (Rotter, 1990).

Support for this in relation to PND comes from Ruben and Ruben (1985). They linked unmet expectations to PND, arguing that depression was linked to the perception of a lack of positive reinforcement, when individuals attempt to control their environment. Ruben and Ruben (1985) hypothesised that the symptoms of depression experienced by women with PND, including dysphoria and lack of motivation, may arise from a loss of, or a disruption to, the response-reinforcement process. The idea of unfulfilled expectations of motherhood having a role in PND for some women is further evidenced by other findings. It is claimed that women with PND often refer to unmet expectations (Allbright, 1993) and increased daily hassles (Hall et al., 1996) following the birth. These reflections by women infer their social interactions are viewed more negatively (Brown et al., 1994) at a time when most women expect to feel happy and fulfilled (DSM-IV, 1994; Maushart, 1997).

Warner et al. (1997) provided findings that a distinct sub-set of women with PND has a cognitive vulnerability to depression associated with maternal attitudes (expectations of self and maternal role). Using the Maternal Attitude Questionnaire...
(MAQ), developed to quantify some of these concepts, Warner et al. (1997) found that there were differences in cognitions of motherhood in mothers who were depressed. Some participants with low mood had a maternal attitude incorporating higher expectations of themselves as mothers (which they termed as maladaptive). Others with similar symptoms of low mood did not report dysfunctional maternal attitudes. Consequently, it was proposed that subsets of women with low mood may be cognitively different, “etiologically distinct...heterogeneous” (p. 352). Expanding this argument, Warner et al. (1997) claimed that there may be differing forms of depression, with one type due to a maternal cognitive vulnerability, while another may be caused by other predictors known to be important to the onset of depression at other stages in the life cycle. However, these were not specified. The researchers speculated that an antenatal cognitive style of high expectations and ambivalence of role change (maternal attitudes) may predict one of the subsets of women identified as experiencing low mood following the birth. This has not yet been assessed.

Exploring the link between cognitive vulnerability and other factors, including maternal attitudes, is challenging, given the complexity of these influences (Boyce & Mason, 1996). Recent research has attempted to further the knowledge on the impact of maternal attitudes and other cognitions in PND. Webster, Thompson, Mitchell and Werry (1994) conducted a study in New Zealand with 206 women. These were from both European and Maori backgrounds. Child health nurses administered questionnaires at a home visit, approximately four weeks after the birth. The questionnaire consisted of demographic questions, the EPDS and 10 items from the Maternal Adjustment and Maternal Attitudes Questionnaire (MAMA). The research team found that a less positive attitude towards motherhood and the baby accounted for the largest amount of the variance (20%) in a model that included various demographic factors. However, despite these findings, few of the women had discussed their negative feelings, and attachment difficulties, with anyone else. In another study, an examination of the Beck (1976) and Abramson et al. (1978) diathesis–stress models of depression found that dysfunctional attitudes around expectations of performance as a mother were associated with higher levels of parental stress (Grazioli & Terry, 2000). Furthermore, the disappointment, fear and anxiety, resulting from unmet expectations may originate in the proximal period surrounding the birth. Czarnocka and Slade (2000) also found that one of the factors leading to increased distress for new mothers was the unexpected nature of the issues around childbirth. These findings provide further evidence that high expectations of motherhood, anticipated by some women, are possibly contributing
factors that require more consideration. In addition, the process by which maternal attitudes interact with other variables, leading to PND, also warrants investigation.

One of the key concepts that may be related to maternal attitudes is self-esteem. Although self-esteem has been widely researched in the field of general depression, it has only been assessed directly in a few small studies on PND. Nevertheless, low self-esteem also appears linked to both AND and PND. Higher self-esteem antenatally may be a protective factor against depression following the birth (Fontaine & Jones, 1998). Kitamura et al. (1996) found that, during pregnancy, self-esteem was lower in women who were concerned with changing body shape, heightened self-consciousness in public, and who sought approval from others, compared with women who did not display these attitudes. Furthermore, women with lower levels of self-esteem were more susceptible to AND than their counterparts with higher levels of self-esteem (Kitamura et al., 1996).

Hall et al. (1996) examined the effects of self-esteem as a mediator of the influence of stressors and social resources on postpartum depressive symptoms. The participants were new mothers. It was found that those with very low self-esteem were 39 times more likely to have depressive symptoms than those with high self-esteem (Hall et al., 1996). However, it is not clear from this study whether women had a low self-esteem before the onset of PND, or if low self-esteem was a concomitant factor with PND. This is an important differentiation. However, it has had little consideration in the literature on PND and associated mood disorders.

3.7: Gaps in the Findings on Cognition and PND

While there has been an attempt to confirm the utility of the three perspectives described, namely LOC, attributional style, and cognitive-behavioural theories, their relevance to PND and other mood disorders around childbirth is still unclear. To date, no consistent findings have been presented. One explanation may be that many studies have only assessed depression by comparing depressed with non-depressed participants (Boyce & Mason, 1996). This method provides evidence that dysfunctional cognitions are more likely to be associated with depression, but does not demonstrate that they are antecedents to depression (Williams, 1992). This limitation may have led to a body of knowledge based on the implicit assumption that distorted cognitions were stable traits. This is implied in much of the research on the original theoretical conceptualisations of
an internal or external LOC (Rotter, 1966) and self-esteem (Roberts & Kendler 1999). What is not clear, then, is whether certain types of cognition, that appear to be involved in the presence of negative affect, are antecedents of depression or whether they are a consequence of the depression (Teasdale, 1996).

This understanding is critical to efficacious prevention and treatment methods, as it may influence the processes of mood disorders. There is some evidence, for example, that poorer personal control results from, rather than precedes (Beck, 1976) depression. Price, Choi and Vinokur (2002) conducted a longitudinal study, in which they followed up 756 people who had experienced involuntary job loss for two years. They found that “loss of personal control”, a construct they defined and measured using modified versions of the Rosenberg Self-esteem scale and Rotter’s LOC scale, ultimately led to long term impaired physiological and emotional functioning. In this study, using path analyses, the research team was able to demonstrate that elevated symptoms of depression preceded lower feelings of personal control. However, the researchers did emphasise that cause and effect findings are dependent on time of assessment, and possibly the impact of different life events. For example, an individual with a previous history of undiagnosed depression, presenting with a new episode, may already have a pre-existing depleted sense of personal control, resulting from the unrecorded episode. As such, if poor personal control is assessed during, or prior to, a new period of depression, it may be judged to be an antecedent to a first episode of low mood, rather than an outcome of a past episode.

It is also apparent from this argument, that those who have a previous history of a mental health problem may be more likely to have longer term, and more chronic, negative affect. This would be the result of the use of dysfunctional cognitive, behavioural and affective coping styles, associated with previous episodes. This may be particularly evident in women who have experienced depression that continued untreated for months or years (Cutrona, 1982; England et al., 1994). Women with a past history of depression, or other mental health problems, will therefore be more likely to have a dysfunctional cognitive style prior to the birth of the baby. Furthermore, this links to evidence that a history of a mental health problem is a strong predictor of PND (O’Hara & Swain, 1996).

However, in relation to the onset of PND and related disorders in women who have no history of a mental health problem, the process is less clear. As yet, whether cognitive changes, observed during episodes of depression and other mood disorders,
are a function of the current state of the individual or are actual precursors to the episode, is not known. There is some evidence in recent literature that negative cognitions result from stressful life events (Trzesniewski et al., 2003). Furthermore, there may be changes in cognition, observed as part of the process of depression, that are only associated with the period of altered affect (Boyce & Mason, 1996). As pregnancy, birth and the period that follows it, are such important times for primiparous mothers, there may be unique shifts and changes in cognition around these events. Rather than necessarily precipitating mood change, dysfunctional cognitions, assessed only at the time of the mood disorder, may be the result of the events related to these processes, not due to a predisposition. This may be particularly relevant when depression occurs for the first time (Roberts & Kendler, 1999).

Following this argument, it is posited that there are different “routes” to PND. Some women may be cognitively dysfunctional when identified as depressed but not prior to, or even after, the episode (Williams, 1992). This supposes that the stress, or stressors, precedes the diathesis. In contrast, others may have a strong familial predisposition, or past history of a mental health problem and ongoing cognitive dysfunction, that may mean they can be predicted for depression prior to the onset. This pre-existing vulnerability may be triggered by the events surrounding the birth and the puerperium (Dennerstein et al., 1989). This is the diathesis-stress model, which has had mixed findings in PND (O'Hara, 1995).

Furthermore, there may be different predictors, associated with syndromes occurring at different times in the puerperium, that are currently being assessed and classified under the one overarching label of PND (Brown et al., 1994). Recognising these possibilities, some researchers are currently exploring the hypothesis that PND may have different sub-types or sub-groups. For example, the Warner et al. (1997) research found there was some evidence of a more specific explanation for one type of PND. This was linked to maternal attitudes and cultural expectations. Kumar and Robson (1984) have also speculated that there are different factors associated with later, rather than earlier, onset of PND.

In researching PND, there has been some emphasis on prospective methods. However, measuring cognitive variables systematically, before and after the episode of higher depressive symptoms as well as during it, has not yet been attempted (Boyce & Mason, 1996). This type of longitudinal study would better explain the process by which women become distressed around the time of childbirth. Research to explore the
role of cognitive factors in the process of mood change around the puerperium, is a gap in knowledge that requires attention.

3.8: Summary

To encapsulate the salient arguments, PND is a complex issue that is likely to have multiple predictors (Stowe & Nemeroff, 1995). There is some strong evidence that a past history of a mental health problem and social support are of some importance in the onset of PND (O’Hara & Swain, 1996). One other possible contributing factor, which has to date received little attention, is the role of cognitive expectations of motherhood (maternal attitudes) and changes in these that may occur in the overall process of becoming a mother for the first time. The role that maternal attitudes play in relation to other cognitive factors is not yet understood.

Furthermore, the importance of some factors, and not others, found in groups of women suffering from PND and related mood disorders, points to the possibility of different trajectories to increased symptoms of depression around childbirth. Women who have low mood at different times during the puerperium may have conflicting cognitive profiles. This may be linked to perceived stressors affecting subsets of new mothers, at different times during the puerperium. Another issue is the possibility of different antecedents. If targeted and efficacious interventions are to be provided, there is a need to understand more about the discrete processes, inherent in these routes or courses.

In an attempt to further the body of knowledge in this area, the current study aims to examine the role of cognitions (while controlling for a past history of a mental health problem and social factors), prior to, and following, the birth of a baby in first time mothers. Women will be considered to be experiencing higher distress if they have an EPDS score of 10 or more, at any time of measurement during the study. Therefore, to avoid any confusion regarding the syndrome being measured, the term PND will not be used to describe the mood of the participants.

The study will measure cognitions, and their association with higher EPDS scores for women before, 10-12 weeks after, and six months after, the birth of the first child. Furthermore, for the first time, all of the cognitive factors to be explored will be measured at each time, in an attempt to add further clarity on some of the questions currently debated in the literature. These include:
• Whether, and to what extent, the cognitive factors measured differ significantly in groups of women who have higher EPDS scores, at some time during the first six months of the postnatal period, when compared to women who never have higher EPDS scores during the same period;

• Whether women with higher (more dysfunctional) maternal attitudes, and higher EPDS scores, differ on the measures at each time from women who have lower (less dysfunctional) maternal attitudes and higher EPDS scores;

• Whether women who have higher EPDS scores, at different points of time during the postnatal period, are predicted by the same, or different factors, measured before the birth of the baby;

• Whether the cohorts of women, who have an onset of higher EPDS scores at different times in the puerperium, can be significantly discriminated from each other on any of the measures, at any of the times of measurement;

• Whether women in the cohorts of new mothers with higher EPDS scores in the postnatal period are more likely than women who never have higher scores during the postnatal period, are associated with other key variables discussed in the literature.

Given that this study is the first to explore the factors to be examined at each time of measurement, in a longitudinal design, no attempt will be made to refine the findings to a specific model. Instead, all of the factors will remain in the analyses, to capture all of the shifts and trends, over the various times of assessment.
The previous Chapter discussed cognition, and its role in depression occurring at other times in the life cycle. It then highlighted some important theoretical models on the role of cognition in depression. Some of the key findings, and evidence in support of the theories, were explored and discussed. Finally, Chapter 3 identified issues yet to be addressed, in relation to PND and other mood disorders. This Chapter describes how the context of PND was investigated in the planning stage of the study. It then explains how the methodological approach was adapted and revised in light of the findings from this investigation. The research questions are then provided.
4.1: Introduction

The preliminary planning of a study is an important first stage, in the overall process leading to the main investigation (Patton, 1990). It had been predetermed that a set of questionnaires would be required to collect the information in the main study in a systematic and structured method. The questionnaire can be a very useful tool in research (Bateson, 1984; Oppenheim, 1992; Wengraf, 2001). However, its development takes time, and requires careful thought, ongoing consultation and testing (Patton, 1990). Before designing a questionnaire, it is important for researchers examining real-life issues to contextualise, explore and describe the phenomena under observation. This points to the need for a clear understanding of the social context in which the study is nested (Bateson, 1984). This is required before a meaningful conceptual framework for the area of investigation can be developed. Qualitative research methods provide a vehicle for the systematic examination of the internal meaning given by individuals to their social context (Berg, 1989; Eisner, 1997; Patton, 1990; Smith, 1996).

Formal and informal consultation with representatives of key stakeholders in PND, will therefore contextualise the qualitative findings, and provide important contemporary socio-cultural data (de Vaus, 1995). This is particularly important, as WA has a high population from both other States of Australia and overseas. Furthermore, the population is rapidly increasing, impacting upon the cultural norms and expectations of society as well as individuals. There were therefore two parts to the research; the planning stage, incorporating qualitative interviews with key informants, and the main study, which predominantly used quantitative methods.

4.1.1 Aim of the Planning Stage

The overarching aim of the planning phase was to determine whether major issues in PND and related disorders, emerging from the literature review conducted, were relevant to the WA context. This was achieved by exploring the issues from the perspective of key stakeholders, before developing the protocol and relevant questionnaires.

There were four subsidiary objectives:

- To explore the individual perspective of women who had experienced PND or a related disorder, with a particular emphasis on identifying whether their
perceived reasons for the onset of the syndrome were similar to those identified in the literature review;

- To inform the questionnaire layout and format by capturing the women's language and expressions (Mauthner, 1993);
- To explore the main issues that service-providers in the health field identified as precipitating PND and related disorders, based on their experiences of working with women;
- To explore service-providers' views on a range of thoughts, feelings and attitudes articulated about motherhood by women with PND and related disorders.

4.1.2 Method

The preliminary investigation was conducted at two levels involving two key information sources. The methods utilised to collect the information were:

1. Interviews with women who were diagnosed as having PND or a related disorder, and had recently completed a therapeutic group.
2. Interviews and focus groups held with professional staff and volunteers, working in the field of PND and related disorders.

At the first level, women who had been diagnosed and treated for PND or a related disorder were interviewed. They were the main group directly affected by the issues of PND and related disorders. Supplementary interviews and focus groups were also conducted with health care practitioners. This was to ascertain whether themes generated by women with PND and related disorders also emerged from health professionals. This cohort was also asked to identify any additional issues or themes, to be considered for the main study.

4.2: Stage 1: Consultations with Women Diagnosed with PND as Key Informants

4.2.1 Design

Stage 1 was conducted to elucidate from women their personal thinking and feeling processes, during their own unique experience of PND, or related disorder. It was constructed as an "orientational qualitative enquiry". (Patton, 1990, p.85). This
enquiry was conducted using an idiographic approach (Patton, 1990) to provide both an understanding of how women individually perceived their experiences of PND and whether their experiences reflected findings in the literature. One of the emerging qualitative methodologies is the “narrative” or “telling” (Eisner, 1997). This permits the participants to tell their story in their own words and allows the investigator an insight into a view of the world in a way that cannot be explained using other methods or language (Smith, 1996). This method enables an understanding of the process, rather than outcomes. Some researchers assert this subjective perspective of the world is important to understanding both perceptions and behaviours (Burgess-Limerick & Burgess-Limerick, 1998; Pope & Mays, 1995; Smith, 1996). Others consider it provides a method of exploring an individual’s world view on a particular topic, using his or her own vernacular and expression that enrich the understanding (Wengraf, 2001). In effect, the subjective method can facilitate individuals towards explaining how they make sense of, and experience, a particular phenomenon (Patton, 1990).

It was considered that incorporating the narrative method was important to a comprehensive understanding of the breadth of issues that women with PND were facing, without leading them in a particular direction (Patton, 1990). It allowed unique stories to be articulated, but also enabled an analysis of common themes. This method was therefore used as a useful aid to understanding how women expressed their thoughts and feelings, before commencing the main study.

4.2.2 Qualitative Literature

An orientational qualitative enquiry (Patton, 1990) informs the main study. It is not a separate entity. Therefore, rather than reviewing the literature in sections, the theory, evidence and arguments relevant to this enquiry were captured under key headings in the previous Chapters. Overarching themes, highlighted by the literature review, and documented in the previous Chapters, were then used to inform the results of the interviews. Following the interviews, the evidence from the literature was considered again, in light of the themes emerging in this enquiry. Therefore, throughout the results and discussion sections in this Chapter, the main categories of experience that materialised from the interviews with women were discussed in the light of findings from various qualitative and quantitative research projects in the main literature review. This included seminal Australian works such as Missing Voices (Brown et al., 1994). Findings from this large research project, and research evidence from other international
works such as those by Mauthner (1993) and Nicolson (1998) were noted, where they supported the themes that emerged.

4.2.3 Participants

The sample was purposive (de Vaus, 1995). Seven women who had participated in, and completed, a PND therapy group agreed to participate in the investigation initially. None refused, but one was unable to complete the interview because of a relocation interstate. All of the women who were interviewed lived in the local catchment area for the JHC and gave birth to their youngest child at the JHC within a year of the interviews. The participants' ages ranged from 23-36 years. Of these six, two were born in the United Kingdom, two others were born interstate, and the final two were born locally, in WA. All of the women worked before they had children. One of the participants was a police officer, another was a childcare worker and one had experience as a travel agent. Two of the women had experience in administration and one worked in retail shops. Two of the women had returned to work following the birth of the baby. All of the participants were married. One had a child from a previous marriage. Three of the women were primiparous.

4.2.4 Interview

The framework of the interview was developed following the guidelines of exploratory interviewing (Oppenheim, 1992). The format was open, with participants asked to "tell me the story of your experience of PND". They were asked to include why they felt it happened, including anything in the past that may have contributed to it. A list of probes was devised to ensure that relevant issues were covered, and examples elicited from the women (Appendix 1).

4.2.5 Procedure

Women who had recently participated in group therapy were told about the study by the group facilitator. They were given a letter containing the details and the office telephone number of the chief researcher. The women were asked to telephone her if they were willing to participate (Appendix 2). In all cases, women who agreed to participate contacted the chief researcher by telephone. They signed a consent form attached to the information letter and returned it to the chief researcher. An interview was then arranged at a place and time that was convenient to them. For all women, this
was in their own homes. The data were collected through an in-depth audiotaped interview with each individual participant. The interviews took approximately 90-120 minutes. They were asked to tell the story of their experience in their own way, and were requested to describe why they felt it happened, including anything in the past that may have contributed to it.

4.2.6 Analysis

A professional medical secretary transcribed the interviews. The analysis of the data was completed by the researcher and two research assistants using a thematic content analysis process (Hartrick, 1996). Working with a copy of each data set from the interviews, the transcripts were initially examined independently by each of the three team members, using an iterative process (Patton, 1990; Smith, 1996). This involved reading and re-reading the data, with a focus on drawing out the common “threads” or “structures of experience” (van Manen, 1990, p. 79). Significant statements were noted with the use of highlighters on the transcript (Miles & Huberman, 1984). At the same time, notes were written in the margin about possible overarching themes related to those statements, thus commencing preliminary interpretation (Berg, 1989; Burgess-Limerick & Burgess-Limerick, 1998; Smith, 1996).

As this was an orientational qualitative enquiry, key overarching themes, elicited from the literature, were used to give an initial guiding structure to the process (Patton, 1990). As emerging themes relevant to the research focus were identified in the data (Berg, 1989), connections between the themes were listed and considered. These were then verified through a refinement process of returning to the transcripts and checking to ensure that each word or phrase matched the assigned theme (Smith, 1996). The highlighted statements, memos and listed themes assisted in speculation and reflection of the material. Inter-rater checking was used to ensure that the coding decisions made by one researcher matched those of other team members.

Subsequently, a master list of overarching themes was produced, compiled from the original set, with a final examination of additional emerging themes that required new categories. Following this process, interpretation was completed. An inclusive account of all the integrated themes was prepared by the chief researcher (Burgess-Limerick & Burgess-Limerick, 1998). Credibility was obtained through the process of inter-rater cross-checking for contradictory interpretations, and negative cases in the data (Cresswell, 1998). Data sets were also perused by an independent reviewer, to
establish that the themes and the descriptions were a true reflection of the data material (Berg, 1989). Finally, the chief researcher collated and summarised all of the data.

4.2.7 Results: Emerging Themes and Categories

Each woman talked about her experience in her own way. Every story was unique, as the women came from different backgrounds and circumstances. However, although they experienced a range of different challenges and problems, women described some similar issues that could be categorised into the overarching themes and concepts that reflected those in the literature. These included:

- Past issues, such as a family or personal history of mental health problem;
- Antenatal Depression;
- Life Stressors before, and during, the pregnancy;
- Traumatic Delivery;
- Breastfeeding Issues;
- Ambivalence about the Baby;
- Negative Maternal Attitudes;
- Unmet Expectations;
- Personal Control Issues;
- Poor Social Support.

The various overarching themes are briefly discussed, and experiences of the women are described, using some short quotations to provide the context and give voice to the experiences of the women. As far as possible the quotes are verbatim. All names have been changed to protect confidentiality.

4.2.8 Past Issues: Past Personal History of Mental Health Problems

A higher EPDS score soon after the birth may be related to a past history of mental health problems (Brugha et al., 1998; Steiner, 1998) and possibly, some familial predisposition. Several women alluded to past issues that they felt may have contributed to the onset of PND. Past history of a mental health problem, and family history of a problem, were two of the issues that several women had in common:
Tina:

I still wouldn’t recognise that I had PND, mainly because I had been through so many bouts of depression before being pregnant from a child. I had been sexually abused, so once I got to this state to me it was just, here it goes again, this is another time when I am down.

Chris:

Well, before the babies I was diagnosed with having depression. It was a bad time in my life. I went to my GP, told him how I was feeling was really, really low and all the signs of depression just appeared etc etc and he just put me straight on to Prozac ... So I don’t really know the cause behind it, I have an idea it had to be the way I dealt with my mother’s death. She died when I was 15 - she had cancer, which I knew about. So I think the way I dealt with it possibly has something to do with what happened later.

4.2.9 Past Issues: Family History of Mental Health Problems

Mandy:

Mandy’s first episode of depression, though triggered by her social circumstances, may have in part been linked to some familial predisposition. During the interview, she alluded to her grandmother’s mental state:

I quite liked my nana and she’s probably got depression.

Carol:

Carol also alluded to some familial predisposition through her father, though she had not previously had diagnosed depression:

The Doctor told me that my father had a history, not a big history, but a small history of depression. When he was 21 he had a nervous breakdown.

4.2.10 Antenatal Depression (AND)

Antenatal Depression is thought to be a common precursor to depression following the birth (Areias et al., 1996). Several of the women claimed to have been depressed during the antenatal period, and, consistent with the literature (Kitamura et al., 1993; Seguin et al., 1999), there were some links to their personal history. It may be
that some women had an unresolved episode of emotional disturbance prior to the pregnancy (Gotlib et al., 1993; Williams, 1992).

Carol’s situation was somewhat different to some of the others who were depressed before the birth, in that she appeared to have an onset of mental health disturbance very early in the pregnancy, and for no known reason:

Carol:

I had a feeling I might have been pregnant on my honeymoon... when we got there I sensed something was wrong with me, and I wasn’t really sure what it was. I was just crying and hysterical and wanted to get off the Island... when I got home I had a feeling that I might have been pregnant at that time because I felt certain changes... I was really, really depressed. I was just not feeling like my happy-go-lucky self and it was taking its toll. I went to the Doctor and got it confirmed and he said ‘yes you are pregnant’ and I just broke out crying.

Mandy also related how she felt depressed around the time of her second pregnancy. She gave a possible reason for the onset of her episode of low mood, which appeared to persist throughout the pregnancy:

Mandy:

I had no PND with the first child. When she was about five, I think I had some kind of depression then, because I was going through divorce and everything. I probably had it right through the pregnancy, with this pregnancy, thinking back now. I was just crying and saying “I don’t want to live... you have got to understand I am pregnant and this is why I am grumpy and this is why I am emotional and things like that”. I was getting in bad moods and getting really angry and blaming everyone, even blaming the house: “It’s the house, it’s the house, it’s not me”. We got a Feng Shui consultant to come in, and paid $350.00 for her to come.

4.2.11 Life Stressors Before and During Pregnancy

Although the evidence is mixed (Seguin et al., 1999), some studies have found that women who had life stressors were significantly more likely to become depressed following the birth of a child (Viinamaki et al., 1997). Two of the women alluded to other issues that are thought to be associated with emotional disturbance around the time of childbirth. For Jan, it was the death of her brother and possibly previous
miscarriages. Sheila had problems in conceiving and spent a lot of time worrying about mortality issues throughout the pregnancy after a miscarriage.

Jan:

I had three miscarriages and I really didn't have anyone to talk to about it. I had friends at work, but we talked about work. Then my brother died, and he was 19. I finally got back to England and they said he had died. That was awful, and just shortly after that I fell pregnant.

Sheila:

I got in to have a laparoscopy and they discovered that I had cysts on my ovaries. That was cut out and I conceived the next month and then miscarried at seven weeks. I was told by the Doctor that I had been seeing to go away, and come back when I was pregnant. I think that's when I really started to have problems, because I just couldn't get pregnant again. The fertility program didn't work, and we conceived on a drug that we were having. So I spent my whole pregnancy worrying about whether the baby would die, or miscarrying, and I was very sort of numb about the whole thing.

4.2.12 Financial Issues

While financial problems were identified in the literature as an issue for some new mothers (Viinamaki et al., 1997), they were not widely discussed by the participants. Nevertheless, at least one of the women was experiencing some financial difficulty. Chris had only been in Australia for five months when she became pregnant unexpectedly. She had no family in Australia:

Chris:

I got pregnant, and that was sad, because we had just emigrated. We knew that by emigration we had lost so much money, though we needed to actually get out of the family and get our lives, you know, start our lives, get a job.... Financially Mike and I both had good jobs, and so we came here, and all of a sudden we were living in Australia. So that put a lot of stress on, the fact that I didn't have my own money, or having to ask Mike for money, which I can't help.
4.2.13 Perceptions of a Traumatic Delivery

Some women alluded to a variety of physiological and psychological issues, associated with the birth experience. These may have ultimately contributed to emotional disturbance (Fisher, 1992). The women discussed their traumatic birth experiences, caused by complications during the birth, or the events of the days or weeks following the birth:

Jan:

*Three were already in labour, but further down the track than I was. I could hear these women yelling and I remember saying to the midwife “why are they making so much noise?” She looked at me a bit stunned and said “they are having their babies” and I thought “oh gosh they aren’t in control”. So, yeh, and then eventually I started screaming. I think it really surprised me that loss of control. It really shocked me, it just really shocked me how much labor hurt. I just couldn’t believe it. I read in some book about the shock, and that giving birth to your baby is like a bomb going off. Something like that, and that’s what it was like, you know.*

Tina:

*She really frightened me when she put me in the stirrups, and she had me in the stirrups all wrong. The Doctor came in and he went off at her, and there was all this tension in the room, it was awful. That was traumatic, and of course, then they said I had to have a Caesarean.*

Chris:

*It was a fine pregnancy but it was the most disgusting birth. I was absolutely wrecked, shocked and devastated after the birth. I worried because it had been such a terrible experience. I mean, I used to wake up with the sweats remembering the birth. I was scared because it was a 22-hour labour, four hours of which was pushing, because Shelley was undiagnosed posterior. So four hours of pushing, pushing, basically wrecked my insides, until eventually she came from the wrong way.*

Alongside the physical issues, there was a reference to feeling “processed”, with little positive recognition of the major life event recently experienced by the woman:

Jan:
I had given birth to a baby. He was really gorgeous and I had done it all. I had given birth and yet it was just like “off you go into the shower dear” and you know, like I was on a production line.

While it may have been anticipated that the perception of a traumatic experience would be more prevalent in first-time mothers, at least one of the women believed her second pregnancy, and experience of childbirth, was much worse than the first. This may have been because she was already experiencing emotional disturbance, which she attributed to the stress of a recent divorce. Some researchers argue that depressed women can make more negative attributions because of their current mental state (Baker & Taylor, 1997; Sherrington et al., 2000):

Mandy:

It was a quick labor. The first contraction was at 1pm, and she was born at 3.26 pm; 2 ½ hours. I remember when she was born that my husband said “the baby’s out, everything’s okay now”, and I had my eyes shut and I just said “it still hurts, I haven’t given birth yet, it still hurts”. And it hurt, the placenta being pulled out and everything. It was just - I had no tears, no cuts, nothing, no stitches.

Furthermore, few felt supported when attempting to learn the skills of motherhood, such as breastfeeding, and settling the baby. Attachment was a problem for some women for various reasons:

Sheila:

The next morning (after the birth) I got up and I had to wait till 4 o’clock in the afternoon to get a TB clearance, because I wasn’t cleared for TB, before I could even try and hold him and breastfeed him. By then I think I just couldn’t get attached to him. He just cried all the time, and I couldn’t feed him, and so breastfeeding became this huge thing that just didn’t happen. So, after a week in hospital, they told me to top him up; breastfeed him, and then give him bottles. So I came home to doing that.

In the puerperium, it can be argued that increased distress was in part caused by a series of events that were perceived by the mothers to be more difficult and traumatic than anticipated (Czarnocka & Slade, 2000). A number of qualitative studies have related the experiences of women during the birth and examined their perceptions of a traumatic birth, and their experiences afterwards (Brown et al., 1994; Nicolson, 1998).
It has been established that births with no complications can be traumatic, depending on the perceptions of the new mother (Arizmendi & Affonso, 1987). Whatever the cause, many of the women interviewed appeared to leave their birthing place feeling traumatised, exhausted, unrecognised and fearful, rather than happy and fulfilled, as is the common expectation (DSM-IV, 1994; Nicolson, 1998). Very importantly, several felt that they had not bonded with the baby. Unfortunately, they did not voice this openly, or felt unheard when they attempted to broach the issue:

**Chris:**

I thought I was the only one, first of all, who didn’t like their child when it was born. I felt that with both my children. I was the only one who was having such a hard time. Why did everyone else have good babies, and why did they look so good?

**Carol:**

As soon as she was born there was just no reaction whatsoever, other than I really did not know what to expect or how to react. Yeh, they just stuck this baby on top of me and I said “look, just take it away”. It was just the weirdest reaction; I wasn’t expecting that, I guess.

### 4.2.14 Breastfeeding Issues

Some of the women had breastfeeding problems. They perceived that these issues significantly impacted upon their feelings and thoughts (Berggren-Clive, 1998). The women discussed the problems in relation to themselves, their bonding to their babies and their relationships with their partners:

**Sheila:**

The fact that I couldn’t breastfeed, you feel like such a failure. I had bleeding nipples, I tried everything to get my milk supply, but it would just disappear. So for a long time I blamed myself for that as well, but only recently discovered my dad remembered to tell us that our mother couldn’t breastfeed either, which has made me feel a little better.

**Jan:**

He was a biggish baby, about 8lb 2 ounces, and all the time he just wanted his feed, 24 hours a day. The morning we were leaving hospital, he started to throw
up blood. Bob, my husband, took one look at him and he literally grabbed the baby, and shouted "oh my god this baby is throwing up blood" and rushed off down the corridor to find a nurse. They both came rushing back into the room and she looked at the blood and said "I think it might be your wife that's bleeding, you know, so let's have a look at your nipples. Oh yes, they are cracked, oh that's okay then, there is nothing wrong with the baby, so that's fine. There's nothing wrong with the baby, not to worry, off you go home". No advice about what to do. My nipples were in really bad shape, and I was in agony as well; it was like razor blades after the episiotomy. I think he was attaching properly by then, but it was all a bit too late. I would try and feed him 12 times a day, and that didn't give them much chance to heal.

Tina:

Tina also had difficulties in feeding her baby. This undermined her confidence in herself:

Then feeling no confidence of why I couldn't feed this child. That was quite difficult, and it snowballed for me.

Sheila also experienced breastfeeding difficulties, but felt constrained in her choices, because of social and cultural expectations (Mauthner, 1997):

Sheila:

I kept saying to Andy "I am going to bottle feed him, I am going to bottle feed", and he kept saying "No, it's better if you breastfeed" and I felt there was a lot of pressure there from him as well as the outside.

4.2.15 Ambivalence Towards the Baby

The affective and cognitive outcomes, resulting from a sense of incompetence and loss of control, experienced by some new mothers during the birth and in the first days certainly appeared to impact on their confidence in their own abilities (Milgrom & Meager, 1996). These thoughts also appeared linked to negative feelings towards their babies:
Chris:

The moment Kyle would start crying, Shelley would start crying, because she knew it was going to take me 45 minutes or an hour to settle him. So Shelley would be screaming, Kyle would be screaming, then I screamed. Now I had visions of that I would start picking him up by the legs, and actually bashing his head against the cupboard just to shut him up. I used to hold his face and shout “Shutup, shutup”. Once you had an episode like that you think “oh what a terrible mother I am”, and I ended up shouting at Shelley as well. So yeh, it was just completely out of control. It was a terrible time, and I had never felt such anger. I felt like I was being punished. I couldn’t understand what I had done to be punished like this. I just used to pray the whole time. I’d say, “Can you just help me, that’s all I am asking, just to help me” and it wouldn’t happen. So I thought “Ah well, I have done something, because I am not getting any help, and the children are so bad”. Anyway, I was just going on a downward spiral, and no-one had any answers for me.

Jan:

I thought, “I know more about cats and dogs than babies. How could they send me home with this poor little baby, and I have no idea how to look after him?” I just felt like a failure, I felt absolutely useless, and I couldn’t do anything right. I felt like I didn’t love him, I felt he had ruined my life.

Sheila:

The coping with having him day to day - I thought I knew about bringing up children, but I didn’t know anything. The practical side of it, just coping with them, and the responsibility of having them, I just didn’t have a clue.

4.2.16 Attitudes Towards, and Perceptions of, Motherhood (Maternal Attitudes)

For some of the women, the trauma and disappointment experienced during the birth, together with the unpredictability of the baby’s needs and wants in the early weeks, were very stressful. This appeared to be linked to their feelings of unexpected negative reinforcement for effort (Marshall, 1993; Ruben & Ruben, 1985). The resulting sense of loss of confidence, and self-esteem, may have been linked to pre-existing maternal attitudes:
Sheila:

I just don't think I felt like I was being a proper mother unless I cooked everything for him. A proper mother who is extremely organised and efficient, and perfect looking, and the baby's perfect, and never cries at the wrong time. Yeh, just perfect I suppose, and does everything without even blinking an eye. I don't really know where I got that, my mum wasn't like that, so I don't know where that came from. Like, I used to feel like people were looking at me because I was giving him a bottle. So, yep, but he took himself off the breast at eight weeks, and after that I did feel a little bit better, because I thought "Well he took himself off, it wasn't my fault". But then I still felt there was a lot of pressure from outside, about why I was bottle-feeding this tiny baby. I also had a lot of anxieties about like, you know, if you used disposables, for example. "What would people think of me - that I wasn't doing the right thing?" I should use cloth nappies and cook food. I didn't want to give him tinned food because I should cook something, so I put a lot of pressure on myself.

Chris:

Nurturing, loving, kind, warm, I just always wanted a relationship with my child like I had with my mother. Just the way you know it should be. It seems someone who has always got time for their children, helping them out, doesn't lose their temper, doesn't shout, doesn't hit, basically doesn't do all the things that I've been doing.

Jan:

I felt like I was always trying to find the right way to do things, you know, the right way to change nappies, the right way to train him. It was just too hard, and they were all giving a piece of advice. My mother-in-law said one thing, someone else would give me totally opposite advice, and I would think "Oh I just did that". I just always seemed to be trying to do, you know, what I should be doing, and I was just getting in a knot.

Tina:

I still find it difficult to ask for help...before I had to do everything, because I am a woman. I had to be this miracle mother that did the cooking, cleaning, the ironing, the washing, the dishes, look after Tom. I had to do everything.
Carol:

I guess I thought it would be like all movies, you know, how they portray motherhood. You know that it's the most spectacular, glorious moment of your life, and all you want to do is, you know, do nothing really, because you are just that exhausted.

Chris:

I think my ideal came from watching other people with their children. I mean, every person I saw with their children, they were always fine, like it seemed so easy. I couldn't have been any more wrong if I tried.

Some of the emotions experienced by women were very negative, during the early months after the birth. Anger, guilt, denial, and blame, were common amongst the cohort. These feelings appeared to be underpinned by their expectations of, and attitudes towards, motherhood. Unfortunately, some of the women felt they could not disclose their innermost fears and concerns, even to those who may be able to help them. This may have led to increasing stressors and the potential for a more severe episode (England et al., 1994):

Tina:

I went to my Child Health Nurse. She knew I had problems during pregnancy and wanted to know was I okay now, did I have depression... I said “Oh no, I am fine, I am just having a few bad days”. I thought “this is what every mother goes through, this is normal. You cry all day, the baby screams all day”. Nearly 15 months of it, having a 15-month-old child, it is too late. I think I should have been more honest with myself right from the beginning. I think the hardest part is, the hardest part for me was, I can’t speak... I have had that instilled in me since I was eight; to keep quiet. People can chip, chip, chip away. Until you are ready to say something, nobody can do anything, you have to take that first step, you have to. For me, to go into hospital was terribly distressing. It was just “Oh my god I am going to a looney bin” and it's that same old stigma.

Mandy:

Mandy also attempted to deny her feelings, and deal with her problems alone:

I have got a book called 'Don’t let hormones ruin your life’. I looked in there, and I said to my husband “It looks like I have PND, I have all the symptoms of
it". But I didn’t want to have it, so I just ignored that. I didn’t want to have it because of the stigma that depression has, and people might think I am crazy. Then I went back to the Doctor a few more times and the last time I sort of went there running up to it. I said to him “Please give me something I just can’t take it anymore”.

Sheila also experienced a need to deny her problems:

Sheila:

*I am a strong person anyway, but I just refused to entertain any idea about being depressed or anything being wrong.*

Jan:

Jan also had the opportunity to discuss her personal feelings with the GP, but focused on her physical issues:

*I went and saw the Doctor, just about the feeding, because it seemed to be he wanted to feed all the time. This Doctor - I won’t say his name - he said to me “Oh you don’t need to feed your baby during the night, just let him cry and he will go back to sleep”.*

Anger at the situation was another common problem faced by the women (Mauthner, 1998). This was often linked to expressions of feeling helpless:

Tina:

*Anger would come and I didn’t want to cry. I think I thought I would just totally lose the plot if I cried. If I broke down and cried, I would never stop crying. The anger would just come out. I was constantly angry at the anger. Maybe I was angry at me, because of the way I was, and the way I wasn’t coping with him. I was so angry and I couldn’t say “I can’t cope with this I can’t do it, I need someone to come and help me”. Then I’d think, “Who have I got to help me, I don’t know anyone that can help me”.*

Chris:

*There was just nothing I could do, because I couldn’t make the situation better. I felt I was being punished for something, and then I would get angry at him, because I was thinking “Stupid little ...” It was a terrible time, and I had never felt such anger, and I felt like I was being punished and couldn’t understand what I had done to be punished like this.*
Alongside the issues of anger, some women experienced increasing feelings of guilt (Mauthner, 1993) that possibly exacerbated their predilection towards PND:

**Carol:**

*Bob was finding it extremely difficult because he actually raised Toni for the first six months. I carried a lot of guilt – the guilt was always there for me, that I wasn’t there for her.*

### 4.2.17 Unmet Expectations

Cognitive and affective factors, such as unmet expectations of motherhood, have been given some consideration in the literature (Maushart, 1998; Oakley, 1981). Many of the women related experiences, feelings and thoughts that indicated that the time following the birth was not all that they had hoped for, or expected. For some this was related to the period immediately following the birth. Others discussed experiencing negative feelings later in the puerperium:

**Chris:**

*Before I had the babies, I thought that motherhood meant that life was going to be a breeze, you know, so that you are going to have wonderful children, and you are going to love them to death. You are going to spoil them rotten. You are not going to have feelings of anger and frustration, and all those sort of things, you know. And how wrong was I.*

**Sheila:**

*Nobody talked about anything awful that was happening, because they felt they would be judged. Friends would say “I was back in my jeans for my six week check up” and just all of those comments. I think it just made me think I was doing everything wrong, because I wasn’t doing any of those things.*

Importantly, these stories indicate that some new mothers thought that they were unlike other women. They perceived that other women were coping, though they felt they could not manage the responsibility of having a new baby. Furthermore, new mothers, feeling out of control, appeared to blame the baby to some extent, for their frustration and helplessness. This caused additional negative thoughts and emotions that were focused both inwardly and externally. The blame for their ambivalence about their new role became focused on themselves, their babies and their partners:
Sheila:

Andy was very good with him, he would come home from work, put him in the pram, and take him for a walk. Then I would start to try and do other things, because I just didn’t, I just felt like, I achieved nothing. Helen, my sister, used to say “But you know you’ve been looking after him all day”, but that didn’t feel like I was achieving anything. It just felt like hard work that, didn’t you know it, you just knew the same thing was going to come up next day, like there was no end. I still hate walking in and things not where they should be, because I haven’t time to do it.

Mandy:

I was exhausted, absolutely exhausted, really emotionally stressed. Stressed about absolutely anything, because I wanted to keep on top of the housework and I just couldn’t. Some days it was hard to find time to have a shower, and still, I’d want everything to be neat and tidy and everything done. I felt I should be more happy, and have more energy to be able to take them to the park, or whatever.

4.2.18 Personal Control

An issue, often discussed by the women during the interviews, was a loss of personal control. This was both during and following the birth. The perception of feeling unable to cope, and out of control, can lead to a more negative schemata of motherhood (Warner et al., 1997). This may result in an increased susceptibility to depression. All of the women referred to feeling out of control to some extent, though some described their experiences more graphically than others:

Sheila:

My entire life just seemed to be spiralling out of control, and there was no routine, and there was no sense, and there was no meaning, and I thought “What have I done, why am I handed this child, I just don’t want this life”. I often used to think that I would just leave them, and never come home again. I’d just go and live somewhere else, and not have anything to do with either of them. I suppose that was my out – I just thought “I didn’t want to have this child”. I didn’t want him to die, but I wanted him to go away and be somewhere else, or I wanted to be somewhere else.
Tina:

I thought “I am just totally useless, I can’t function, I can’t do anything with this screaming child. I can’t do anything else, I can’t do two things at once”. I guess feeling out of control, of not being able to stand back and say, “I have got a screaming baby”. He would just scream and I would look outside and wish I wasn’t here. I felt like I was abusing my son. I was so terrified that one day I would just totally lose control, and I have heard a lot of women say that. Well, you don’t do it, you want to kick them, but you don’t, but smacking a child, sometimes you do, and you think, “god what if I really do it - am I going mad?”

Carol:

It’s just something that I was never prepared for, because I have always been in control of my life. I have had a career, and dealt with all sorts of things in my life, and it’s never affected me.

4.2.19 Perceptions of Social Support

Alongside all of these issues of personal performance as a mother, feeling less supported is also a critical factor in PND (Mauthner, 1998; Fleming, Flett, Ruble, & Wagner, 1990). The feelings of inferiority, helplessness, and distress, were therefore possibly compounded by various social issues (Maloney, 1998). Four of the six women who participated in interviews were born in other parts of Australia, or overseas. As such, many had limited local family networks to provide either emotional, or instrumental, support:

Sheila:

I didn’t go back to work, Andy went back to work, so I had four days of help, and then I was on my own. So, he was barely two weeks old, and I was on my own. My sister works full-time, and she is the only other family I have got in Perth. Mum couldn’t come at the time, so I just remember crying, and just not knowing what to do. I organised a trip to go to Karratha to stay with mum and dad for five weeks, and I did that, and that was really good. I seemed a lot better up there. I seemed to be coping with things, but I had a lot of help. I wasn’t by myself all day, everyday, which down here (Perth) I was.

Exacerbating the loneliness, several women also indicated that they either had few friends or their friends were at work. Furthermore, the women had little common
interest with former friends, once the baby was born. Two of the women were relatively new migrants. They had little family support, or friends outside their workmates when they conceived:

Jan:

You just feel so isolated. I didn't have friends with babies, I had friends at work. I joined a Playgroup and I didn't really click with them. I used to sort of try and go out, but it was just too much effort, plus he was always wanting a feed, so it was too much effort to go out. I'd spend my day here, him and me, and just feel like screaming. I was so, I'd become this 'mother person'. My life, it was just gone, it was dead and it had just been taken, and everything I did was a huge effort.

Tina:

This is what every mother goes through, this is normal. You cry all day, the baby screams all day, without having anybody to talk to. I had no support either, that was quite difficult, and my husband's family was in Sydney, so there was nobody here.

However, the issue of support is a complex one. There is also evidence that some women have support that decreases, rather than increases, their confidence. This is particularly important during a critical period of adjustment to a new role, such as motherhood (Lee, 1997; Viinamaki et al., 1997). Carol seriously considered self-harm. She indicated that she felt relatives and friends either could not understand, or were possibly disinterested, in her feelings of rejection. They also appeared to ignore her lack of interest in the baby.

Carol:

Every person I tried to talk to about my feelings, about not wanting the child and, you know, anxiety and depression, and everyone kept saying 'it's just your hormones'.

There were other indications that, though some women had relatives locally, their interactions were negative and unhelpful. Several women discussed some specific instances of family contact that were disappointing. For example, some had problems with female relations such as their mothers, or mothers-in-law. Tina talked about a visit from her mother a few weeks after the birth.
Tina:

I was starting to feel a little bit better, and then I had my mother come over and there was a lot tension, because we didn’t get on.

Sheila had some possibility of a supportive relationship with her sister. However, she found they had little in common after the birth of her baby, as her sister was working full-time and did not have children.

Sheila:

Well, my sister moved here about five months ago, but she’s got her own problems, so it’s difficult for either of us to support each other in the end.

It may be that women highlighted these issues with their female family relationships, because this is where they sought, and anticipated, help and support, both instrumentally and emotionally. These expectations arise from cultural norms and practices in western societies (Nicolson, 1998).

4.2.20 Perceptions of Partner Support

A critical person in the support network is the partner. Some women alluded to perceived relationship problems in the dyad. Their stories indicated that the men initially attempted to offer support. However, some women indicated that their male partners found it difficult to understand why new mothers were having problems, particularly later into the puerperium:

Carol:

By that time Bob had changed. He had a gutful of it. No-one was giving us any guidance on where to go, absolutely no one, because no-one really wanted to get involved, I don’t think. The psychiatrist didn’t really recommend anything either. He was mainly, he was dealing with me, and not with Bob. Poor Bob got left out of, left in the dark. So he felt lost, and then bewildered.

Culturally bound expectations that women should be able to cope soon after the birth are common issues. They can exacerbate, if not lead to, PND (Price, 1988). These misunderstandings can cause psychological problems for men, as well as women (Areias et al., 1996):
Jan:

He's always known me to be a strong person, so there were a few problems with why wasn't I coping, and I needed a lot of support. He would take the children out for a walk so I could get on, but emotionally he doesn't really know how to deal with it, because all of a sudden I am showing weakness. So we had a few ups and downs there, but we've spoken extensively about it in counselling, and he's a lot better now.

Sheila:

Andy and I stopped communicating. I was crying and I was just angry all the time. I would just yell, Andy would walk in the door, and I would start yelling. It was always, you know, he never asked the right things, and did the right things. Nothing was right, but I seemed to be able to behave normally in public - to the outside world. Everyone thought I was okay.

4.2.21 Discussion

During the first months after the birth, all of the women experienced some similar issues. They clearly felt they were unable to manage the many tasks of motherhood that were necessary, or expected, though for a range of reasons. Alongside the shock of the birthing experience, low mood in the first days after the birth, worry about breastfeeding and coping with a new baby were all problematic. Disappointment, and other negative feelings about their unmet expectations soon after the birth may have altered the views of some of the women, related to themselves as mothers. Several of the women claimed that they were more in control of their lives before the pregnancy, and enjoyed an ordered existence that was important to them. It can be argued that negative reinforcement unexpectedly resulted from a range of experiences in new motherhood. The unpredictability of the baby's needs and wants, and the inability to settle quickly into a routine, particularly where there were breastfeeding issues, led to few positive responses for effort (Marshall, 1993). Furthermore, the feelings of ambivalence, or incongruity of affect, arising from the stressors experienced during pregnancy and the first weeks after the birth seemed completely alien to new mothers previous schemata of motherhood (Brown et al., 1997). This appeared to cause serious additional stressors for many of these mothers (Fleming et al., 1990).
Furthermore, as time passed, some of the women began to think they were unlike other mothers. They came to believe that they were the only ones experiencing difficulties and that other new mothers were coping. These selective, and negative, comparisons of self to others, resulted in feelings of anger, guilt and shame (Beck, 1976). This further lowered their confidence in their own abilities as mothers (Clement & Elliott, 1999). Importantly, the perception of being the only one with maternal issues, together with expectations of self, resulted in some women feeling the need to deny their problems (Nicolson, 1998). This process of maladjustment, for some new mothers, may possibly be linked to a combination of antecedent vulnerability and negative, distressing experiences around the puerperium. The problems are likely to be exacerbated where women have few quality supports to guide and assist them.

4.2.22 Limitations of the Consultations

The women who participated in these interviews were exceptionally open and honest about their thoughts, feelings, issues and difficulties. However, it is important to recognise that they had recently participated in a therapeutic environment. This had given them the opportunity to articulate openly, and freely, their innermost thoughts, in a safe and secure environment. Within the group, they had been able to explore and form thoughts and opinions that were previously unspoken, or even unacknowledged. The synthesis inherent in the group process, therefore, may have influenced the way women retrospectively reported their perceptions of their own experiences.

Moreover, the participant sample was purposive, and did not include the wide spectrum of women who may experience distress. Therefore, the full range of mood changes in women, who may have experienced less severe emotional disturbance in the postnatal period, were not necessarily articulated. There were also some demographic omissions, in that none of the women was single nor were any of them adolescents. Furthermore, none of the women was from first generation non-English speaking backgrounds.
4.3: Stage 2: Consultations and Focus Groups with Practitioner Key Informants

4.3.1 Participants

The participants were professional practitioners, and volunteers, working with new mothers in a range of services, based in WA. These included:

- Representatives from The Postnatal Depression Support Association (PNDSA), who provide telephone and group support on a voluntary basis throughout WA to women who believe they have, or have had, PND;
- Child Health Nurses, who work with women in the first few months following the birth;
- GPs with a particular interest in PND and related disorders;
- Nurses, social workers, and psychologists, working in Women's Health centres, who receive many referrals from Child Health Nurses and GPs;
- Social workers and registered midwives in Antenatal Clinics, who often identify women vulnerable to PND antenatally;
- Mental health staff in local mental health clinics, who work with women diagnosed as having severe mental health problems during the period after the birth;
- Representatives from two women's health centres (Women's Healthworks and Women's Healthcare House) and other agencies (Ngala, Red Cross Home Visiting Service, Family and Children Services).

The services were located in the northern suburbs or Perth City centre. All were servicing clients from the area as part of their mandate. Twenty professional and volunteer practitioners working in the area of PND gave information, either by telephone or in person. Of these 18 were female, and two were male.

The focus groups consisted of:

- A representative from each of the nursing and allied health stakeholder groups, working in the hospital and community settings (New Beginnings, Child Health Nurses, an Antenatal Clinic, Women’s Healthcare Services);
- Representatives from the PNDSA management committee.
4.3.2 Procedure

The second stage of the preliminary study involved consultations with health care professionals and volunteers. Two methods were used, consisting of interviews and focus groups (Stewart & Shamdasani, 1990). In the first phase of this stage, key personnel in the local community involved in the process of assessment and management of women who experience PND or related disorders were identified by a “snowballing” or “chaining” technique (Oppenheim, 1992; Patton, 1990). Using this method, professional staff in various organisations, known to the chief researcher, were contacted. They were asked to provide information on others involved in the identification and management of PND or related disorders in the local community. This was continued until no new key informants were mentioned (Patton, 1990). Following the identification of key personnel, representatives from each agency were randomly contacted. The purposes of the preliminary investigation were explained. They were asked if they were willing to provide general information on their experiences of working with women with PND. This process was continued until 20 participants had agreed to give information. These interviews were predominantly conducted in person, or by telephone. Notes were taken during the consultations and a list of issues was compiled. Following this process, two key informants with extensive experience in the area of women’s health were asked to consider the list and identify any anomalies or missing issues.

In the second phase of stage two, focus groups were arranged. In each case, six respondents agreed to participate. Focus groups are recommended when high-quality data on a particular theme are required (Patton, 1990). The focus group is conducted in a common environment to elucidate information. This is shared reciprocally amongst the participants within the social context of interest. In this case, the issues related to PND were investigated within the groups, to explore the concepts more fully in a shared environment. It also provided an opportunity for any additional issues to emerge.

4.3.3 Analysis

Analysis of the data collected was conducted using the same procedure as for Stage 1.
4.3.4 Results

Professional and volunteer staff who regularly engage with women around the time of childbirth identified many wide-ranging issues. This section was supplementary. It was intended to complement both the literature review, and the first stage of this process in which the themes, generated by the women who had experienced PND or related disorders, were explored in depth. The results are therefore presented succinctly as key issues, without elaboration or direct quotes.

4.3.5 Antenatal Issues

The reasons that emerged to explain mood disturbance during the antenatal period included:

- Antenatal depression;
- Excessive anxiety about the baby’s health;
- Unresolved grief from previous miscarriages;
- Family illness;
- Past history of PND or depression at other times during the life-cycle;
- Social issues such as lack of family support, relationship problems, no partner;
- Financial issues for those with no partner, or partner out of work, or on low income.

These factors highlight that, while practitioners have identified “antenatal depression” as an issue for some women before the birth, they also recognise other factors that may have an impact on the emotional health of pregnant women, but are not necessarily linked to a clinical depression.

4.3.6 Postnatal Issues

The issues that emerged from contact with women during the postnatal period included a range of cognitive-affective issues that were regularly articulated by depressed women. These included:

- Unplanned pregnancy, resulting in ambivalence;
- Loss of control during and following the birthing process;
- Insensitivity of the medical system during puerperium;
• Women believing they were not “good” mothers - an inability to cope to the level of their own expectations;
• Anxiety regarding their ability to cope in areas such as settling the baby, breast feeding the baby, and completing domestic chores;
• Guilt, often linked to ambivalence and feelings of being trapped, isolated, out of control, or angry at various times;
• No time for self;
• Criticism, either real or perceived, from extended family – parents, or family of the partner;
• Feeling let down, misled, when the reality of motherhood did not meet expectations “it wasn’t what they thought it would be”;
• Feeling loss of independence when moving to one income, particularly when having to ask for money.

Practitioners also identified additional social problems such as:

• Little instrumental support from extended family, because women had migrated, moved interstate, or were living in towns or suburbs some distance from their relatives and friends;
• A lack of perceived instrumental and/or emotional support from partners;
• Worries over finances, particularly when changing from a two to a one-income family, as well as for some single parents, particularly with more than one child;
• Additional stressors related to other children or family members;
• Isolation;
• Exhaustion and sleep-deprivation.

Additional background factors highlighted by practitioners were:

• The incidence of PND in the local area was sketchy and often undocumented;
• Some women had already suffered from PND following a previous pregnancy, though this was not necessarily diagnosed nor recorded by the system. This was either articulated by some of the women themselves during consultations, or the practitioner assessed that their anecdotal recollection of previous experiences indicated some disturbance;
• Some women with PND did not recognise that they were experiencing a mood disturbance. Others did not acknowledge it.
4.3.7 Summary of Stage 2

This supplementary process offered the opportunity to compare the views of practitioners on the issues of PND and related disorders with those expressed by the cohort of women who had suffered from a diagnosed episode of PND. The issues highlighted by service-provider perspectives, on the problems arising for women in both the antenatal and postnatal period, were similar to those espoused by the women themselves in the first stage of the enquiry. Both discussed issues consistently documented in the literature, such as those to be investigated in this study. This stage of the study also provided valuable information on who the target population might be, and how to contact and access them (Patton, 1990).

4.3.8 Limitations of Stage 2

This information-gathering process indicated that there was a range of cognitive and affective factors that appeared to have some association with PND, as documented in national and international studies. However, whether these were present in the period before women came to the attention of those who could assist them, was unclear. This relied on anecdotal evidence. The literature did not have anything to offer on this question. In the longitudinal studies reviewed, where the aim was to predict PND prospectively, cognitive measures were either administered during the episode or only once antenatally. Understanding the role of cognition before the pregnancy in women without a past history of a mental health problem, has not yet been investigated.

4.4: Implications for the Main Study

As recommended by Patton (1990), the scope of the planning stage included an investigation of the social context to inform the development of the protocol for the main study. The information provided by the women, the healthcare workers and the volunteers highlighted the importance of many of the factors noted in the literature by a range of reviewers (NHMRC, 2000; O’Hara, 1995; Elliott, 1989; Whiffen, 1992). The themes that emerged in the discussions further indicated that some cognitive factors may be antecedents, or associated factors, in the process of PND. These included women’s perceptions of a range of important experiences, such as pregnancy, the birth and the early months following the birth, as they attempted to cope with the transition to motherhood. Hence, the key research questions, emerging from the literature review,
appear to be grounded in the experiences of local women. The healthcare professionals and volunteers also confirmed this.

To conclude, the outcomes relevant to the main study were:

1. That the views of key stakeholders appeared to support the themes discussed by the women interviewed, and evidence found in national and international literature.

2. Given this finding, the questionnaire should include:
   - Maternal attitudes, including ambivalence about the birth and the baby, and concept of self as a mother (Warner et al., 1997);
   - A measure of the extent to which women worried over everyday stressors during the pregnancy and following the birth;
   - A social support measure, specifically devised to measure this concept in women with young children (Pascoe, Ialongo, Horn, Reinhart, & Perradatto, 1988);
   - Personal control, self-esteem, LOC and attributional style;
   - Information on family history of a mental health problem, and past history of a mental health problem was to be ascertained.

3. Women would be asked information at each time on their feelings about key issues such as feelings about pregnancy, the baby, and their relationships, to provide additional contextual detail.

4. All of the measures would be administered at each time in the study, in an attempt to observe shifts and changes in cognitions prior to and following the birth.

5. The language used to introduce the protocol and questionnaires should be sensitive to individual women.

6. Given the sensitivity of the questions and issues to be raised, it was determined that all interviews should be conducted in person, unless there were difficulties with this method. Where personal interviews were not possible, regular contact would be continued by telephone and in writing during the period of the main study, to maintain rapport and continuity.

4.5: Questions

The aims and specific research questions to be addressed follow in this section. Each overarching question includes a brief explanation of the aim, followed by the
questions. The hypotheses linked to these questions are then provided. Finally, the specific rationale for each question, arising from the literature and theoretical frameworks described in the previous section, is elucidated.

4.5.1: Research Question 1

Aim:

The aim of the first set of questions is to explore whether cognitive variables (after controlling for past history of a diagnosed mental health problem and social support) significantly differentiate a group of women with higher EPDS scores postnatally, from a group of women who never had higher EPDS scores, at different times of assessment (Time 1, Time 2, and Time 3). The times referred to on each occasion are:

- **Time 1**: 12-24 weeks survey assessment (Antenatal)
- **Time 2**: 10-12 weeks survey assessment (Postnatal)
- **Time 3**: 20-24 weeks survey assessment (Postnatal)

To emphasise an important point, a past history of a mental health problem was only included where it had been diagnosed by a health professional. This understanding of differences between groups of women, both antenatally and postnatally, will assist practitioners to identify the women who may benefit from intervention when screening at different times of assessment.

Research Question 1: Time 1

In the antenatal period (Time 1), are there significant differences in the cognitive profile (personal control, self-esteem, attribution style, worrying style, maternal attitudes, and LOC) between women with higher EPDS scores postnatally, and women who did not have higher EPDS scores, after controlling for past history of a mental health problem and social support?

Research Question 1: Time 2

In the early postnatal period (Time 2), are there significant differences in the cognitive profile (personal control, self-esteem, attribution style, worrying style, maternal attitudes, and LOC) between women with higher EPDS scores postnatally and...
women who did not have higher EPDS scores, after controlling for past history of a mental health problem and social support?

**Research Question 1: Time 3**

In the later postnatal period (Time 3), are there significant differences in the cognitive profile (personal control, self-esteem, attribution style, worrying style, maternal attitudes, and LOC) between women with higher EPDS scores postnatally and women who did not have higher EPDS scores, after controlling for past history of a mental health problem and social support?

**Hypotheses for Research Question 1:**

It is hypothesised that, when grouped and compared, all women with higher EPDS scores postnatally will differ significantly on the cognitive measures from women who did not have higher EPDS scores postnatally. The differences will increase at each time of assessment (from the antenatal period – Time 1 to the final time – Time 3).

**Rationale for Research Question 1:**

The hypotheses are based on the assumption that the group of women who have higher EPDS scores postnatally (all women with higher EPDS scores at either Time 2 or Time 3 postnatally) will become increasingly cognitively dysfunctional over time.

Some women will only have their first experience of lower mood for the first time following the birth, and are, therefore, less likely before the onset to differ cognitively from women who never have higher EPDS scores. This proposition is based on evidence that some women will be more likely to have higher EPDS scores at Time 2 postnatally, without any evidence to suppose a pre-existing vulnerability. The higher EPDS scores will result from some of the stressors that are present in the transition to motherhood (O’Hara, Newborough, & Zekowski, 1984). This group, therefore, is less likely to be cognitively dysfunctional antenatally. However, on experiencing higher EPDS scores, cognitive dysfunction will increase (Williams, 1992).

Those with higher EPDS scores at Time 3 postnatally will be more likely to have some cognitive predisposition (and dysfunction) before the birth. This will increase, and further differentiate them on these variables from women who never have higher EPDS scores. This will be a result of the cognitive changes associated with becoming more distressed later in the period, following the birth.
Antenatally (Time 1), after controlling for past history and social support, the two groups (Lower EPDS scores and Higher EPDS scores) will be less likely to differ to a significant level on the cognitive measures of personal control, maternal attitudes, attribution style, worrying style and LOC. This will be because fewer of the women, with higher EPDS scores after the birth will have dysfunctional cognitive profiles antenatally. As noted earlier, those with higher EPDS scores after the birth at Time 2 will be less likely to be cognitively dysfunctional prior to the birth. Therefore, in the antenatal period, the cognitive profile of women with higher EPDS scores will not differ significantly, from that of those who do not have higher EPDS scores;

Postnatally (Time 2 and Time 3), after controlling for past history of a mental health problem and social support, the combined group of women with higher EPDS scores postnatally will be more likely to differ significantly from those who do not have higher EPDS scores. This will be on the cognitive measures of personal control, maternal attitudes, attribution style, worrying style, and LOC. The reason for this is that the women with higher EPDS scores at Time 2 postnatally will also have associated cognitive dysfunctional profiles during the time of higher EPDS score. This will increase the mean differences between the two groups. The mean cognitive differences between the two groups will increase over time, as more women experience higher EPDS scores at Time 3, and some women with higher EPDS score at Time 2 continue to have residual dysfunctional cognitions.

Given the prominence in the literature of both a past history of a mental health problem (Appleby et al., 1994; Cox et al., 1994) and poor social support (Brugha et al., 1998) as antecedents of PND, it was considered important to control for these in the analyses.

4.5.2: Research Question 2

Aim:

The aim of this set of analyses is to compare women with higher EPDS scores postnatally, and determine whether high or low maternal attitudes are more likely to be associated with other variables known to be important in depression occurring at other times in the life-cycle. These are a past history of a mental health problem, poor social support, LOC, attribution style, worrying style, personal control, self-esteem and more extreme EPDS scores.

Research Question 2: Time 1
Does the group of women with higher dysfunctional maternal attitudes, and with higher EPDS scores postnatally, differ on past history of a mental health problem, social support, EPDS score and cognitive factors, compared to the group of women with higher EPDS scores postnatally, with lower, more functional maternal attitudes in the antenatal period?

**Research Question 2: Time 2**

Does the group of women with higher dysfunctional maternal attitudes, and with higher EPDS scores postnatally, differ on a past history of a mental health problem, social support, EPDS score and cognitive factors, compared to the group of women with higher EPDS scores postnatally with lower more functional maternal attitudes 10-12 weeks after the birth?

**Research Question 2: Time 3**

Does the group of women with higher dysfunctional maternal attitudes, and with higher EPDS scores postnatally, differ on past history of a mental health problem, social support, EPDS score and cognitive factors, compared to the group of women with higher EPDS scores postnatally, with lower more functional maternal attitudes 20-24 weeks after the birth?
**Hypotheses for Research Question 2:**

It is hypothesised that there are differing subsets of women, who have higher EPDS scores postnatally. The subsets are differentiated by higher, dysfunctional or lower, functional maternal attitudes. Lower maternal attitudes (in women with higher EPDS scores postnatally) will be more likely to be significantly associated with other variables considered to be important to the onset of depression occurring at other stages in the life cycle. These include past history of a mental health problem, poor social support, higher EPDS score, ELOC, dysfunctional attribution style, higher worry level, feeling less in control and lower self-esteem.

Higher maternal attitudes (in women with higher EPDS scores postnatally) will be less likely to be significantly associated with past history of a mental health problem, poor social support, higher EPDS score, ELOC, dysfunctional attribution style, higher worry level, feeling less in control and lower self-esteem.

**Rationale for Research Question 2:**

There is some evidence that women experiencing more depressive symptoms at different times in the puerperium are predicted by different factors (Kumar & Robson, 1984). Warner et al. (1997) proposed that maternal attitudes might be a key factor in predicting PND in one subset of women. These attitudes will be linked to expectations of high performance as a mother. However, this subset will not necessarily have other predisposing factors such as a past history of a mental health problem or low self-esteem. The second subset, however, may be predicted by these, as well as other, factors known to be important in depression occurring at other times in the life cycle.

**4.5.3: Research Question 3**

**Aim:**

The aim of this question is to determine the cognitive variables (measured in the second trimester of pregnancy) that predict women with higher EPDS scores, following the birth of a baby, at two points in time:

1. 10-12 weeks following the birth
2. 20-24 weeks following the birth.

Given the prominence in the literature of both a past history of a diagnosed mental health problem (Appleby et al., 1994; Cox et al., 1994) and poor social support
(Brugha et al., 1998) as antecedents of PND, it was considered important to control for these in the analyses.

**Research Question 3: Time 2**

Ten to 12 weeks after giving birth, do antenatal cognitive factors predict higher EPDS scores in first time mothers, after controlling for past history of mental health problems, and social support?

**Research Question 3: Time 3**

Twenty to 24 weeks after giving birth, do antenatal cognitive factors predict higher EPDS scores in first time mothers, after controlling for past history of mental health problems and social support?

**Hypotheses for Research Question 3:**

It is hypothesised that women with higher EPDS scores, at different times following the birth, will be predicted by different variables, measured antenatally.

Women with higher EPDS scores at 10-12 weeks following the birth will be less likely than women with higher EPDS scores later in the puerperium to be predicted by already existing dysfunctional cognitions. These include low self-esteem, ELOC, high worrying style, feeling out of control and dysfunctional attributional style.

At Time 2 (10-12 weeks after the birth), antenatal cognitive factors will not be significant in predicting higher EPDS scores in first-time mothers. Maternal attitudes will be higher.

Women with higher EPDS scores in the later months following the birth (20-24 weeks) will be more likely than women with higher EPDS scores earlier in the puerperium to be predicted by a past history of a mental health problem and residual dysfunctional factors associated with depression and associated disorders. These include low self-esteem, ELOC, dysfunctional attributional style, high worrying style, feeling less in control (Sherrington et al., 2001). Maternal attitudes will be lower.

At Time 3 (20-24 weeks after the birth), cognitive factors, known to be important at other times in the life cycle, will be significant in predicting higher EPDS scores in first-time mothers (Warner et al., 1997).

**Rationale for Research Question 3:**

There is some indication that women with higher EPDS scores at different times in the puerperium may be predicted by different factors. Primiparous women with
higher EPDS scores at 10-12 weeks following the birth may be more likely to be reacting to the stressors inherent in the birth of a first child, and the early postnatal period of adjustment. This may be mediated by pre-existing higher maternal attitudes (Warner et al., 1997). Women with higher EPDS scores in the later months following the birth (20-24 weeks) may be more likely than women with higher EPDS scores earlier in the puerperium to be predicted by a past history of a mental health problem, and lower self-esteem (Kumar & Robson, 1984). Furthermore, it had been found that a past history of depression might result in some residual cognitive dysfunction after the episode (Sherrington et al., 2001). The group of women with higher EPDS scores in the later months following the birth (20-24 weeks) may be more likely than women with higher EPDS scores earlier in the puerperium to have a more external LOC, dysfunctional attributional style and higher worrying style. They may also be feeling less in control.

4.5.4: Research Question 4

Aim:

The next set of questions will compare cognitive differences between groups of women with higher EPDS scores at different times postnatally (Time 2 and Time 3), and women who do not have higher EPDS scores, during the period of the study. The main aim is to determine which variables differ significantly within different groups, and between different groups, at each time (Time 1 antenatally, Time 2, and Time 3 postnatally).

Research Question 4: Maternal Attitudes

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences, between groups of women with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time, during the study, on maternal attitudes, at Time 1, Time 2, and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences, over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time during the study) on maternal attitudes, at Time 1, Time 2, and Time 3?
Research Question 4: Personal Control

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women, with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time during the study, on sense of personal control, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences, over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time during the study) on sense of personal control, at Time 1, Time 2 and Time 3?

Research Question 4: Self-esteem

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women, with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores, at every time during the study, on self-esteem, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences, over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time during the study), on self-esteem, at Time 1, Time 2 and Time 3?

Research Question 4: Worry Over Everyday Stressors

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women, with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time during the study, on worry over everyday stressors, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2
and Time 3 postnatally, and women who do not have higher EPDS scores at every time during the study) on worry over everyday stressors, at Time 1, Time 2 and Time 3?

**Research Question 4: Locus of Control**

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women, with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time during the study, on LOC, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time during the study), on LOC, at Time 1, Time 2 and Time 3?

**Research Question 4: Attributional Style**

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women, with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time during the study, on attributional style, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time during the study), on attributional style, at Time 1, Time 2 and Time 3?

**Hypotheses for Research Question 4**

It is hypothesised that:

**Maternal Attitudes:**

Women with higher EPDS scores at Time 2 postnatally will have significantly different (higher) maternal attitudes to women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3);
Women with higher EPDS scores at Time 3 postnatally will have similar maternal attitudes (lower) to women who did not have higher EPDS scores at every time during the study.

**Personal Control:**

Women did not have higher EPDS scores at every time will feel significantly more in control of their lives when pregnant and at both times following the pregnancy than women who had higher EPDS scores at Time 3 postnatally;

Women who did not have higher EPDS scores and women who had higher EPDS scores at Time 2 postnatally will feel significantly more in control of their lives when pregnant than women with higher EPDS scores at Time 3 postnatally;

Women with higher EPDS scores at Time 2 postnatally will feel significantly less in control than either of the other two groups, at Time 2;

Women with higher EPDS scores at Time 3 postnatally, will have significantly lower feelings of personal control compared to women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3).

**Self-esteem:**

Women with higher EPDS scores at Time 2 postnatally will have significantly lower self-esteem, than women who did not have higher EPDS scores at every time, only when they have higher EPDS scores (at Time 2);

Women who had higher EPDS scores at Time 2 postnatally will have significantly higher self-esteem, than women who had higher EPDS scores at Time 3. This will be at two times of assessment. These are antenatally (Time 1) and at Time 3 postnatally. At Time 2 postnatally, both groups will have lower self-esteem;

Women who had higher EPDS scores at Time 3 postnatally will have significantly lower self-esteem than women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3).

**Worry Over Everyday Stressors:**

Worry will be lower in women who did not have higher EPDS scores at every time in the study (Time 1, Time 2 and Time 3);

Antenatally (Time 1), women with higher EPDS scores at Time 2, will not have significantly different worry levels compared to women who did not have higher EPDS scores at every time;
Postnatally (at Time 2 and Time 3), women with higher EPDS scores at Time 2, will have significantly different worry levels compared to women who did not have higher EPDS scores at every time;

Women with higher EPDS scores at Time 3 will have significantly different worry levels, from women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3).

**Locus of Control:**

Women with higher EPDS scores at Time 2 postnatally will have no significant differences in LOC levels compared to women who did not have higher EPDS scores at every time;

Women with higher EPDS scores at Time 2 postnatally will have significantly different LOC (more internal) compared to women with higher EPDS scores at Time 3 postnatally, at each time (Time 1, Time 2 and Time 3);

Women with higher EPDS scores at Time 3 postnatally will have significantly different LOC (more external) compared to women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3).

**Composite Attributional Style:**

Women with higher EPDS scores at Time 2 postnatally will have significantly lower composite ASQ at that time (Time 2 postnatally) than women who did not have higher EPDS scores at every time;

Women with higher EPDS scores at Time 2 postnatally will have significantly higher composite ASQ compared to women with higher EPDS scores at Time 3 postnatally, at two assessment points. These are antenatally (Time 1) and again at Time 3;

Women with higher EPDS scores at Time 3 postnatally will have significantly lower composite ASQ compared to women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3).

**Rationale for Research Question 4:**

Question 3 indicated that cognitive factors were more strongly associated with higher EPDS scores in women who had higher EPDS scores later in the puerperium. Based on the findings from this question, the women with higher EPDS scores at any time in the puerperium were divided into discrete groups. This was determined by the
period of onset in the puerperium (Time 2 or Time 3 postnatal onset). Women who scored high at both Time 2 and Time 3 were grouped by their first time of onset, and remained in the Time 2 cohort, for the purposes of analyses. The two discrete groups were compared with women who did not have higher EPDS scores at any time in the study. This question will provide additional information on the processes of individual cognitive variables, from the antenatal to the postnatal period, in groups of women with higher EPDS scores at different times in the puerperium. It will also describe cognitive differences between these groups, and the group of women who did not have higher EPDS scores at any time in the study.

4.5.5: Research Question 5

**Aim:**

The aim is to determine:

- The extent to which the subsets assigned to different groups by time are correctly classified, based on the cognitive factors assessed.
- Which of the variables included best discriminate between the two groups of women, who had higher EPDS scores commencing at different time during the puerperium, assessed at each time in the study.

**Research Question 5: Time 1**

To what extent does the cognitive profile indicate the groups are correctly classified at Time 1?

Which of the cognitive measures best discriminate between women who have higher EPDS scores commencing at different times postnatally (Time 2, Time 3) when assessed at Time 1?

**Research Question 5: Time 2**

To what extent does the cognitive profile indicate the groups are correctly classified at Time 2?

Which of the cognitive measures best discriminate between women who have higher EPDS scores commencing at different times postnatally (Time 2, Time 3) when assessed at Time 2?
Research Question 5: Time 3

To what extent does the cognitive profile indicate the groups are correctly classified at Time 3 postnatally?

Which of the cognitive measures best discriminate between women who have higher EPDS scores commencing at different times postnatally (Time 2, Time 3) when assessed at Time 3 postnatally?

Hypotheses for Research Question 5:

It is hypothesised that women with higher EPDS scores at different times postnatally will be discriminated significantly on cognitive measures, at each time:

At Time 1 antenatally, women with higher EPDS scores later in the puerperium (Time 3), will be cognitively dysfunctional. Women with higher EPDS scores earlier in the puerperium (Time 2) will not be cognitively dysfunctional. Hence, there will be significant differences between the groups;

At Time 2 postnatally, women with higher EPDS scores at that time will be more likely to be cognitively dysfunctional. Women with higher EPDS scores later in the puerperium (Time 3) will be less likely to be cognitively dysfunctional. Hence, the groups will differ;

At Time 3 postnatally, the groups will not differ significantly. Some women with higher EPDS scores at Time 2 will have residual dysfunction cognition, and some will continue to have higher EPDS scores. Women with higher EPDS scores at Time 3 postnatally will be more cognitively dysfunctional because they have higher EPDS scores, at that time.

Rationale for Research Question 5:

Given that the women with higher EPDS scores will be assigned to groups by time, it was considered important to determine the extent to which they were correctly classified. Furthermore, the results of this question would indicate which variables most strongly discriminated between the groups.

4.5.6: Research Question 6

Aim:

The aim of this final question is to determine whether there are differences between groups of women with higher EPDS scores at different times postnatally and
those who did not have higher EPDS scores during the study, on other background and risk factors, at each time. These include relationship problems, ambivalence about the pregnancy, a traumatic delivery, mixed feelings about motherhood, and feelings of isolation. The additional information collected from women at each time of assessment is intended to demonstrate further differences in women with higher EPDS scores and women who did not have higher EPDS scores, at every time. This analysis was conducted for each time of assessment during the pregnancy and puerperium.

**Research Question 6:**

Are groups of women, who have higher EPDS scores postnatally, more likely than those who do not have higher EPDS scores at every time to be significantly associated with factors known to be important in PND at each time (Time 1 antenatally, Time 2 and Time 3 postnatally)?

**Hypotheses for Research Question 6:**

It is hypothesised that women who have higher EPDS scores postnatally will be more likely than those who do not have higher EPDS scores at every time to:

- Feel more ambivalent about motherhood antenatally;
- Perceive themselves as having a traumatic birth;
- Perceive they have more breastfeeding problems;
- Have more negative feelings about motherhood;
- Perceive they have more problems with their partner relationship; and
- Perceive they have less support from their social system.

**Rationale for Research Question 6:**

This question was based on findings postulated in the literature that a range of background factors may also play a role in the onset of higher EPDS scores, following the birth. These were supported by findings from the “orientational enquiry” (Patton, 1990) conducted during the planning stage of this study. The factors that emerged included affective feelings of ambivalence about the pregnancy, poor relationships prior to, and following the birth, a lack of support and differences in income. This will also provide some interesting and important insights into women’s perceptions and feelings before, during, and following the birth.
Chapter 5

Method

The previous Chapter outlined the planning stage of the study. This informed the researcher of the context of the study, and the methodological approach to be adopted. The development of the protocol and the questionnaires used was based on quantitative and qualitative information, gleaned from a number of sources. These included theoretical frameworks, empirical evidence, health practitioners, volunteers working with women with PND and related mood disorders and women who had suffered from diagnosed PND. This Chapter describes how the questions, emerging from these reviews and consultations, were investigated.
5.1: The Main Study

The main study was a longitudinal non-experimental repeated measures survey design. It consisted of a prospective follow-up of primiparous women in the antenatal and postnatal period. The research involved the use of a range of instruments developed to measure and examine further the role of cognitive influences and other factors in first-time mothers who experienced higher EPDS scores after the birth of their baby. As well as investigating the role of cognitive factors, the study explored the impact of other well-researched and important background variables such as social factors that are known to be important in PND and other mood disorders. The main method chosen for the data collection was a battery of self-report questionnaires, which were compiled into a protocol. This was completed in the presence of a member of the research team, for clarification purposes. The results of the protocols were coded, summarised and entered onto SPSS. They were then analysed, using Multiple analysis of covariance (MANCOVA), analysis of covariance (ANCOVA), Mann-Whitney U, Multiple Regression, repeated measures analysis of covariance (SPANOVA), Discriminant function analysis (DISCRIM), and Chi-Square tests. These were determined as appropriate, to answer the questions.

5.2: Design

The research questions were investigated by a prospective longitudinal survey of women both antenatally and postnatally. A repeated-measures design was used with the measures taken at three intervals. The three intervals of assessment were as follows:

<table>
<thead>
<tr>
<th>Time 1</th>
<th>12-24 weeks survey assessment (Antenatal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 2</td>
<td>10-12 weeks survey assessment (Postnatal)</td>
</tr>
<tr>
<td>Time 3</td>
<td>20-24 weeks survey assessment (Postnatal)</td>
</tr>
</tbody>
</table>

At each time, the following variables were assessed:

Dependent variable:

Higher EPDS defined as a score of 10 or more, indicating distress at the time of measurement.
Independent variables:
Locus of Control (LOC)
Attribution Style (ASQcomp)
Maternal Attitudes (MAQ)
Self-esteem (SE)
Level of Worry Over Daily Hassles (ESI)
Feeling More or Less in Control Since Becoming Pregnant (PC)
Maternal Social Support (MSSI)

5.3: Participants

The inclusion criteria for participation in the main study were:

Antenatal Assessment: Time 1

Ability to speak and understand English; first birth; and ability to respond with understanding to the protocol, at the time of recruitment to the study.

Postnatal Assessment: Times 2 & 3

Birth weight more than 2 kg; No major abnormality in the baby at birth; No major physical illness in the new mother.

5.3.1 Population

Two hundred and three primiparous women attended the JHC Antenatal Clinic during the recruitment period. Of these, 78% agreed to participate in the study. Twenty-two percent (43) of the women did not participate for the following reasons:

- Thirty-eight (87.5%) of the women approached refused to participate either immediately, or at a later date, when contacted to confirm an interview time. Three of the 38 refused to participate in the study at the clinic. The reasons given by two were that they did not think they would get PND. Another chose not to give any reason. The remainder (35) initially agreed to complete the study. They either refused when contacted by telephone to confirm their appointments, or
were not at home when the researcher arrived. A minimum of three attempts was made to contact each potential participant to maximise participation.

Five women were not recruited for the following reasons:

- Two women had insufficient English to participate with understanding;
- One person was referred immediately to mental health services by the Clinic midwife;
- One woman with a recorded pre-existing severe mental health problem was disruptive at the clinic, and insulted the staff before leaving abruptly;
- One was a 16-year-old female who was pregnant following a serious sexual assault. She had a miscarriage prior to the pre-arranged interview time.

The non-participants ranged in age from 16-39 years, and lived in a similar range of suburbs to the women who participated in the study. Fifteen were single, four were in de facto relationships, and 24 were married.

5.3.2 Sample

In order to conduct the analyses, it was determined that 150 women were required. It was anticipated that 30% - 40% of these might experience higher distress after the birth. One hundred and fifty-eight women who presented to the Antenatal Clinic for their first visit (the “booking-in” appointment), agreed to participate in the study. This equated to approximately 26% of those who were first-time mothers, and delivered in public beds at JHC in 1999/2000. Overall, this is 18.26% of public births in the region, during the same period. All participants completed the battery of research questionnaires in the antenatal period. Those who remained in the study, for the full duration of the research period were systematically followed up until six months postpartum. On each occasion, the same protocol was administered, with additional questions included after the birth.

5.3.3 Age

Table 1 shows the age range of the participants at each time.
Table 1
*Age Range of Participants*

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Antenatal (Time 1)</th>
<th>Postnatal (Time 2)</th>
<th>Postnatal (Time 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>17-21 yrs</td>
<td>31</td>
<td>19.6</td>
<td>25</td>
</tr>
<tr>
<td>22-25 yrs</td>
<td>36</td>
<td>22.8</td>
<td>33</td>
</tr>
<tr>
<td>26-30 yrs</td>
<td>64</td>
<td>40.5</td>
<td>53</td>
</tr>
<tr>
<td>31-35 yrs</td>
<td>22</td>
<td>13.9</td>
<td>24</td>
</tr>
<tr>
<td>36-40 yrs</td>
<td>5</td>
<td>3.2</td>
<td>6</td>
</tr>
<tr>
<td>Total N</td>
<td>158</td>
<td>141</td>
<td>127</td>
</tr>
</tbody>
</table>

The cohort of participants at Time 1 comprised 158 primiparous women. Their ages when assessed ranged from 17 to 39 years, with a mean age of 26 years (M = 26.24, SD = 4.97). Seventeen participants were lost to the study at Time 2, and a further 14 between the second and third time.

5.3.4 Marital Status

Table 2 indicates the marital status of the participants at each time.
Table 2

*Marital Status*

<table>
<thead>
<tr>
<th></th>
<th>Antenatal (Time 1)</th>
<th>Postnatal (Time 2)</th>
<th>Postnatal (Time 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>Married</td>
<td>101</td>
<td>63.92</td>
<td>88</td>
</tr>
<tr>
<td>De Facto</td>
<td>35</td>
<td>22.95</td>
<td>35</td>
</tr>
<tr>
<td>Single</td>
<td>22</td>
<td>13.93</td>
<td>18</td>
</tr>
<tr>
<td>Total N</td>
<td>158</td>
<td></td>
<td>141</td>
</tr>
</tbody>
</table>

Prior to the birth of the baby, 101 of the women were married and 35 were living in a de facto relationship (86.1%). The remaining 22 (13.9%) were single.

5.3.5 Education Level

Table 3 shows the education level of the participants at the first time of measurement in the study.
Table 3

*Education Level*

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 10</td>
<td>57</td>
<td>36.0</td>
</tr>
<tr>
<td>Year 12</td>
<td>55</td>
<td>34.8</td>
</tr>
<tr>
<td>TAFE</td>
<td>21</td>
<td>13.3</td>
</tr>
<tr>
<td>Uni undergrad</td>
<td>20</td>
<td>12.7</td>
</tr>
<tr>
<td>Uni postgrad</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Total N</td>
<td>158</td>
<td></td>
</tr>
</tbody>
</table>

When assessed antenatally, 46 women (29.2%) had completed, or were completing, some form of tertiary education. The remaining 112 women, (70.8%), had completed either Year 10 or Year 12.

5.3.6 Employment During Pregnancy

One hundred and nine women (69%), were working at the first point of contact, and 49 (31%) were unemployed. Table 4 indicates the usual occupation of the women, when assessed during the antenatal period (Time1).
Table 4

*Usual Occupation of Women*

<table>
<thead>
<tr>
<th>Work Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>37</td>
<td>23.4</td>
</tr>
<tr>
<td>Trade</td>
<td>29</td>
<td>18.4</td>
</tr>
<tr>
<td>Clerical</td>
<td>46</td>
<td>29.1</td>
</tr>
<tr>
<td>Professional/Management</td>
<td>33</td>
<td>20.9</td>
</tr>
<tr>
<td>Student</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
<td>4.4</td>
</tr>
<tr>
<td>Total N</td>
<td>158</td>
<td></td>
</tr>
</tbody>
</table>

The responses of the women indicated that 33 (20.9%), were employed in management or professional roles, 46 (29.1%) were in clerical occupations and 29 (18.4%) normally worked in trades.

5.3.7 Country of Birth

Women were asked to indicate their country of birth. Table 5 shows the origin of the participants.
### Table 5

**Country of Birth**

<table>
<thead>
<tr>
<th>Country of Birth</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>103</td>
<td>65.2</td>
</tr>
<tr>
<td>UK</td>
<td>34</td>
<td>21.5</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Europe</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Asia</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>S. Africa</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>S. America</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total N</strong></td>
<td><strong>158</strong></td>
<td></td>
</tr>
</tbody>
</table>

The majority of the 158 participants was born in Australia (65.2%). The next largest group (21.5%) comprised women born in the UK. Overall, 34.8% of the participants were born overseas. This ethnic profile is consistent with Census data collected by the Australian Bureau of Statistics (ABS, 1996). This indicated that 34% of people residing in the northern suburbs of Perth were born overseas.

#### 5.3.8 First Language Spoken

The vast majority of the 158 participants spoke English as their first language (93.7%). Only 10 (6.3%) spoke another language, prior to learning English.

#### 5.3.9 Income Range

Table 6 indicates the range of incomes of the participants.
Table 6

*Household Income*

<table>
<thead>
<tr>
<th>Annual Household Income</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $20,000</td>
<td>22</td>
<td>13.9</td>
</tr>
<tr>
<td>$20 - 35,000</td>
<td>37</td>
<td>23.4</td>
</tr>
<tr>
<td>$35 - 50,000</td>
<td>33</td>
<td>20.9</td>
</tr>
<tr>
<td>$50 - 65,000</td>
<td>31</td>
<td>19.6</td>
</tr>
<tr>
<td>$65,000+</td>
<td>34</td>
<td>21.5</td>
</tr>
<tr>
<td><em>Missing</em></td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Total N</td>
<td>158</td>
<td></td>
</tr>
</tbody>
</table>

*Refused to disclose income.

Fifty-nine of the 158 participants (37.3%) had a household income of less than $35,000 during the pregnancy. The median personal income in WA was approximately $15,964 in 1996. The average family income was $35,000 (ABS, 1996).

5.3.10 Mental Health Problem

Table 7 shows the number of participants who indicated that they had suffered from a mental health problem before the pregnancy.
### Table 7

**Previous Diagnosis of a Mental Health Problem**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>13</td>
<td>8.2</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Eating Disorder</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>None</td>
<td>142</td>
<td>89.9</td>
</tr>
<tr>
<td>Total N</td>
<td>158</td>
<td></td>
</tr>
</tbody>
</table>

Sixteen participants (10.1%) stated that they had a past history of a mental health problem (PH). Five participants had more than one episode. Two participants had an episode sometime in three months before the pregnancy, and a further six participants within one year.

### 5.3.11 Previous Treatment

Of the 158 participants, 8.2% of the women had a history of treatment for a mental health problem in the past. Of these, 5.7% took medication, 1.9% had counselling and one (0.6%) had combined treatments.

### 5.3.12 Current Treatment

At Time 1 antenatally, two of the participants (1.3%) were undergoing counselling. One was also on a small amount of anti-depressant medication that she had been reportedly taking since the age of 14 years under the supervision of her GP. One hundred and fifty-five participants (98.1%) were not having any treatment for a mental health problem.
5.4: Instruments/Materials

The combined questionnaire protocol was constructed to collect information on the variables of interest. It consisted of seven instruments designed to be self-completed. These instruments had been used in previous investigations by other researchers. The questionnaires were preceded by a set of questions, developed by the researcher, to obtain additional information. This included demographic information, past history of diagnosed mental health problem, family history of diagnosed mental health problem, perceptions of social circumstances, feelings about control and feelings about the pregnancy (Appendix 3).

Following the birth, obstetric details and additional information related to the birth and other issues were collected at both postnatal times (Time 2 and Time 3). These included questions such as whether or not the new mothers felt they had a difficult delivery; whether or not they suffered from "The Blues" and for how long; breastfeeding issues; and their feelings on motherhood (Appendix 4).

5.4.1 Variables.

The independent variables (predictors) were Locus Of Control (LOC), measured using the Rotter Locus of Control Scale (1966); Attributional Style, using a modified Attributional Style Questionnaire (ASQ), devised by Peterson, Semmel, Von Brayer, Abramson, Metalsky and Seligman (1982); Maternal Attitudes, measured by the Maternal Attitudes Questionnaire (MAQ), constructed by Warner et al. (1997); Self-esteem, assessed using the Rosenberg Self-Esteem Scale (SE), developed by Rosenberg (1965); a single-item measure of feeling more or less in control, using a scale of 1-7 (PC); and worry over daily hassles or everyday stressors, assessed using the Everyday Stress Index (ESI), devised by Hall, Williams and Greenberg (1985).

The dependent variable (criterion) was higher EPDS score. Higher EPDS score was measured using the Edinburgh Postnatal Depression Scale (EPDS), constructed by Cox, Holden and Sagovsky (1987). Since it was considered important to identify all women who may be suffering higher distress, a cut-off of 9/10 was used. A percentage of participants, who were not assessed as having a higher EPDS score, was randomly selected. The participants were screened by the chief researcher, using the EPDS at each stage, to confirm the score was less than 10. All high scorers completed the EPDS on two occasions. Women who preferred to complete the questionnaire by mail at the
subsequent times of assessment (or were residing more than 50 kilometres from the JHC) completed the protocol with a researcher, on the first occasion. They were contacted on the telephone by the chief researcher at the second and third assessment times.

5.4.2 Covariates

Two covariates, past history of a mental health problem (PH) and social support (MSSI) were included in the study for the following reasons:

To increase power by recognising the importance of these factors, as found in other studies (Brugha et al., 1998)

To control, or equate, for the variance of these factors, while assessing the importance of the independent cognitive variables (Tabachnick & Fidell, 1996).

Past History (PH)

Past history of a mental health problem (PH) was assessed by asking women whether they had suffered from a diagnosed mental health problem in the past. Various researchers have posed similar retrospective questions to ascertain the answer to this question using a self-report format. There is some evidence that this is reported accurately (Kumar & Robson, 1984).

Social Support (MSSI)

Social support was assessed using the measure developed by Pascoe, Ialongo, Wade, Horn, Reinhart and Perradatto in 1982 (Pascoe et al., 1988). It is called The Maternal Social Support Index (MSSI). This instrument is a self-completed questionnaire that assesses task-sharing in the home, and the quantity and perceived quality of additional support. The primiparous version of the Scale (Pascoe & French, 1990) has 21 questions, divided into seven items, that contain questions relevant to each of the sections. Item 1 assesses the level of instrumental support, and asks questions related to who takes responsibility for food preparation, shopping, cleaning inside and outside, home maintenance and childcare. Item 2 relates to regular family contact. Items 3 and 4 investigate friend and neighbour supports, in time of need. Item 5 explores satisfaction with partner communication. Item 6 evaluates other opportunities for communication with relatives or friends, and satisfaction with the support, and the final item evaluates outside support through regular contact with social or religious groups. The scores are combined to provide a final score. Higher scores on the scale indicate
higher satisfaction with supports. The test-re-test co-efficient was .72 over 6-8 weeks and Cronbach's Alpha ranged from .60 to .63 over three samples (Pascoe et al., 1988). Primiparous women anticipated their responses to the three childcare questions in the first item at Time 1 antenatally, as in a previous study on first-time mothers (Pascoe, Chessare, Baugh, Urich, & Ialongo, 1987).

5.4.3 Instrument Reliability and Validity

**Locus of Control (LOC)**

Rotter's Locus of Control Scale is a forced-choice scale with 23 items (6 fillers were omitted). The score indicates either a more internal or external orientation. Higher scorers are more external, lower scorers more internal. It was developed in 1966 and had an internal consistency of .70. Test-retest reliability was .72 (r = .83 for females). The concept of LOC has been tested with numerous samples and cited in more than 5000 studies in the last 25 years (Rotter, 1990). Validity estimates over the years have therefore varied. Correlations with response bias are typically low. Rotter (1966) found a range of -.07 to -.05 with the Marlove-Crowne Social Desirability Scale.

**The Rosenberg Self-Esteem Scale (SE)**

The Rosenberg Self-Esteem Scale was originally developed in 1965, as part of an extensive study of self-esteem in adolescents (Rosenberg, 1965). It was devised for easy simple completion and administration (Robinson, Shaver, & Wrightman, 1994). The original version consists of 10 self-administered questions, in which the respondent answers "strongly agree" "agree" "disagree or "strongly disagree" on a scale from 0 to 3. Questions 3, 5, 8, 9 and 10 are reverse-scored. The final score ranges from 0 to 40. Items include perceptions of worth, satisfaction with self, self-respect, comparable ability with others, and perceptions of failure and uselessness. Higher scores are more positive, indicating a higher self-esteem. The scale has been widely used and well-validated over the years (Stamp & Crowther, 1994).

The Rosenberg Self-Esteem Scale is the most commonly used measure of its kind in this literature. A search of the PsycINFO database (from 1967 to the present) found citations to more than 20,000 relevant studies (Watson, Suls, & Haig, 2002). Reliability ranges from .87 to .92. Correlates of .58-.60 have been found with other measures of self-esteem (Roy, Neale, & Kendler, 1995). Later findings have found stronger relationships. Watson et al. (2002) examined global self-esteem in several
studies, and reported that the Rosenberg and Coopersmith scales were strongly correlated (0.88). Furthermore, they demonstrated that measures such as the Rosenberg are strongly correlated with depression. The Rosenberg correlated -.79 with the NEO-PI-R Depression facet scale, indicating that the two measures share approximately 63% of their variance. This correlation increased to -.90 after being corrected for unreliability. The research team recommended that scales such as the Rosenberg Self-Esteem Scale, should continue to be used in psychological research.

**Attributional Style Questionnaire (ASQ)**

The ASQ was developed by Peterson, Semmel, Von Brayer, Abramson, Metalsky and Seligman (1982). This measure assesses whether individuals attribute responsibility to themselves, or external factors, for positive and negative situations and circumstances. It consists of six hypothetical good and bad events (12 in total). Each has an internal, stable and global rating from 1-7. The final two scores are a CP (composite positive) and a CN (composite negative) that can be divided to a final CPCN score. The highest score is +18 the lowest –18. The authors recommended that the individual stable, global and internal ratings should not be used because of their limited reliability (Peterson et al., 1982). Internal consistency for positive events was .75 and .72 for negative events. Test-retest reliability over a five-week interval was .57 to .69. Meta-analyses of studies have shown that there is good evidence for a relationship between negative attribution and depression (Gladstone & Kaslow, 1995).

**The Maternal Attitude Questionnaire (MAQ)**

The MAQ was developed by Warner, Appleby, Whitton and Faragher (1997). A pilot questionnaire was devised made up of 16 items. Four of the items were the same as items in the “attitudes towards baby” subscale of the Maternal Adjustment and Maternal Attitudes questionnaire, a 60-item instrument devised by Kumar, Robson and Smith (1984). Other items were constructed based on the literature, and clinical experience that indicated cognitions about motherhood may be associated with depression (Warner et al., 1997). Following the pilot, two items were discarded because women had difficulty understanding or answering them. The final version of the MAQ consisted of 14 questions each with four responses ranging from “strongly agree” to “strongly disagree”. The items measure maternal cognitions related to three areas:

- role change - “I resent the way my life has been restricted since having my baby”;

• expectations of motherhood - “having a baby has made me as happy as I expected”; and
• expectations of self as a mother - “to be a good mother I should be able to cope well all of the time”, and “if other people help me look after my baby I feel a failure”.

Scores range from 0-2 for each question. The composite scores for the total questionnaire range from 0-28. Higher scores indicate more dysfunctional maternal cognitions. In the original validation study with 483 participants, the mean MAQ score was 7.7 for women with depression and 4.2 for non-depressed women. Test-retest reliability found no significant changes in responses over one week (95% reference range plus or minus 4.6 %). Internal reliability was .84 (Warner et al., 1997).

In this study the instrument was also used antenatally. With the permission of the authors, the tenses were changed for this purpose. However, to ensure the meaning was not changed, the wording was negotiated by the research team and the intent of each item was tested, and confirmed with individual team members. It was then piloted with 10 women who participated in the study.

**The Everyday Stress Index (ESI)**

The ESI was developed by Hall et al. (1985). The original Index has 20 items, measuring the level of worry reportedly felt by women due to “daily hassles” or problems. These are answered using a 4-point scale ranging from 0 (not at all bothered) to 3 (bothered a great deal). The items include role overload, employment problems, financial concerns, and interpersonal conflict. Internal consistency was .83 (Hall et al., 1985). The ESI has subsequently been used in other studies that have confirmed satisfactory internal consistency ranging from .80 (Hall, Schafer, & Greenberg, 1987) to .85. (Hall, 1990). Four questions related to parental worries that were not relevant to primiparous women were omitted from the protocol. The scores therefore range from 0-48 in this study. Higher scores indicated more worry.

**Feeling More or Less in Control (PC)**

A single-item measure of feeling more or less in control was devised. The Likert-type scale ranged from 1-7. The number 1 was denoted on the scale as feeling “much less” in control, 4 indicating “the same” and 7 being “much more” in control. Women were asked “do you feel more or less in control of your life since becoming pregnant?” at the first time of assessment. After the birth, they were asked to use the birth event as
the reference point. Feeling less in control, a score of less than 4, was associated with a range of factors theorised to be associated with PND (Green, Coupland, & Kitzinger, 1990). This provided some evidence of criterion validity. For example, feeling less in control antenatally was associated with a higher EPDS score, $r (156) = .245, p < .01$, country of birth other than Australia, $r (156) = .157, p < .05$, and higher anxiety, $r (156) = .195, p < .05$. Low mood, $r (156) = .255, p < .01$, and sleep disturbance, $r (156) = .200, p < .05$, were also associated with feeling less in control before the birth.

Feeling more in control was associated with less ambivalence about the pregnancy, $r (156) = .229, p < .01$. However, some unanticipated findings were that women who were more likely to feel more in control antenatally also had associated family history of mental health problems, $r (156) = .292, p < .01$, and more relationship problems during pregnancy, $r (156) = .167, p < .05$.

**Past History of Diagnosed Mental Health Problem (PH)**

Women who reported having had a past history of a mental health problem also had some significant associations with other instruments and factors that may be important in depression, providing some evidence of criterion validity.

Women who had a history of a mental health problem before becoming pregnant for the first time were more likely to be associated with having a family history of a mental health problem, $r (156) = .399, p < .01$, were more ambivalent about the birth, $r (156) = .266, p < .01$, had more anxiety, $r (156) = .251, p < .01$, experienced significantly more mood change, $r (156) = .163, p < .05$, and felt less in control of their lives, $r (156) = .160, p < .05$. A past history of diagnosed mental health problem was also associated with higher antenatal EPDS scores, $r (156) = .284, p < .01$, lower self-esteem, $r (156) = .210, p < .01$, and higher worry over everyday stressors scores, $r (156) = .183, p < .05$.

Postnatally at 10-12 weeks, women with a history of a mental health problem were more likely to be having treatment, $r (139) = .444, p < .01$. However, they were not significantly different to the cohort of new mothers on any of the other measures.

At 20-24 weeks postnatally, women with a history of a mental health problem were more likely to have limited social support, $r (126) = .183, p < .05$, and had suffered from a recent mental health problem, $r (126) = .393, p < .01$. They had significantly higher EPDS scores, $r (126) = .187, p < .05$, and were associated with higher dysfunctional maternal attitudes, $r (126) = .188, p < .05$, and worrying style, $r (126) = -$
.188, p<.05. They also had a significantly lower MSSI composite score, r (126) = -.262, p<.05, indicating they had less perceived instrumental and emotional support.

**The Edinburgh Postnatal Depression Scale (EPDS)**

The EPDS was developed by Cox et al. (1987) following a range of prospective studies that had highlighted the limitations of other scales in indicating PND. Following the development of a 13-item scale and several pilot studies, the items were reduced to 10. A validation study was conducted to test the psychometric properties of the 10-item instrument (Cox et al., 1987). The sample consisted of 84 women at approximately 13 weeks postpartum, who were also tested using the Standardised Psychiatric Interview. At this postpartum period, the sensitivity (proportion of women correctly identified as true positives) was 86%, the specificity (number of non-depressed women who were true negatives) 78%, and the positive predictive value (those above threshold on the EPDS who met RDC criteria for depression) was 73%. The split-half reliability was 0.88 and the standardised alpha coefficient 0.87. These properties were established using a cut-off of 12/13 (Cox, 1994). However, Cox et al. (1987) noted that in some clinical or research settings, where it was important not to miss cases, failed detection could be less than 10%, if a lower cut-off were used. They also concluded “a threshold of 9/10 may be appropriate if the scale was considered for routine use by primary care workers” (Cox et al., 1987, p. 785).

A series of comparative studies followed that further refined the parameters and uses of the scale, testing its properties against other established criteria used in the diagnosis of depression. Murray and Carothers (1990) tested the EPDS and examined a range of cut-offs. Using the Standardised Psychiatric Interview, they found 12/13 to be the optimum cut-off, with a sensitivity of 95.7%, a specificity of 81.1% and a positive predictive value of 43%. They noted that using a cut-off of 9/10 would identify 92.6% of cases of major depression and 73.2% of minor depression. Harris, Huckle, Thomas, Johns and Fung (1989) used the DSM-III criteria to validate the EPDS. The research team reported a sensitivity of 95%, specificity of 93%, and a positive predictive value of 75%, when using a cut-off of 12/13. Using a threshold of 9/10, they noted 100% sensitivity, but a lowering of specificity to 82%.

Harris and Jamil (1994) screened 147 women at 6-8 weeks postpartum using the DSM-III criteria for major depression. The 15% of the women who were identified as having major depressive symptomatology were then asked to complete the Beck Depression Inventory (BDI) and the EPDS. The BDI is a 21 item self-report inventory
that has been widely used since its introduction in 1961 as both a screening and assessment tool to identify depression and its severity (Beck, 1976). Alongside the two self-report inventories that were completed, participants were also asked to complete two other measures in the same interview. These were the Raskin 3-area Scale for Depression and the Montgomery Asberg Depression Rating Scale (MADRS). It was found that the specificity of the EPDS was 93%, the highest of all the four scales used. The sensitivity was 95%, indicating 21 of the 22 women were identified as having major depression. The BDI, however, was much less sensitive, with a sensitivity of 68% and a specificity of 88%.

Wickberg and Hwang (1996) also compared the EPDS with the MADRS, in a Swedish community sample. However, they preferred a cut-off of 11/12. They found that this identified 96% (54 of 56 women) found to have a diagnosis of major depression, using the DSM-III-R criteria. Although there were 37 false positives, the authors claimed these women did have depressive symptoms, but did not meet all of the criteria for depression. They noted that a higher cut-off of 12/13 increased the specificity and positive predictive value to 63% and 64% respectively. However, it reduced the sensitivity to 85%. In another international study, Lawrie, Hofmeyr, de Jager and Berk (1998) also lowered the threshold to 11/12 for South African women. This improved the combined sensitivity of both minor, and major, depression to 80%, whereas it was 76% at the higher cut-off of 12/13.

Boyce, Stubbs and Todd (1993) administered the EPDS to 103 Australian resident post-partum women, who were also interviewed using the Diagnostic Interview Schedule. The optimum cut-off was found to be 12.5. A score of 13 identified all nine women who had the criteria for major depression (100% sensitivity). The specificity was 95.7%, and the positive predictive value was 69.2%. Thompson, Harris, Lazarus and Richards (1998) compared the EPDS with other well-established scales. The EPDS was shown to have better sensitivity than the Hamilton Rating Scale for Depression, in the Hamilton Anxiety and Mental Disorders Scale (HAMDS). Furthermore, there was a positive correlation between the two instruments at the chosen cut-offs.

Only one study has validated the EPDS antenatally (Murray & Cox, 1990). In this study 100 women, attending an antenatal clinic, who were between 28 and 32 weeks pregnant, completed an EPDS. Diagnosis was determined by The Research Diagnostic Criteria for major and minor depression, and the Total Weighted Score calculated from the Standardised Psychiatric Interview. It was found that the best cut-
off for the identification of major depression was 14/15, though 12/13 was comparative, and was recommended if screening for both major and minor depression.

In another interesting study, the use of the EPDS was tested in the initial postnatal period. Hannah, Adams, Lee, Glover and Sandler (1992) found that the EPDS correlated significantly with identified PND at six weeks, when administered in the first five days postpartum. This provides some evidence that a percentage of women may suffer from continuous low mood for a longer period than previously considered, following the birth. The EPDS is now widely used as a screening tool, to identify those with low mood, both antenatally and postnatally. However, it has been noted that further testing is required in the antenatal period, to validate its use and appropriate cut-off points (Holden, 1994).

It was determined that a cut-off of 9/10 would be used in this current study. This was the postnatal threshold recommended by Cox (1994) for research purposes. One consideration was that the focus of this study was on variables associated both proximally, and distally, with postnatal distress. Since it appeared important to maintain consistency in the use of the instrument in a longitudinal study, a similar cut-off was considered necessary, for comparison. An additional and important point was that the EPDS score alone would not be used at any time to diagnose or label women as “depressed”. A final consideration for a lower cut-off were the findings of some researchers that chronicity of depression (England et al., 1994) and major depressive episodes, are often preceded by subthreshold depression (Piccinelli et al., 1999). This may be particularly relevant following a major stressor, such as the birth of a first child, and the consequences of this major life event. Therefore, assessing cognition in women who were distressed, but not necessarily clinically depressed at that time point, appeared important.

In assessing the use of the EPDS, several cautionary points have been made on its use and misuse.

• It is only a screening tool that should assist, but not replace, clinical judgement (Cox, 1994).
• The EPDS is only a screening tool for depression, and does not necessarily identify other severe disorders such as schizophrenia (Cox, 1989).
• The EPDS does not make a differential diagnosis, and may “trawl-in” all sorts of other problems, which must be individually assessed (Leverton & Elliott, 2000).
It should be used in the context of an offer of help - which can be refused if the women chooses (Holden, 1994).

The issue of whether women get “depressed about having depression” when being confronted with instruments such as the EPDS has been discussed widely (Holden, 1994). This does not appear to be a major issue for women (Holden, 1989; 1994). When women were asked about their response to the intervention, most saw it “as a relief to be asked about their feelings”, whilst others saw it as giving them “permission to speak” (Holden, 1994, p.127).

5.5: Preparation of the Protocol

The protocol of questionnaires and additional questions was devised within a framework, based on the six-part strategy recommended by Shaunessy and Zechmeister (1990). This is outlined below:

1. Decide what information should be sought.
2. Decide what type of questionnaire should be used.
4. Write a first draft of the questionnaire.
4. Re-examine and revise the questionnaire.
5. Pretest the questionnaire.
6. Edit the questionnaire and specify procedures for its use.

The developing of tools to measure abstract concepts is a very difficult one. For these purposes, the recommended approach is to use well established measures, developed for use in other research (de Vaus, 1995). This minimises the need for extensive testing, to establish reliability and validity. Following consideration of all the available information, it was decided that the cognitive variables to be examined should contain some of those that were linked to well-established theoretical frameworks. Furthermore, it was more likely that their use in measuring the concept being assessed had been evaluated, in other studies on depression at various times in the life cycle. Supplementary questions were specifically devised to measure additional concepts, considered important to the affective state of women in pregnancy, and the puerperium.

Due to the complexity of the questions inherent in cognitive assessment, it was considered that at least one set of questions contained in the protocol should be
administered in a face-to-face setting. There were several additional reasons for this method:

1. It was known that women suffering from mood disturbance, particularly those who were suffering from moderate to severe depression, may have problems in attending centres or completing a questionnaire by mail;

2. There was some risk of women becoming upset during completion of the protocol, as some questions related to issues that the women may have difficulty in discussing;

3. The response rate overall is generally higher in one-to-one interviewing (Patton, 1990).

However, the limitations of face-to-face interviews were also reviewed (Oppenheim, 1992). The most important consideration for this study was the potential for interviewer influence in the completion of questionnaires that were designed for self-administration. On balance, it was determined that the key conceptual data on cognitive-affective changes should be collected using a self-report format. This was for two reasons:

a) To minimise interviewer bias.

b) The instruments used to assess some of the cognitive constructs of interest were designed for self-completion.

However, given the issues outlined earlier, an interviewer would be present to clarify meaning, and ensure any women upset by any of the questions, or clearly at risk, was referred for assistance. Individual questions were formulated, with consideration of the guidelines for question development, recommended by Shaunessy and Zechmeister (1990) and de Vaus (1995). They suggested that questions should be short, concise, simple and direct; loaded, leading, or double-barrelled questions should be avoided. The protocol was then circulated for comment and discussed with a range of professional health staff and volunteers at various forums. Copies were given to research staff and postgraduate psychology students, for perusal and discussion. Comments and suggestions for change were invited.

After preparation of the final draft, an exploratory pilot study was devised to evaluate the protocol. A small subset of 10 women was drawn from the same population as those in the main study. Following the pilot, the format was finally reviewed.
5.6: Pilot Testing of the Protocol

5.6.1 Purpose

The purpose of pre-testing the protocol was to minimise the non-response of participants, by establishing the level of difficulty in completing the questionnaires, prior to commencing the main study. Any necessary changes would be made to ensure maximum participation and ease of completion (de Vaus, 1995).

5.6.2 Objectives

There were three main objectives of the pilot study:

1. To assess the ease of completion and whether the length of the protocol of combined questionnaires was reasonable. It was considered that an average completion time of one hour was the maximum that could be expected. It was known from information available that many of the women who attended the Antenatal Clinic were working and had other commitments.

2. To establish if any of the instruments contained items that could be construed as ambiguous or difficult. If this was the case, standardised information for use by the interviewer could be formulated that would clarify the item, but not influence the participant in their choice of responses.

3. The interviewers assessed whether the questionnaires flowed well. That is, whether the questions and sections appeared to follow-on logically, during completion of the protocol (de Vaus, 1995).

Initially the protocol was tested with 10 participants recruited at the Antenatal Clinic, using the same procedure as for the main sample. The participants were asked to self-complete the questionnaires contained in the protocol, and the researcher then asked the participant a series of pre-designed questions related to its completion. The results of the survey indicated several problems that included:

- Some women had difficulty understanding the relevance of the Rotter’s Locus of Control and the Attribution Style Questionnaires.
- Five found the syntax used in the ASQ questions to be complex, confusing and difficult to understand.
• Two initially refused to complete the ASQ, but did so after further explanation that may have influenced their responses. Another completed only three questions, and one participant refused outright to complete the instrument.

• A further two participants had difficulty completing the LOC, one refused, and another required further information and clarification on the meaning of terminology.

• One commented on the general format and spacing of questions.

• Several became concerned about the amount of time the protocol took to complete (ranging from one to one-and-a-half hours). In one case, a participant born in Japan took two-and-a-half hours to complete the protocol. Another who was born in Indonesia took two hours. The average was approximately one-hour and 15 minutes.

5.6.3 Recommended Changes

Following compilation of the comments and discussion with the research assistants and study supervisors, it was decided that several changes would be made to the protocol. It was considered these were required to ensure maximum participation from the cohort of first-time mothers who were from a range of differing educational, cultural and socio-economic backgrounds. It is known that low response can occur when participants fail to appreciate the relevance of items (de Vaus, 1995). As it appeared the women generally had a problem with the relevance of some of the LOC and ASQ items, it was concluded that the instruments measuring LOC and attribution required some modification. These were:

1. The filler questions were extracted from the Rotter questionnaire. These are coded as zero, and their omission did not affect the total score. This has been done in other studies (O'Hara et al., 1982).

2. Another issue was the layout of the protocol, which was changed to provide better spacing. The modified questionnaires in the protocol appeared more acceptable to the participants, with the result that there were no further refusals to complete the individual instruments. The average time taken to complete the revised protocol was 50 minutes.

3. The ASQ was substantially modified in response to many concerns expressed by the women. Support for this adjustment came from information that the total questionnaire had been dropped from a very large Western Australian study on
women and pregnancy, due to insufficient completed ASQ protocols (D. Wilmoth, personal communication, June 1999). Following lengthy discussion, eight of the 12 sections in the ASQ, were omitted, to facilitate easier and quicker completion of the protocol by women. These were determined initially by extracting four questions that appeared at face value to be irrelevant to pregnant women, as in a similar procedure used in a study by O’Hara et al. (1982). Other questions that were consistently commented upon adversely were also removed. The items taken out were the positive and negative sets of questions directly or indirectly related to employment and dating. The remaining four sets of questions on relationship issues were retained, as an overall measure of composite Attributional Style (ASQrevised). Using SPSS reliability analysis for scales, the modified protocol used in this study had a Cronbach Alpha of .65 for positive events and .55 for negative events. For the composite positive/composite negative (ASQcomp) it was .75. The ASQrevised scale composite score (ASQcomp) was significantly associated with the composite scores of other instruments, summed at each time of assessment during the study. It was also significantly associated with self-esteem (Table 8). The modification of the instrument precluded the use of subscores. However, their individual use is not recommended by the authors (Peterson et al., 1982).

Table 8 indicates the relationship between the modified ASQcomp and self-esteem at each Time.
Table 8.

*Correlations Between the Modified ASQcomp Score and Self-esteem Score.*

<table>
<thead>
<tr>
<th>ASQcomp</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASQcomp</td>
<td>1.000</td>
<td>.444**</td>
<td>.511**</td>
</tr>
<tr>
<td>Time 1</td>
<td>.444**</td>
<td>1.000</td>
<td>.614**</td>
</tr>
<tr>
<td>ASQcomp</td>
<td>.511**</td>
<td>.614**</td>
<td>1.000</td>
</tr>
<tr>
<td>Time 1 SE</td>
<td>.367**</td>
<td>.264**</td>
<td>.330**</td>
</tr>
<tr>
<td>Time 2 SE</td>
<td>.213**</td>
<td>.298**</td>
<td>.304**</td>
</tr>
<tr>
<td>Time 3 SE</td>
<td>.149</td>
<td>.263**</td>
<td>.263**</td>
</tr>
</tbody>
</table>
5.7: Ethical Considerations

All procedures were considered in the light of relevant ethical considerations prior to implementation (Appendix 5). The Ethics Committee of Edith Cowan University (ECU) approved the study proposal. The main study was also approved by the Ethics Committee of JHC, before the commencement of the recruitment process.

5.8: Procedure

All women who intend to have their babies at the JHC are required to attend the Antenatal Clinic sometime during the second trimester. This usually occurs at approximately 14-16 weeks gestation, for what is termed as “their booking interview”. This was therefore selected as the first assessment point (Time 1). To recruit participants, the chief researcher attended the antenatal clinic two out of a possible three sessions, every week for six months, alternating the days attended each week. Fifty-two from a total of 70 sessions held between June and November 1999 were attended; 18 sessions were not attended. Five hundred and sixty-six pregnant women (27% of the women from the catchment area who gave birth during 1999/2000) were recorded as having appointments at the clinic, during the sessions attended for recruitment purposes. Of these women, 363 were multiparous and 203 were primiparous. While registering for their appointment, first-time mothers were identified. These women were handed a letter by the receptionist or midwife in the clinic, explaining the study. They were asked if they were willing to discuss this with the chief researcher (Appendix 6).

Following agreement to discuss the study, the chief researcher approached the women. The purpose and procedure were then explained in more detail, and any questions that the participant had were answered. All participants were specifically advised that participation was purely voluntary, and they could withdraw at any time. They were also given the name of an independent complaints officer and advised in writing of the complaints procedure.

An appointment was then arranged, at a time and place convenient to the participant, for the first interview. In some cases, participants completed the protocol of questionnaires at that time in a private room allocated for that purpose. Once completed, the chief researcher reviewed the protocol. Any incomplete or unclear responses were
discussed with the participant. In cases where immediate completion of the protocol was not convenient, the chief researcher, or one of the trained research assistants, met with the woman at a later time, at a location of her choice (usually at home). The same procedure was completed.

5.8.1 Research Assistant Training

The research assistants were postgraduate psychology students, who were studying at Edith Cowan University. After volunteering to assist with the study, they were given three days of training on PND and related disorders. This included signs and symptoms, known predictors and current treatments. Training also included additional information on the use and misuse of the EPDS, and training on the other instruments used in the study.

At a later workshop, they were trained in administering each of the questionnaires used in the protocol. They were instructed to use a written procedure including an opening statement. There was also information on a process to follow, in cases where women appeared to be distressed. This included asking interviewees whether they wished to terminate the interview, and offering the individual the opportunity to be debriefed by a qualified psychologist. During this training, the assistants were able to practise the procedure for the interview with other students under supervision. They were also given a comprehensive list of qualified psychologists, who had agreed to provide a service to the participants, if required. Finally, they were trained in collating and entering the data on SPSS, in a subsequent two-day workshop.

During the period of data collection, the team was instructed to contact the chief researcher if any woman either had an EPDS of 10 or more, or if they were concerned about the woman during the interview. The chief researcher also contacted any participant who was reported to be in either of these situations. This was to recheck the reliability of the score, and ensure the individual was aware of the local support mechanisms in place. At each time, participants were read a standardised script prior to completion of the questionnaire, outlining ethical considerations, and describing the procedure. A random check of women (1:5) who were not rated as having a higher EPDS score (score <10 on the EPDS) was also undertaken. The randomly selected participants were contacted by the chief researcher and screened using the EPDS.

The team met twice weekly to review and debrief, and address any ongoing issues. The due date of delivery was documented, and at the expected time of delivery
the actual date of the birth was checked with hospital staff. Following confirmation of a
live birth with no major abnormalities and the date of delivery, the chief researcher
contacted the women by telephone, and a tentative appointment was made for the
second interview. Approximately one week before the appointment the new mother was
contacted again to confirm the date, and a letter was sent confirming the time. Where
possible, the same researcher conducted all of the subsequent interviews with the
women, to maintain continuity and rapport.

At Time 3 postnatally, some participants completed the protocol of
questionnaires by mail. In these cases, the chief researcher contacted the women by
telephone. This was to assess their current emotional state, and confirm the preferred
method of completion. Those assessed as having a higher EPDS score, or who preferred
a visit, completed the questionnaire in the presence of a researcher. The majority of
women chose this method.

5.8.2 Archival Data

Additional data were also obtained through an archival search of the hospital
medical records, with the consent of the women, to check demographic details and
changes. It was also noted as to whether the participants had medical intervention
during the birthing process. The use of medical records provided confirmation of any
traumatic or difficult delivery reported by the women.

5.8.3 Data Management

The data were summarised, collated and entered onto SPSS, as soon as possible
after the interview, by two members of the team. This ensured the scores and other
information were correctly entered onto the system. All materials pertaining to the study
were coded, and securely stored in a locked filing cabinet, during the study. Personal
identifying information was maintained separately, in a secure place.
Chapter 6

Results

Chapter 5 described the method used to collect and collate the data for the research. Chapter 6 provides the results of the analyses used to answer the questions. Discussion of the results is deferred to Chapter 7. Each of the questions is addressed separately, and a brief summary of findings is given at the end of each question.
6.1: Introduction

The data were collected at three times:

**Time 1**  
First visit to antenatal clinic during pregnancy (Mean = 19 weeks)

**Time 2**  
10-12 weeks after the birth

**Time 3**  
20-24 weeks after the birth

The dependent variable (criterion) at each time was:

Higher EPDS score (EPDS = 10 or higher), (Cronbach Alpha .82).

The independent variables (predictors) at each time were:

- Rotter Locus of Control Scale 1966 (LOC). (Cronbach Alpha .65).
- The Maternal Attitude Questionnaire 1997 (MAQ). (Cronbach Alpha .58).
- Rosenberg Self-esteem Scale 1965 (SE). (Cronbach Alpha .58).
- Everyday Stress Index 1985 (ESI). (Cronbach Alpha .84).
- Attributional Style Questionnaire 1982 (ASQcomp). (Cronbach Alpha .78).
- Feeling More or Less in Control of one's life (PC). (Single item).

The covariates were:

- Past History of a Mental Health Problem (PH). (Dichotomous variable)

The means and standard deviations of all of the variables at each time are provided in Appendix 7.

6.2: Considerations Prior to the Main Analyses

Technically, a past history of a mental health problem should have been excluded as a control variable from the analyses. For the group of women with higher EPDS scores at Time 2 postnatally, preliminary analysis of the data indicated that there were few women (2) with a past history of a mental health problem. However, it was more influential at Time 3 postnatally. This, together with the findings in some literature on the importance of this variable, indicated a need for consideration of the
influence of this factor in the overall analyses. For the purposes of consistency it was therefore included at each time of assessment, as indicated. There were similar issues with two of the other variables that were not significant at any time of assessment. These were the Locus of Control measure, and the Attributional Style Questionnaire. However, where possible, these variables remained in the analyses. This was for two reasons. Firstly, this research was on the processes of cognition in women having their first child. It therefore appeared important to inform the reader of the various trends observed as a result of the analyses. Secondly, it would not have been possible to be consistent in judging the importance of the combined variables at different times, if measures were removed from the analyses because they were not significant at any one particular time.

A further point is that the analyses are all based on group means, and there are therefore individual differences in each set that are not explained by the analyses. Thirdly, women who only had higher EPDS scores antenatally were excluded from analyses comparing subsets of women. This was determined on the basis that the main focus of this research was to add to the knowledge base on the processes of depression following the birth of a baby to better inform strategies for prevention, early identification and treatment of this problem.

6.3: Power Analysis

The numbers of women in the analyses, comparing differences between discrete subsets of women are not large, and, as such, the results of these particular analyses must be interpreted with caution. The number of women recruited to the main study was based on several important considerations. These included the power required and the literature on the incidence of EPDS scores of 10 or more in new mothers following the birth. Additional factors were the need to be parsimonious and recruit only the necessary number of women to minimise the intrusion at the JHC Antenatal Clinic. A further consideration was the limitation of the resources required to conduct the research, with the design requiring as many as 450 interviews in the main study. Given previous findings in the literature on numbers of women experiencing increased distress after the birth, the number of women required to conduct the analyses proposed was determined to be 150. It was anticipated that approximately 30% - 40% would have some higher levels of distress postnatally, as defined by a cut-off of 9/10 on the EPDS.
This would equate to approximately 50-65 women. This was considered sufficient to conduct the main analyses and detect significant differences.

According to Cohen (1992), the necessary number for Power at .80 to detect a medium effect size for stepwise regression, with eight independent variables, is 107 participants. For a large effect size 50 participants is required. For ANOVA tests with two groups, a medium effect size would require 64 per group, and a large effect size would require 26 per group (p.158). However, ANOVA analysis can be run with 10 or more participants per group (Tabachnik & Fidell, 1996). Other factors considered in relation to the power of the analyses were:

- This study was conducted with approximately 1:5 of the primiparous women who gave birth in the area (approximately 250,000 people) in 1999/2000. Therefore the potential for sampling error in this population/cohort was reduced;
- The use of covariates removed the variance associated with these factors, thus reducing error variance and providing a more powerful test of mean differences among groups (Tabachnik & Fidell, 1995, p.376).
- The study was conducted with the same cohort of women over three times of measurement, minimising the potential for additional error;
- Extraneous factors that may have impacted on the results were checked at each time (e.g., additional stressors such as illness of a family member, financial issues, physical problems of self, partner or baby);
- There was ongoing personal contact with the same researcher throughout the study. This minimised confusion and provided clarification of any misunderstandings of the intent and meaning of questions and instruments;
- Where possible, reliable measures were used.

6.4: Results: Question 1

Multivariate Analysis of Covariance (MANCOVA) is used to determine whether mean differences among groups on a combined set of DV’s occur by chance, after controlling for the covariates (Tabachnik & Fidell, 1996). Analysis of Covariance tests (ANCOVA) were also conducted to indicate the contribution of the various DV’s to any significant effect. These tests were used to answer Question 1. The EPDS score determined the classification for Group (higher EPDS postnatally versus lower EPDS postnatally during the timeframe of the study). Women scoring <10 (lower EPDS
Group) at every stage during the study were grouped separately to those scoring 10 or more (higher EPDS Group) at either of the two postnatal times (Time 2 and Time 3). For the purposes of interpretation and clarity, women who had scores of 10 or more antenatally and recovered spontaneously before the assessment at Time 2 were not included in this set of analyses (n = 17). This group comprised approximately 66% of women who had higher EPDS scores antenatally. The reason for non-inclusion of the discrete group was to deal with the issue of appropriate group allocation, and avoid any residual dysfunctional cognition that might confound the differences between the women who did not have higher EPDS scores postnatally, and women who had higher EPDS scores postnatally. The other 34% of the women (n = 9) who had higher EPDS scores at Time 2 or Time 3 postnatally, as well as antenatally, were included in the higher EPDS group. The rationale was that they had higher scores after the birth of the baby and therefore should be included.

Prior to commencing each MANCOVA and ANCOVA analysis, the test variables were assessed with regard for the limitations of the tests for each of the three times (Tabachnik & Fidell, 1996). Violations of skewness were identified in the self-esteem scale antenatally at Time 1. Skewness has been found to be a common problem with this measure. However, MANCOVA is robust to failure of normality if it is caused by skewness (Tabachnik & Fidell, 1996). It was therefore decided not to transform this variable. The primary concern was interpretation of the results after transformation. Furthermore, transforming the data at every stage may have been unnecessary, and could have influenced the error rates (Tabachnik & Fidell, 1996, p.82). However, a more stringent alpha level (p<.008) was used to interpret the significance of self-esteem at each time in the ANCOVA tests, to protect against Type 1 error.

Given that the unequal sample sizes were considered to be a reflection of the normal population distribution, the sequential approach for unequal n was used. The lower EPDS group was given priority over the other group at each time (Tabachnik & Fidell, 1996).

### 6.4.1 Research Question 1: Time 1

In the antenatal period, are there significant differences in the cognitive profile (personal control, self-esteem, attribution style, worrying style, maternal attitudes, and LOC) of women with higher EPDS scores postnatally (EPDS >9) and women with
lower EPDS scores (EPDS<10) after controlling for past history of a mental health problem and social support?

6.4.2 Data Analysis:

Research Question 1 was addressed by conducting the following MANCOVA at Time 1

**Dependent variables:**

PC, LOC, MAQ, SE, ESI, and ASQcomp measured in the second trimester before giving birth

**Fixed factor:**

Group: Women with lower EPDS scores and Women with higher EPDS scores

**Covariates (antenatal control variables):**

PH, MSSI.

One hundred and forty-one participants were included in the analysis. Of these, 115 women had lower EPDS scores and 26 women had higher EPDS scores. Women who only had an EPDS of 10 or more in the antenatal period (n = 17) were also excluded from the analysis. Of those who were excluded, one woman had not completed two of the key instruments (ASQ and LOC).

Homogeneity of variance co-variance using the Box’s M was non-significant at the p<.001 level (p = .021), indicating this was satisfactory. Multivariate outliers were checked using Cook’s distance. Only one was located (participant 96) and it was determined that this was acceptable and would not overly influence the results (Coakes & Steed, 1999). Multicollinearity and singularity were accounted for at each time by the SPSS program, which tested for sufficient tolerance during the analyses (Tabachnik & Fidell, 1996). Linearity amongst the covariate and dependent variables was assessed by within-cell scatterplots and was considered satisfactory.

Table 9 shows the means, standard deviations and the adjusted means by group for the covariates at Time 1.
Table 9.

*Adjusted Means and Standard Deviations by Group at the Antenatal Stage*

<table>
<thead>
<tr>
<th>Group</th>
<th>Women with lower EPDS scores (n = 115)</th>
<th>Women with higher EPDS scores (n = 26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Adj. M (SD)</td>
<td>Adj. M (SD)</td>
</tr>
<tr>
<td>PC</td>
<td>3.97 (0.84)</td>
<td>3.68 (1.31)</td>
</tr>
<tr>
<td>MAQ</td>
<td>3.23 (1.94)</td>
<td>4.12 (1.91)</td>
</tr>
<tr>
<td>LOC</td>
<td>11.11 (3.32)</td>
<td>11.36 (3.52)</td>
</tr>
<tr>
<td>ASQcomp</td>
<td>4.92 (3.82)</td>
<td>4.70 (2.62)</td>
</tr>
<tr>
<td>SE</td>
<td>33.61 (4.15)</td>
<td>30.88 (5.01)</td>
</tr>
<tr>
<td>ESI</td>
<td>9.22 (6.24)</td>
<td>14.76 (6.88)</td>
</tr>
</tbody>
</table>

Women with lower EPDS scores = EPDS <10 following the birth. Women with higher EPDS scores = EPDS >9 at one or more times following the birth. Adj. M = Means adjusted for the covariates.

### 6.4.3 MANCOVA Result

The omnibus test found a significant group difference across the composite dependent variables, after controlling for past history and maternal social support, $F(6,132) = 2.68$, $p < 0.05$.

### 6.4.4 ANCOVA Results

The program generated univariate tests, indicating the effects of the covariates on each dependent variable. This was followed by a series of univariate tests after adjusting for the covariates. It is recommended that a Bonferroni adjustment for multiple tests be used in these cases (Tabachnik & Fidell, 1996) This involved dividing the number of tests (6) by .05. Given this adjustment, only a significance of alpha $p < .008$ will be reported for the univariate tests of each dependent variable (ANOVA) at each time. Table 10 indicates the effects of the covariates on the variables, and the group differences.
Table 10.

Analysis of Variance on the Dependent Variables at Time 1 Antenatally

<table>
<thead>
<tr>
<th>Source</th>
<th>Variable</th>
<th>df</th>
<th>F</th>
<th>$\eta^2$</th>
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<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>MAQ</td>
<td>1</td>
<td>24.88</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>17.90</td>
<td>.12</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>.06</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>42.90</td>
<td>.24</td>
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<td>PC</td>
<td>1</td>
<td>36.88</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>11.10</td>
<td>.08</td>
</tr>
<tr>
<td>Past History</td>
<td>MAQ</td>
<td>1</td>
<td>.79</td>
<td>.01</td>
</tr>
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<td></td>
<td>LOC</td>
<td>1</td>
<td>1.38</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>.53</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>1.08</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>PC</td>
<td>1</td>
<td>1.38</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>1.51</td>
<td>.01</td>
</tr>
<tr>
<td>Maternal Social Support</td>
<td>MAQ</td>
<td>1</td>
<td>7.88</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>2.28</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>3.40</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>6.61</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>PC</td>
<td>1</td>
<td>.33</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>.07</td>
<td>.00</td>
</tr>
<tr>
<td>Group</td>
<td>MAQ</td>
<td>1</td>
<td>1.97</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>.06</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>.05</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>SE</td>
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<td>PC</td>
<td>1</td>
<td>1.86</td>
<td>.00</td>
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<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>11.88**</td>
<td>.08</td>
</tr>
</tbody>
</table>
The covariate past history of a mental health problem did not differ significantly across the dependent variables. However, although the covariate maternal social support differed significantly across the dependent variables of maternal attitudes and self-esteem, indicating that these factors varied significantly as a function of social support, they were not significant after the Bonferroni adjustment.

After adjusting for the covariates, univariate tests indicated a significant difference between the two groups on worry over everyday stress $F(1,137) = 11.88 \ p <.008$. Self-esteem was not independently significant after the Bonferroni adjustment.

### 6.4.5 Research Question 1: Time 2

In the early postnatal period (Time 2), are there significant differences in the cognitive profile (personal control, self-esteem, attribution style, worrying style, maternal attitudes, and LOC) of women with higher EPDS scores postnatally (EPDS >9), and women with lower EPDS scores at every time (EPDS <10), after controlling for past history of a mental health problem and social support?

### 6.4.6 Data Analysis:

Research Question 1 at Time 2 was addressed by conducting the following MANCOVA
**Dependent variables:**

PC, LOC, MAQ, SE, ESI, and ASQcomp assessed at 10-12 weeks postnatal.

**Fixed factor:**

Group: Women with lower EPDS scores and

Women with higher EPDS scores

**Covariates (Control variables assessed at 10-12 weeks postnatal):**

PH, MSSI.

At Time 2, 127 participants were included in the analysis. There were 101 participants in the group of women with lower EPDS scores and 26 in the group of women with higher EPDS scores. The women who only had higher EPDS scores antenatally (14) were excluded from the analysis.

The assumptions of homogeneity of variance co-variance, linearity, multicollinearity and singularity were satisfactory (Tabachnik & Fidell, 1996). Multivariate outliers were checked using Cook’s distance. Only one was located (participant 96) and it was determined that this was acceptable.

Table 11 shows the mean adjusted for the covariates and standard deviations of each variable.
Table 11.

*Adjusted Means and Standard Deviations by Group at Time 2 Postnatally*

<table>
<thead>
<tr>
<th>Group</th>
<th>Women with lower EPDS scores (n = 101)</th>
<th>Women with higher EPDS scores (n = 26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Adj. M (SD)</td>
<td>Adj. M (SD)</td>
</tr>
<tr>
<td>PC</td>
<td>4.57 (1.27)</td>
<td>3.25 (1.70)</td>
</tr>
<tr>
<td>MAQ</td>
<td>1.78 (1.61)</td>
<td>3.64 (2.57)</td>
</tr>
<tr>
<td>LOC</td>
<td>10.82 (3.69)</td>
<td>10.76 (4.36)</td>
</tr>
<tr>
<td>ASQcomp</td>
<td>4.98 (3.94)</td>
<td>3.83 (3.33)</td>
</tr>
<tr>
<td>SE</td>
<td>34.81 (3.59)</td>
<td>30.24 (4.66)</td>
</tr>
<tr>
<td>ESI</td>
<td>7.12 (5.62)</td>
<td>14.32 (9.58)</td>
</tr>
</tbody>
</table>

Women with lower EPDS scores = EPDS <10 during study. Women with higher EPDS scores = EPDS >9 at one or more times during the study. Adj. M = Means adjusted for the covariates

6.4.7 MANCOVA Result

The omnibus test found a group difference across the composite dependent variables, controlling for past history and maternal social support

\[ F(6,118) = 7.08, p =<.001. \]

6.4.8 ANCOVA Results

The program also generated univariate tests indicating the effects of the covariates on each dependent variable, followed by a series of univariate tests after adjusting for the covariates. Table 12 indicates the effect of the covariates on the dependent variables and the differences in dependent variables by group, after controlling for the covariates.
Table 12.

Analysis of Variance on the Dependent Variables at Time 2 Postnatally

<table>
<thead>
<tr>
<th>Source</th>
<th>Variable</th>
<th>df</th>
<th>F</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>MAQ</td>
<td>1</td>
<td>11.68</td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>7.53</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>.56</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>55.41</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>PC</td>
<td>1</td>
<td>20.29</td>
<td>.14</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>8.23</td>
<td>.06</td>
</tr>
<tr>
<td>Past History</td>
<td>MAQ</td>
<td>1</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>.44</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>.08</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>PC</td>
<td>1</td>
<td>.97</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>.02</td>
<td>.00</td>
</tr>
<tr>
<td>Maternal Social Support</td>
<td>MAQ</td>
<td>1</td>
<td>7.04</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>.24</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>4.97</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>10.40**</td>
<td>.08</td>
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<tr>
<td></td>
<td>PC</td>
<td>1</td>
<td>.53</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>2.81</td>
<td>.02</td>
</tr>
<tr>
<td>Group</td>
<td>MAQ</td>
<td>1</td>
<td>9.41**</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ASQcomp</td>
<td>1</td>
<td>.41</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>1</td>
<td>15.50***</td>
<td>.11</td>
</tr>
<tr>
<td></td>
<td>PC</td>
<td>1</td>
<td>14.73***</td>
<td>.11</td>
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<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>14.56***</td>
<td>.11</td>
</tr>
</tbody>
</table>
The covariate past history of a mental health problem did not differ significantly across any of the dependent variables. The covariate maternal social support differed significantly across the dependent variables self-esteem. Maternal attitudes and ASQcomp were significant at $p<.05$, but not significant after the Bonferroni adjustment.

After adjusting for the covariates and the Bonferroni, univariate tests indicated a significant difference between the two groups on personal control, self-esteem, worry over everyday stress and maternal attitudes.

### 6.4.9 Research Question 1: Time 3

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally (EPDS >9), during the course of the study, and women with lower EPDS scores postnatally (EPDS<10), at every time during the course of the study, on self esteem, attributional style, worrying style, maternal attitudes, sense of control and locus of control, at Time 3?

### 6.4.10 Data Analysis:

Research Question 1, Time 3, was addressed by conducting the following

MANCOVA and ANCOVA
Dependent variables assessed at Time 3:

PC, LOC, MAQ, SE, ESI, and ASQcomp

**Fixed factor:**

Group: Women with lower EPDS scores  and
       Women with higher EPDS scores

**Covariates (control variables assessed at 20 – 24 weeks postnatal):**

PH, MSSI.

At Time 3, 118 participants were included in the analysis. Ninety-three were in the group of women with lower EPDS scores, and 25 were in the group of women with higher EPDS scores. The women remaining in the sample that only had EPDS scores of 10 or more antenatally (n = 11) were excluded from the analysis.

Homogeneity of variance co-variance was tested in the analyses using the Box’s M, which was significant at the p > .001 level (.000). The results of the omnibus test will therefore need to be interpreted conservatively and with caution. Linearity was checked by reviewing the scatterplots for each group. Multivariate outliers were checked using Cook’s distance.

Table 13 indicates the means adjusted for the covariates and the standard deviations.
Table 13.  
*Adjusted Means and Standard Deviations of Dependent Variables by Group at Time 3*

<table>
<thead>
<tr>
<th>Group</th>
<th>Women with lower EPDS scores</th>
<th>Women with higher EPDS scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 93)</td>
<td>(n = 25)</td>
</tr>
<tr>
<td>Variables</td>
<td>Adj. M (SD)</td>
<td>Adj. M (SD)</td>
</tr>
<tr>
<td>PC</td>
<td>4.60 (1.20)</td>
<td>3.63 (1.50)</td>
</tr>
<tr>
<td>MAQ</td>
<td>1.85 (1.57)</td>
<td>4.50 (2.98)</td>
</tr>
<tr>
<td>LOC</td>
<td>11.00 (3.59)</td>
<td>11.08 (4.41)</td>
</tr>
<tr>
<td>ASQcomp</td>
<td>4.58 (3.65)</td>
<td>3.50 (4.32)</td>
</tr>
<tr>
<td>SE</td>
<td>34.43 (3.88)</td>
<td>30.08 (4.64)</td>
</tr>
<tr>
<td>ESI</td>
<td>7.25 (6.40)</td>
<td>13.79 (8.69)</td>
</tr>
</tbody>
</table>

Women with lower EPDS scores = EPDS <10 following the birth. Women with higher EPDS scores = EPDS >9 at one or more times following the birth. Adj. M. = Means adjusted for the covariates.

6.4.11 MANCOVA Result

The omnibus test found that across the composite dependent variables, there was a significant group difference at Time 3 postnatally, after controlling for past history of a mental health problem and maternal social support $F(6,109) = 4.75$, $p < .001$.

6.4.12 ANCOVA Results

Univariate tests were generated, indicating the effects of the covariates on each dependent variable. This was followed by a series of univariate tests after adjusting for the covariates. Due to the Bonferroni adjustment for multiple tests (Tabachnik & Fidell, 1996) only significance of alpha $p < .008$ is reported.

Table 14 shows the effect of the dependent variables on the groups at Time 3, after controlling for the covariates.
Table 14.

*Analysis of Variance on the Dependent Variables at Time 3*

<table>
<thead>
<tr>
<th>Source</th>
<th>Variable</th>
<th>df</th>
<th>F</th>
<th>η²</th>
</tr>
</thead>
<tbody>
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<tr>
<td><strong>Between Subjects</strong></td>
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<tr>
<td>Intercept</td>
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<td>PC</td>
<td>1</td>
<td>.12</td>
<td>.00</td>
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<tr>
<td></td>
<td>ESI</td>
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<td>2.30</td>
<td>.02</td>
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<td>Maternal Social Support</td>
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<tr>
<td></td>
<td>MAQ</td>
<td>1</td>
<td>11.88**</td>
<td>.09</td>
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<tr>
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<td>LOC</td>
<td>1</td>
<td>.32</td>
<td>.00</td>
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<tr>
<td></td>
<td>ASQcomp</td>
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<td>.01</td>
<td>.00</td>
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<td>.03</td>
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<td></td>
<td>PC</td>
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<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>.07</td>
<td>.00</td>
</tr>
<tr>
<td>Group</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>MAQ</td>
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<td>17.30**</td>
<td>.13</td>
</tr>
<tr>
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<tr>
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<td>PC</td>
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<td>7.90**</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>ESI</td>
<td>1</td>
<td>9.32***</td>
<td>.08</td>
</tr>
</tbody>
</table>
The covariate past history did not differ significantly across any of the dependent variables. The covariate maternal social support differed significantly across the dependent variable maternal attitudes.

After adjusting for the covariates and the Bonferroni, univariate tests indicated a significant difference between the two groups on maternal attitudes, self-esteem, worry over everyday stress and personal control.

### 6.4.14 Summary of Results

The MANCOVA tests found a significant group difference across the composite dependent variables at each time, after controlling for past history and maternal social support. The difference between the groups on the combined DVs was at $p<.05$, antenatally. Postnatally, the significant difference was $p<.001$. This was both at 10-12 weeks and 20-24 weeks, after the birth.

The covariate, past history of a mental health problem, did not differ significantly across the dependent variables at any time. However, there was some evidence that maternal social support differed significantly on the dependent variables maternal attitudes and self-esteem, before the birth. However, neither of these was significant after the Bonferroni adjustment. After the birth at 10-12 weeks, maternal

---

<table>
<thead>
<tr>
<th>Error</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAQ</td>
<td>114</td>
<td>401.55</td>
<td>3.52</td>
</tr>
<tr>
<td>LOC</td>
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<td>1631.68</td>
<td>14.31</td>
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<tr>
<td>ASQcomp</td>
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<td>1671.65</td>
<td>14.66</td>
</tr>
<tr>
<td>SE</td>
<td>114</td>
<td>1843.48</td>
<td>16.17</td>
</tr>
<tr>
<td>PC</td>
<td>114</td>
<td>189.11</td>
<td>1.66</td>
</tr>
<tr>
<td>ESI</td>
<td>114</td>
<td>5486.10</td>
<td>48.12</td>
</tr>
</tbody>
</table>

**$p<.008$  ***$p<.001$**

Adjusted $R^2$ values:

- MAQ: .27
- LOC: -.02
- ASQcomp: -.01
- SE: .16
- PC: .05
- ESI: .11
social support affected self-esteem. At 20-24 weeks after the birth, maternal social support affected maternal attitudes.

After adjusting for the covariates antenatally, there was a significant difference between the two groups on worry over everyday stress. At both times of assessment after the birth, there was a significant difference between the two groups, on personal control, self esteem, worry over everyday stress and maternal attitudes, after adjusting for the covariates and the Bonferroni. At 10-12 weeks after the birth, the strongest difference between the groups was on self-esteem. At 20-24 weeks postnatally, the strongest difference between the groups was on maternal attitudes.

6.5 Results: Research Question 2

6.5.1 Research Question 2: Time 1

In the antenatal period, does the group of women with higher maternal attitudes and a higher EPDS postnatally (n = 9) differ on past history, social support, EPDS score and cognitive factors from the group of women with a higher EPDS score postnatally with lower maternal attitudes (n = 17)?

6.5.2 Research Question 2: Time 2

Ten to 12 weeks after the birth, does the group of women with higher maternal attitudes and a higher EPDS score postnatally (n = 9) differ on past history, social support, EPDS score and cognitive factors compared to the group of women with a higher EPDS score postnatally with lower maternal attitudes (n = 17)?

6.5.3 Research Question 2: Time 3

Twenty to 24 weeks after the birth, does the group of women with higher maternal attitudes and a higher EPDS score postnatally (n = 14) differ on past history, social support, EPDS score and cognitive factors, compared to the group of women with a higher EPDS score postnatally with lower maternal attitudes (n = 11)?
6.5.4 Data Analysis:

Women with a higher EPDS score following the birth \((n = 26)\) were assigned to two discrete groups, depending on their score on maternal attitudes (MAQ). Based on the overall cohort mean (3.48 at Time 1 antenatally), those with higher MAQ scores (greater than 4) were assigned to a high MAQ group \((n = 9)\). The second group with lower MAQ scores (equal to or less than 4) was assigned to the lower MAQ group \((n = 17)\).

As one of the groups consisted of fewer than 10 participants, non-parametric tests were used to compare the groups. A series of Mann–Whitney tests was conducted on the dichotomous groups and the variables, at each time (Time 1 antenatally and Time 2 and Time 3 postnatally). Only significant findings are reported.

**Within subjects variables in each test:**

PH, SS, PC SE, ESI, LOC, & ASQcomp all assessed at each time

(Time 1 antenatally and Time 2 and Time 3 postnatally)

**Between subjects factor in each test:**

Groups: Higher maternal attitudes and higher EPDS score postnatally

Lower maternal attitudes and higher EPDS score postnatally

6.5.5 Results: Time 1

The groups differed significantly on one variable antenatally. Women with higher maternal attitudes consistently ranked lower on self-esteem \((Z = .013, p<.05)\).

6.5.6 Results: Time 2

At 10–12 weeks following the birth women with higher maternal attitudes consistently ranked lower on feeling in control \((Z = .014, p<.05)\) and had lower perceived social support \((Z = .043, p<.05)\).

6.5.7 Results: Time 3

Women with higher maternal attitudes 20–24 weeks after the birth consistently ranked higher on EPDS score \((Z = .005, p<.05)\) had consistently lower self-esteem \((Z = .008, p<.05)\), and ranked significantly higher on negative attributional style \((Z = .005,\)
Women with higher maternal attitudes were more likely to have worries over everyday stressors \( (Z = .021, p < .05) \). They had more mixed feelings about motherhood \( (Z = .002, p < .05) \). They also felt less happy since the birth of the baby \( (Z = .015, p < .05) \).

6.5.8 Summary of Results

Antenatally, women with higher maternal attitudes (and a higher EPDS score) were more likely than women who had lower maternal attitudes (and a higher EPDS score) to have lower self-esteem. Following the birth at 10-12 weeks, women with higher maternal attitudes (and a higher EPDS score) were more likely than women with lower maternal attitudes (and a higher EPDS score) to feel less in control of their lives, and feel less supported. Twenty to 24 weeks after the birth, women with higher maternal attitudes (and a higher EPDS score) were feeling more ambivalent about the baby, felt less happy since the birth, worried more and had a more negative attributional style. They also had lower self-esteem and more extreme EPDS scores than women with lower maternal attitudes (and a higher EPDS score).

6.6: Results: Research Question 3

6.6.1 Research Question 3: Time 2

Ten to 12 weeks after giving birth, do antenatal cognitive factors predict higher EPDS score in first time mothers, after controlling for a past history of mental health problems and maternal social support?

6.6.2 Data Analysis:

Research Question 3 was addressed by conducting the following stepwise regression at Time 2:

**Dependent variable:**
Higher EPDS score measured 10-12 weeks after giving birth

**Antenatal control variables:**
Past history of mental health problems prior to this pregnancy (PH), antenatal maternal social support (MSSI) - Step 1

and
Antenatal cognitive variables:

Personal control (PC), locus of control (LOC), maternal attitudes (MAQ), self-esteem (SE), worry over everyday stress (ESI), and attributional style (modified ASQcomp) - Step 2.

Seven univariate outliers were modified to within one unit of the next most extreme score (Tabachnik & Fidell, 1996). One participant had not completed two assessments measuring LOC and ASQcomp at Time 1, and was omitted from the analyses. Assumptions of multicollinearity and singularity were automatically accounted for, by the SPSS program. The residual scatterplots indicated acceptable normality, linearity and homoscedasticity in all variables except the Rosenberg self-esteem measure, which was negatively skewed. Reflect and square root transformations were performed to test the effects. Analysis with the transformed variable did not effect significant changes to the outcome of the analysis, and the original data were used in subsequent analyses (Tabachnik & Fidell, 1996).

Table 15 shows the correlation matrix between the variables included in this set of analyses.

Table 15. Intercorrelation Between Cognitive Variables Measured Antenally

<table>
<thead>
<tr>
<th>Variable</th>
<th>MSSI</th>
<th>MAQ</th>
<th>LOC</th>
<th>ASQcomp</th>
<th>SE</th>
<th>PC</th>
<th>ESI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal Control:</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PH</td>
<td>-.062</td>
<td>.040</td>
<td>.038</td>
<td>-.033</td>
<td>-.151</td>
<td>.164</td>
<td>.145</td>
</tr>
<tr>
<td>MSSI</td>
<td>.185</td>
<td>.073</td>
<td>-.136</td>
<td>-.148</td>
<td>.045</td>
<td>-.073</td>
<td></td>
</tr>
<tr>
<td>Antenatal Cognitive:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQ</td>
<td>-.029</td>
<td>-.035</td>
<td>.047</td>
<td>.084</td>
<td>-.201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOC</td>
<td>-.020</td>
<td>-.183</td>
<td>-.022</td>
<td>.173</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ASQcomp</td>
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<td>-.072</td>
<td>.155</td>
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</tr>
<tr>
<td>SE</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The correlation matrix indicated that none of the variables were intercorrelated at .3 or more, as recommended (Tabachnik & Fidell, 1996). They ranged from .018 (PC/SE) to .243 (ESI/SE).

The following Table shows the results of the regression model at Time 1.

Table 16.
Summary of the Stepwise Regression Model at Time 1 Postnatally (N = 127).

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>Sig</th>
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</tr>
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<td>1.17</td>
<td>-.83</td>
<td>.41</td>
</tr>
<tr>
<td>MSSI</td>
<td>-.31</td>
<td>.15</td>
<td>-.17*</td>
<td>.04</td>
</tr>
<tr>
<td>ESI</td>
<td>.18</td>
<td>.05</td>
<td>.337***</td>
<td>.00</td>
</tr>
<tr>
<td>PC</td>
<td>.72</td>
<td>.32</td>
<td>.18*</td>
<td>.03</td>
</tr>
</tbody>
</table>

Note. \( \Delta R^2 = .05 \) for Step 1; \( \Delta R^2 = .16 \) for Step 2; \( \Delta R^2 = .18 \) for Step 3.

The results indicated that the control variables accounted for a significant 5.0% of the variance in higher EPDS score at 10-12 weeks after the birth. Past history was not significant prior to the entry of MSSI. After controlling for these variables, the everyday stress index accounted for a significant 15.5% of the variance in higher EPDS scores of new mothers. With the addition of personal control, the total model accounted for 18.2% of the variance in EPDS scores at 10-12 weeks after the birth.
6.6.3 Research Question 3: Time 3

Twenty to 24 weeks after giving birth, do antenatal cognitive factors predict higher EPDS score in first time mothers, after controlling for past history of mental health problems, and social support?

6.6.4 Data Analysis:

Research Question 3 was addressed by conducting the following stepwise regression at Time 3.

**Dependent Variable:**

Higher EPDS score measured 20-24 weeks after giving birth

**Step 1 Predictors (antenatal control variables):**

PH, MSSI.

**Step 2 Predictors (antenatal cognitive variables):**

PC, LOC, MAQ, SE, ESI, and ASQcomp.

Table 17 shows the models at Time 3.
Table 17. 
Summary of the Stepwise Regression Model at Time 3 Postnatally 
(N = 118).

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH</td>
<td>-2.55</td>
<td>1.32</td>
<td>-.18</td>
<td>-1.93</td>
<td>.06</td>
</tr>
<tr>
<td>MSSI</td>
<td>-0.35</td>
<td>0.18</td>
<td>-.18</td>
<td>-1.94</td>
<td>.06</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH</td>
<td>-1.11</td>
<td>1.23</td>
<td>0.08</td>
<td>-0.90</td>
<td>.37</td>
</tr>
<tr>
<td>MSSI</td>
<td>-0.29</td>
<td>0.16</td>
<td>-.15</td>
<td>-1.77</td>
<td>.08</td>
</tr>
<tr>
<td>ESI</td>
<td>0.27</td>
<td>0.05</td>
<td>0.43***</td>
<td>5.08</td>
<td>.00</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH</td>
<td>-0.84</td>
<td>1.17</td>
<td>-0.06</td>
<td>-0.72</td>
<td>.47</td>
</tr>
<tr>
<td>MSSI</td>
<td>-0.30</td>
<td>0.15</td>
<td>-0.16</td>
<td>-1.99</td>
<td>.05</td>
</tr>
<tr>
<td>ESI</td>
<td>0.21</td>
<td>0.05</td>
<td>0.33***</td>
<td>3.92</td>
<td>.00</td>
</tr>
<tr>
<td>SE</td>
<td>-0.30</td>
<td>0.08</td>
<td>-0.32***</td>
<td>-3.75</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. ΔR² = .05 for Step 1; ΔR² = .22 for Step 2; ΔR² = .30 for Step 3.

The results indicated that the antenatal control variables accounted for a non-significant 5.4% of the variance in the DV. After entry of the everyday stress index, the model accounted for a significant 22.2% of the variance in the DV. Following entry of self-esteem, the total model accounted for 30.2% of the variance in EPDS scores.

6.6.5 Summary of Findings at 10-12 weeks and 20-24 weeks Postnatally

The instrument assessing social support, named MSSI in the model, was independently significant in predicting a higher EPDS score at Time 2 postnatally. Past history (PH) was not significant. Step 2 of the analysis indicated that, after accounting for the variance of past history and maternal social support (MSSI), two of the six antenatal cognitive variables were able to account uniquely for significant proportions of variance in higher EPDS score. More worry over everyday stressors (ESI) and sense of personal control (PC) were significant predictors of higher EPDS score 10-12 weeks after the birth.
Neither a past history of a mental health problem nor the MSSI were significant in predicting a higher EPDS score, 20-24 weeks after the birth of the baby. Entry of the other variables indicated that more worry over everyday stressors (ESI) and lower self-esteem (SE) were the strongest significant predictors of a higher EPDS score after the birth.

6.7: Results: Research Question 4

6.7.1 Data Analysis:

Research Question 4 was addressed by conducting the following individual repeated-measures Analysis of Variance (ANOVA) models.

**Within subjects variables:**
MAQ, PC, SE, ESI, LOC, and ASQcomp assessed at each time (Time 1 antenatally, Time 2 and Time 3 postnatally).

**Between subjects factor in each test:**
Groups: Lower EPDS at every time, Higher EPDS Time 2, Higher EPDS Time 3.

**Covariates**
Control variables measured antenatally were used to control for the influence of these factors on the groups at each time of assessment:
PH, MSSI.

Women were divided into discrete groups, based on their postnatal EPDS scores. For the purpose of the assumption of independent groups, women could only be assigned to one group. Firstly, women who did not have a score of 10 or more either antenatally or postnatally were assigned to one group (Lower EPDS at every time group).

Women who scored 10 or more at either time postnatally were assigned to one of two higher groups: Those with higher EPDS scores postnatally at 10-12 weeks following the birth (Higher EPDS Time 2 group) and those women with higher EPDS scores postnatally at 20-24 weeks (Higher EPDS Time 3 group). Women who scored higher at both Time 2 and Time 3 were only included in the Time 2 group, to conform
with the assumptions of the tests. The women who only had scores more than 10 on the EPDS antenatally were excluded from the analyses. This was determined for several reasons. The primary consideration was the main aim of the analyses, which was to assess the influence of the selected variables in women with higher EPDS scores after, rather than before, the birth. A second factor in the decision to exclude women who only had higher EPDS scores antenatally was the need to have clearly defined groups at each time of assessment.

6.7.2 Research Question 4: Maternal Attitudes:

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally at different times (Higher EPDS Time 2, Higher EPDS Time 3), and women with Lower EPDS scores at every time during the study (Lower EPDS at every time group), on maternal attitudes, at Time 1 antenatally, and Time 2 and Time 3 postnatally?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2, Higher EPDS Time 3, and Lower EPDS at every Time), on maternal attitudes at Time 1 antenatally, and Time 2 and Time 3 postnatally?

6.7.3 Maternal Attitudes Analyses

The assumptions for repeated-measures ANOVA were considered prior to the analyses. All were satisfactory, except the assumption of sphericity, which was violated. Therefore, the Huynh-Feldt computation was used to interpret the analyses (Coakes & Steed, 1999).

Table 18 shows the means and standard deviations of maternal attitudes by group at each time.
Table 18.

Means and Standard Deviations of Maternal Attitudes by Group at Each Time
(Time 1, Time 2, and Time 3)

<table>
<thead>
<tr>
<th>Group</th>
<th>Lower EPDS at every Time (n=93)</th>
<th>Higher EPDS at Time 2 (n=13)</th>
<th>Higher EPDS at Time 3 (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Marginal means</td>
<td>2.30</td>
<td>0.15</td>
<td>4.02</td>
</tr>
<tr>
<td>Time 1 MAQ</td>
<td>3.10</td>
<td>1.86</td>
<td>3.75</td>
</tr>
<tr>
<td>Time 2 MAQ</td>
<td>1.83</td>
<td>1.65</td>
<td>4.25</td>
</tr>
<tr>
<td>Time 3 MAQ</td>
<td>1.85</td>
<td>1.57</td>
<td>4.33</td>
</tr>
</tbody>
</table>

Table 19 shows the within and between group differences in maternal attitudes.
Table 19.

Analysis of Variance for Maternal Attitudes

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial $\eta^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Within subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Attitudes</td>
<td>.217</td>
<td>1.54</td>
<td>.01</td>
<td>.22</td>
</tr>
<tr>
<td>Maternal Attitudes*</td>
<td>1.934</td>
<td>0.27</td>
<td>.00</td>
<td>.76</td>
</tr>
<tr>
<td>Past History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Attitudes*</td>
<td>1.934</td>
<td>0.56</td>
<td>.01</td>
<td>.57</td>
</tr>
<tr>
<td>Social Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Attitudes*</td>
<td>3.87</td>
<td>3.04</td>
<td>.05</td>
<td>.02</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>218.54</td>
<td>(2.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Between subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past History</td>
<td>1</td>
<td>0.19</td>
<td>.00</td>
<td>.73</td>
</tr>
<tr>
<td>Social Support</td>
<td>1</td>
<td>5.48</td>
<td>.05</td>
<td>.02</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>11.05</td>
<td>.16</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>113</td>
<td>(2.00)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square error.
Huynh-Feldt adjustment used since sphericity assumption was not met, $p = .006$.

The interaction between maternal attitudes and group was significant. After controlling for past history and maternal social support, there was a significant difference between the groups over time on maternal attitudes $F(3.87, 218.54) = 3.04$, $p < .05$. 
Figure 2. Maternal Attitudes by Group at Each Time.

The Higher EPDS at Time 2 group stayed relatively constant over time. The Higher EPDS at Time 3 group started with higher more dysfunctional attitudes relative to the other two groups at the antenatal time, improved (dropped) following the birth, but reverted back to more dysfunctional attitudes, at the later postnatal time. The Lower EPDS at every time group started lower (with higher functionality) antenatally, improved after birth, and sustained improvement.

6.7.4 Research Question 4: Personal Control:

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores after the birth (Higher EPDS Time 2, Higher EPDS Time 3), and women with lower EPDS scores at every time during the study (Lower EPDS at every Time), on sense of personal control at Time 1 antenatally, and Time 2 and Time 3 postnatally?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time during the pregnancy and first six months of motherhood, within the groups, on sense of personal control at Time 1 antenatally, and Time 2 and Time 3 postnatally?
6.7.5 Personal Control Analyses

The assumptions for repeated-measures ANOVA were considered prior to the analyses. All were satisfactory.

Table 20.

*Means and Standard Deviations of Personal Control by Group at Each Time (Time 1, Time 2, Time 3)*

<table>
<thead>
<tr>
<th>Group</th>
<th>Lower EPDS at every Time (n = 93)</th>
<th>Higher EPDS at Time 2 (n = 13)</th>
<th>Higher EPDS at Time 3 (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Marginal means</td>
<td>4.41</td>
<td>0.08</td>
<td>3.37</td>
</tr>
<tr>
<td>Time 1 PC</td>
<td>3.98</td>
<td>0.85</td>
<td>4.42</td>
</tr>
<tr>
<td>Time 2 PC</td>
<td>4.59</td>
<td>1.27</td>
<td>2.17</td>
</tr>
<tr>
<td>Time 3 PC</td>
<td>4.60</td>
<td>1.20</td>
<td>3.67</td>
</tr>
</tbody>
</table>

Table 21 shows the within and between group differences.
Table 21.

*Analysis of Variance for Personal Control*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial η²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Control</td>
<td>2</td>
<td>0.15</td>
<td>.00</td>
<td>.86</td>
</tr>
<tr>
<td>Personal Control*</td>
<td>2</td>
<td>0.22</td>
<td>.00</td>
<td>.80</td>
</tr>
<tr>
<td>Past History</td>
<td>2</td>
<td>0.09</td>
<td>.00</td>
<td>.91</td>
</tr>
<tr>
<td>Social Support</td>
<td>2</td>
<td>9.87</td>
<td>.15</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Group</strong></td>
<td>4</td>
<td>10.25</td>
<td>.15</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>226</td>
<td>(1.17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past History</td>
<td>1</td>
<td>1.30</td>
<td>.01</td>
<td>.26</td>
</tr>
<tr>
<td>Social Support</td>
<td>1</td>
<td>0.78</td>
<td>.01</td>
<td>.38</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>10.25</td>
<td>.15</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>113</td>
<td>(1.89)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square error. **p >.001

The interaction between personal control and group was significant. After controlling for past history and maternal social support, there was a significant difference in personal control over time, within the groups F(4,226) = 9.87, p<.001.

Figure 3 demonstrates the trend in personal control by group at each time.
Women with a lower EPDS at every time felt less personal control over their lives before the birth overall. However, following the birth, they felt more in control of their lives. This increased later in the puerperium. Women with higher scores at Time 2 postnatally felt more in control of their lives when pregnant. However, they felt less in control of their lives after the birth of the baby. At Time 3 women with higher scores at Time 2 postnatally felt somewhat more in control, but did not return to the same level of confidence as when they were pregnant. Women with Higher EPDS scores at Time 3 felt much less in control of their lives when pregnant. However, they felt more in control at 10-12 weeks after the birth. At 20-24 weeks postnatally, they again felt less in control of their lives.

6.7.6 Research Question 4: Self-esteem:

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores (Higher EPDS score Time 2 and Higher EPDS score Time 3 postnatally), and women with lower EPDS scores at every time during the study (Lower EPDS at every Time), on self-esteem, at Time 1 antenatally, and Time 2 and Time 3 postnatally?
After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups, on self-esteem at Time 1 antenatally, and Time 2 and Time 3 postnatally?

6.7.7 Self-esteem Analyses

The assumptions for repeated-measures ANOVA were considered prior to the analysis. All were satisfactory, except the assumption of sphericity, which was violated. Therefore the Huynh-Feldt computation was used to interpret the analyses (Coakes & Steed, 1999).

Table 22.

Means and Standard Deviations of Self-esteem by Group at Each Time (Time 1, Time 2, Time 3)

<table>
<thead>
<tr>
<th>Group</th>
<th>Lower EPDS at every Time (n = 93)</th>
<th>Higher EPDS at Time 2 (n = 13)</th>
<th>Higher EPDS at Time 3 (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
</tr>
<tr>
<td>Marginal means 34.34 0.36</td>
<td>32.75 0.98</td>
<td>28.70 1.04</td>
<td></td>
</tr>
<tr>
<td>Time 1 SE 34.00 3.91</td>
<td>33.92 3.20</td>
<td>27.75 4.86</td>
<td></td>
</tr>
<tr>
<td>Time 2 SE 34.81 3.64</td>
<td>31.92 3.65</td>
<td>28.83 5.42</td>
<td></td>
</tr>
<tr>
<td>Time 3 SE 34.43 3.88</td>
<td>31.92 3.85</td>
<td>28.25 4.79</td>
<td></td>
</tr>
</tbody>
</table>

Table 23 shows the within and between group differences in self-esteem.
Table 23.  
*Analysis of Variance for Self-esteem*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Within subjects</th>
<th>F</th>
<th>Partial η²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem</td>
<td>1.96</td>
<td>2.38</td>
<td>.02</td>
<td>.10</td>
<td></td>
</tr>
<tr>
<td>Self-esteem * Past History</td>
<td>1.96</td>
<td>0.49</td>
<td>.00</td>
<td>.61</td>
<td></td>
</tr>
<tr>
<td>Self-esteem * Social Support</td>
<td>1.96</td>
<td>3.09</td>
<td>.03</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>3.93</td>
<td>2.11</td>
<td>.04</td>
<td>.08</td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square error. **p > .001**
Huynh-Feldt adjustment used since sphericity was not met, p = .016.

The interaction between self-esteem and group was not significant, indicating that differences in self-esteem over time were similar for the groups F(3.93, 226) = 2.11, p > .05. (Although the interaction was non-significant, the p value of .08 indicates a possible weak difference in trends over time.)

The groups were significantly different overall, as indicated by the significant main effect for group F(2, 113) = 13.21, p < .001.

Figure 4 indicates self-esteem by group at each time.
Figure 4. Self-esteem by Group at Each Time.

Pairwise comparisons of the groups (using a Bonferroni adjustment), based on the estimated marginal means, indicated that the self-esteem scores of the group of women who had higher EPDS scores at the final postnatal time of measurement (Time 3) were significantly lower than either of the other two groups (Lower EPDS every Time group vs Higher EPDS Time 3 group p<.001. Higher EPDS Time 2 vs Higher EPDS Time 3 (p=.017). However, the Lower EPDS every Time group and the Higher EPDS Time 2 group did not differ significantly on self-esteem (p=.251).

There was a significant main effect for maternal social support between groups, indicating that self-esteem varied as a function of social support
F(4,226) = 2.11, p<.05.

6.7.8 Research Question 4: Worry Over Everyday Stressors:

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally (Higher EPDS score Time 2 and Higher EPDS score Time 3), and women will lower EPDS scores at every Time during the study (Lower EPDS at every time), on worry over everyday stressors, at Time 1 antenatally, and Time 2 and Time 3 postnatally?
After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time during the pregnancy and first six months of motherhood, within the groups, on worry over everyday stressors at Time 1 antenatally, and Time 2 and Time 3 postnatally?

6.7.9 Worry Over Everyday Stressors Analyses

The assumptions for repeated-measures ANOVA were considered prior to the analyses. All were satisfactory, except the assumption of sphericity, which was violated. Therefore the Huynh-Feldt computation was used to interpret the analyses (Coakes & Steed, 1999).

Table 24.

Means and Standard Deviations of Worry by Group at Each Time (Time 1, Time 2 and Time 3)

<table>
<thead>
<tr>
<th>Group</th>
<th>Lower EPDS at every Time (n = 93)</th>
<th>Higher EPDS at Time 2 (n = 13)</th>
<th>Higher EPDS at Time 3 (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Marginal means</td>
<td>7.91</td>
<td>0.60</td>
<td>14.31</td>
</tr>
<tr>
<td>Time 1 ESI</td>
<td>8.95</td>
<td>5.80</td>
<td>15.17</td>
</tr>
<tr>
<td>Time 2 ESI</td>
<td>7.15</td>
<td>5.69</td>
<td>14.50</td>
</tr>
<tr>
<td>Time 3 ESI</td>
<td>7.25</td>
<td>6.40</td>
<td>14.00</td>
</tr>
</tbody>
</table>

Table 25 shows the within and between group differences in worry over everyday stressors.
Table 25. 
*Analysis of Variance for Worry Over Everyday Stress*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial $\eta^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everyday Stress</td>
<td>1.90</td>
<td>0.35</td>
<td>.00</td>
<td>.69</td>
</tr>
<tr>
<td>Everyday Stress *</td>
<td>1.90</td>
<td>2.15</td>
<td>.02</td>
<td>.12</td>
</tr>
<tr>
<td>Past History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everyday Stress *</td>
<td>1.90</td>
<td>0.88</td>
<td>.01</td>
<td>.41</td>
</tr>
<tr>
<td>Social Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everyday Stress *</td>
<td>3.80</td>
<td>.30</td>
<td>.00</td>
<td>.87</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>214.45</td>
<td>(16.77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past History</td>
<td>1</td>
<td>1.55</td>
<td>.01</td>
<td>.22</td>
</tr>
<tr>
<td>Social Support</td>
<td>1</td>
<td>0.12</td>
<td>.00</td>
<td>.73</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>8.28*</td>
<td>.13</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>113</td>
<td>(97.50)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square error. **p>.001

Huynh-Feldt adjustment used since sphericity was not met, p = .002.

The interaction between worry over everyday stressors and group was not significant, indicating that differences in worry over everyday stressors over time were similar for the groups.

After controlling for past history and maternal social support, there was a significant difference between the groups over time on worry over everyday stressors $F(2,113) = 8.28$, p<.001.

Figure 5 indicates worry over everyday stressors by group at each time.
Pairwise comparisons of the groups (using a Bonferroni adjustment), based on the estimated marginal means, indicated that the worry over everyday stressors scores of the group of women who had lower EPDS scores at every Time of measurement (Time 1, Time 2 and Time 3) were significant lower than either of the other two groups (Lower EPDS every time group vs Higher EPDS Time 3 group *p*<.001). Lower EPDS every Time group vs Higher EPDS Time 2 group *p*<.001. However, the Higher EPDS Time 3 postnatally group, and the Higher EPDS Time 2 postnatally group, did not differ on worry over everyday stressors (*p* = >.05).

6.7.10 Research Question 4: Locus of Control:

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally (Higher EPDS score Time 2 and Higher EPDS score Time 3) and women with lower EPDS scores at every time during the study (Lower EPDS at every Time) on LOC, at Time 1 antenatally, and Time 2 and Time 3 postnatally?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time during the pregnancy
and first six months of motherhood, within the groups, on LOC at Time 1 antenatally, and Time 2 and Time 3 postnatally?

6.7.11 Locus of Control Analyses

The assumptions for repeated-measures ANOVA were considered before the analysis. All were satisfactory.

Table 26.
Means and Standard Deviations of Locus of Control by Group at Each Time (Time 1, Time 2 and Time 3)

<table>
<thead>
<tr>
<th>Group</th>
<th>Lower EPDS at every Time (n = 93)</th>
<th>Higher EPDS at Time 2 (n = 13)</th>
<th>Higher EPDS at Time 3 (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Marginal means</td>
<td>10.96</td>
<td>0.33</td>
<td>12.19</td>
</tr>
<tr>
<td>Time 1 LOC</td>
<td>10.95</td>
<td>3.22</td>
<td>10.81</td>
</tr>
<tr>
<td>Time 2 LOC</td>
<td>12.08</td>
<td>2.94</td>
<td>12.58</td>
</tr>
<tr>
<td>Time 3 LOC</td>
<td>11.08</td>
<td>3.90</td>
<td>9.25</td>
</tr>
</tbody>
</table>

Table 27 shows the within and between differences in the groups.
Table 27.
*Analysis of Variance for Locus of Control*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial $\eta^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td>2</td>
<td>0.79</td>
<td>.01</td>
<td>.46</td>
</tr>
<tr>
<td>Locus of Control *</td>
<td>2</td>
<td>0.58</td>
<td>.01</td>
<td>.56</td>
</tr>
<tr>
<td>Past History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control *</td>
<td>2</td>
<td>0.86</td>
<td>.01</td>
<td>.43</td>
</tr>
<tr>
<td>Social Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control *</td>
<td>4</td>
<td>1.43</td>
<td>.03</td>
<td>.22</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>226</td>
<td>(4.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past History</td>
<td>1</td>
<td>0.07</td>
<td>.00</td>
<td>.80</td>
</tr>
<tr>
<td>Social Support</td>
<td>1</td>
<td>2.22</td>
<td>.02</td>
<td>.14</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>1.52</td>
<td>.03</td>
<td>.22</td>
</tr>
<tr>
<td>Error</td>
<td>113</td>
<td>(29.74)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square error.

The analyses indicated that there were no significant differences between the groups on LOC. The interaction between LOC and group was not significant, indicating that there was no significant difference, in locus of control over time, in any of the groups $F(4, 226) = 1.43, p>.05$.

After controlling for past history and maternal social support, there was no significant difference between the groups over time, on LOC, $F(2,113) = 1.52, p>.05$. Figure 6 shows the trend in LOC by group at each time.
Figure 6. LOC by Group at Each Time

6.7.12 Research Question 4: Composite Attributional Style:

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally (higher EPDS score Time 2 and higher EPDS score Time 3 postnatally) and women with lower EPDS at every time during the study (lower EPDS at every Time) on attributional style, at Time 1 antenatally, and Time 2 and Time 3 postnatally?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups, on attributional style, at Time 1 antenatally, and Time 2 and Time 3 postnatally?

6.7.13 Composite Attributional Style Analyses

The assumptions for repeated-measures ANOVA were considered prior to the analyses. All were satisfactory.
Table 28.
*Means and Standard Deviations of Composite Attributional Style by Group at Each Time (Time 1, Time 2, Time 3)*

<table>
<thead>
<tr>
<th>Group</th>
<th>Lower EPDS At every Time (n = 93)</th>
<th>Higher EPDS Time 2 (n = 13)</th>
<th>Higher EPDS Time 3 (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Marginal means</td>
<td>4.82</td>
<td>0.31</td>
<td>4.56</td>
</tr>
<tr>
<td>Time 1 ASQcomp</td>
<td>5.02</td>
<td>3.69</td>
<td>5.02</td>
</tr>
<tr>
<td>Time 2 ASQcomp</td>
<td>5.37</td>
<td>2.36</td>
<td>4.25</td>
</tr>
<tr>
<td>Time 3 ASQcomp</td>
<td>4.42</td>
<td>2.61</td>
<td>3.42</td>
</tr>
</tbody>
</table>

Table 29 shows the within and between group differences in attributional style.
Table 29.  
*Analysis of Variance for Attributional Style*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial ( \eta^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Within subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attributional Style</td>
<td>2</td>
<td>3.20</td>
<td>.03</td>
<td>.04</td>
</tr>
<tr>
<td>Attributional Style *</td>
<td>2</td>
<td>1.22</td>
<td>.01</td>
<td>.30</td>
</tr>
<tr>
<td>Psychiatric History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attributional Style *</td>
<td>2</td>
<td>2.86</td>
<td>.03</td>
<td>.06</td>
</tr>
<tr>
<td>Social Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attributional Style *</td>
<td>4</td>
<td>1.23</td>
<td>.02</td>
<td>.30</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>226</td>
<td>(7.17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatric History</td>
<td>1</td>
<td>0.54</td>
<td>.01</td>
<td>.46</td>
</tr>
<tr>
<td>Social Support</td>
<td>1</td>
<td>0.19</td>
<td>.01</td>
<td>.66</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>0.45</td>
<td>.01</td>
<td>.61</td>
</tr>
<tr>
<td>Error</td>
<td>113</td>
<td>(26.96)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square error.

The interaction between composite attributional style and group was not significant, indicating that there was no significant difference in composite attributional style over time, across the groups \( F(4, 226), = 1.23, p>.05 \).

After controlling for past history and maternal social support, there was no significant difference between the groups, over time, on composite attributional style \( F(2,113)= 0.45, p>.05 \).

The trend in attributional style is shown in Figure 7.
6.7.14 Summary of Findings

The interaction between maternal attitudes and group was significant. After controlling for past history and maternal social support, there was a significant difference between the groups, over time, on maternal attitudes. Women with a higher EPDS at Time 2 stayed relatively constant over time. Women with a higher EPDS at Time 3 had higher more dysfunctional attitudes, relative to the other two groups at the antenatal time. This improved following the birth, but reverted to more dysfunctional attitudes, at six months after the birth. Women with lower EPDS at every time had lower (more functional) maternal attitudes antenatally. They continued to improve after birth, and sustained improvement throughout the remainder of the study.

After controlling for past history and maternal social support, the interaction between personal control and group was significant. There was a significant difference in personal control over time within the groups. Women with a lower EPDS at every time felt less personal control over their lives before the birth. However, following the birth, they felt more in control of their lives and this increased later in the puerperium. Women with higher scores at Time 2 postnatally felt more in control of their lives when pregnant. However, they felt less in control of their lives after the birth of the baby. At Time 3, women with higher scores at Time 2 postnatally felt somewhat more in control, but did not return to the same level of confidence as when they were pregnant.
with higher EPDS scores at Time 3 felt much less in control of their lives when pregnant. However, they felt more in control at 10-12 weeks after the birth. At 20-24 weeks postnatally, they again felt less in control of their lives.

The interaction between self-esteem and group was not significant indicating that differences in self-esteem over time were similar for the women in different groups, although there was some indication of a possible weak difference in trends over time. The groups were significantly different overall. Pairwise comparisons of the groups indicated that the self-esteem scores of the group of women who had higher EPDS scores at the final postnatal time of measurement (Time 3) were significantly lower than either of the other two groups. However, women with lower EPDS every Time, and women with higher EPDS at Time 2 did not differ significantly on self-esteem. There was also a significant main effect for maternal social support between groups, indicating that self-esteem varied as a function of social support.

The interaction between worry over everyday stressors and group was not significant indicating that differences in worry over everyday stressors, over time were similar for the groups. After controlling for past history and maternal social support, there was a significant difference between the groups over time on worry over everyday stressors. Pairwise comparisons of the groups indicated that the worry over everyday stressors scores of the group of women who had lower EPDS scores at every Time of measurement (Time 1, Time 2 and Time 3) were significantly lower than either of the other two groups. However, the higher EPDS Time 3 postnatally group and the higher EPDS Time 2 postnatally group did not differ on worry over everyday stressors.

The analyses indicated that there were no significant differences between the groups on LOC or ASQ although there were some interesting trends. For this reason, graphs were included to highlight these for the reader.
6.8 Results: Research Question 5

6.8.1 Research Question 5: Time 1

To what extent does the cognitive profile indicate the two groups (those with higher EPDS scores at 10-12 weeks following the birth, and those women with higher EPDS scores 20-24 weeks postnatally) are correctly classified at Time 1 antenatally;

At Time 1 antenatally, which of the cognitive measures best discriminate between women, who have higher EPDS scores at different times postnatally (10-12 weeks, and 20-24 weeks, after the birth)?

6.8.2 Research Question 5: Time 2

To what extent does the cognitive profile indicate the two groups (those with higher EPDS scores at 10-12 weeks following the birth, and those women with higher EPDS scores 20-24 weeks postnatally) are correctly classified at Time 2 postnatally;

At Time 2 postnatally, which of the cognitive measures best discriminate between women who have higher EPDS scores at different times postnatally (10-12 weeks and 20-24 weeks after the birth)?

6.8.3 Research Question 5: Time 3

To what extent does the cognitive profile indicate the two groups (those with higher EPDS scores at 10-12 weeks following the birth, and those women with higher EPDS scores 20-24 weeks postnatally) are correctly classified at Time 3 postnatally;

At Time 3 postnatally, which of the cognitive measures best discriminate between women who have higher EPDS scores at different times postnatally (10-12 weeks and 20-24 weeks after the birth)?

6.8.4 Data Analysis:

Research Question 5 was addressed by conducting individual Discriminant Function Analysis (DFA) at each time (Time 1 antenatally, Time 2 and Time 3 postnatally).
**Within subjects variables in each test:**

MAQ, PC SE, ESI, LOC, and ASQcomp, all assessed at each time
(Time 1 antenatally, and Time 2 and Time 3 postnatally)

**Between subjects factor in each test:**

Groups: Higher EPDS Time 2, Higher EPDS Time 3 postnatally

DFA is intended to predict group membership from a set of predictors (Tabachnik & Fidell, 1996). At each Time, the assumptions underlying the use of DFA were considered before the analysis. Homogeneity of variance co-variance was tested in the analyses using the Box’s M. Multivariate normality was assessed using Mahalanobis Distances and linearity was checked by reviewing the scatterplots for each group. All were considered satisfactory. Multicollinearity and singularity were accounted for by the program which tests for sufficient tolerance during the analysis (Tabachnik & Fidell, 1996).

Women were divided into groups based on their postnatal EPDS scores. Women who scored 10 or more at either time postnatally were assigned to one of two groups: participants with higher EPDS scores at 10-12 weeks following the birth, and participants with higher EPDS scores postnatally at Time 3. The women who only had higher EPDS scores antenatally (n = 17) and those who never had higher EPDS scores at each assessment point during the course of the study period (n = 115) were excluded from the analyses.

6.8.5 **Results: Time 1**

Table 30 shows the means and standard deviations of the two groups at Time 1.
Table 30.
*Means and Standard Deviations of the Variables by Group at the Antenatal Stage (Time 1)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>M (Time 1)</th>
<th>SD (Time 1)</th>
<th>M (Time 2)</th>
<th>SD (Time 2)</th>
<th>M (Time 3)</th>
<th>SD (Time 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 PC</td>
<td>4.50</td>
<td>0.85</td>
<td>2.92</td>
<td>1.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 MAQ</td>
<td>3.71</td>
<td>1.73</td>
<td>4.75</td>
<td>1.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 LOC</td>
<td>11.50</td>
<td>3.18</td>
<td>11.08</td>
<td>3.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 ASQcomp</td>
<td>4.78</td>
<td>2.67</td>
<td>4.42</td>
<td>2.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SE</td>
<td>33.36</td>
<td>3.36</td>
<td>27.50</td>
<td>5.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 ESI</td>
<td>15.50</td>
<td>7.75</td>
<td>14.00</td>
<td>5.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 31 indicates the significant differences between the groups on the individual variables at Time 1.

Table 31.
*Univariate Comparisons of the Predictor Variables at Time 1*

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 MAQ</td>
<td>0.91</td>
<td>2.28</td>
</tr>
<tr>
<td>Time 1 LOC</td>
<td>0.99</td>
<td>0.09</td>
</tr>
<tr>
<td>Time 1 ASQcomp</td>
<td>0.99</td>
<td>0.13</td>
</tr>
<tr>
<td>Time 1 SE</td>
<td>0.67</td>
<td>11.97**</td>
</tr>
<tr>
<td>Time 1 PC</td>
<td>0.65</td>
<td>12.78**</td>
</tr>
<tr>
<td>Time 1 ESI</td>
<td>0.99</td>
<td>0.31</td>
</tr>
</tbody>
</table>

**p<.01 DF 1, 24**
The univariate analysis indicated that two of the variables discriminated significantly between the two groups. These were personal control, \( F(1, 24) = 12.78, p < .01 \) and self-esteem, \( F(1, 24) = 11.97, p < .01 \).

The canonical function at Time 1 is shown in Table 32.

Table 32.

The Canonical Discriminant Function at Time 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Eigenvalue</th>
<th>Can Corr</th>
<th>( \chi^2 )</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function 1</td>
<td>0.98</td>
<td>0.70</td>
<td>14.31</td>
<td>0.03*</td>
</tr>
</tbody>
</table>

* p < .05

The canonical discriminant function indicated that the main function was significant and accounted for 70.3% of the total explained variance between the groups. The function indicated that the predictors that best discriminated between the two groups were personal control \( (r = .74) \) and self-esteem \( (r = .72) \).

The classification results for the groups at Time 1 are shown in Table 33.

Table 33.

Predicted Group Membership Antenatally (Time 1)

<table>
<thead>
<tr>
<th>Group</th>
<th>Higher EPDS score</th>
<th>Higher EPDS score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 2 (n = 14)</td>
<td>Time 3 (n = 12)</td>
</tr>
<tr>
<td>Higher EPDS scores Time 2</td>
<td>14 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Higher EPDS scores Time 3</td>
<td>3 (25.0%)</td>
<td>9 (75.0%)</td>
</tr>
</tbody>
</table>

All of the women with higher EPDS scores at the first postnatal stage (Time 2) were correctly classified antenatally (100%). Seventy-five percent of the group of women who had higher EPDS scores at the final postnatal assessment stage (Time 3) were correctly classified. Overall, 88.5% of the original grouped cases were correctly classified.
6.8.6 Results: Time 2

The means and standard deviations of the variables are shown in Table 34.

Table 34.
Means and Standard Deviations of the Variables by Group at 10-12 Weeks Following the Birth (Time 2)

<table>
<thead>
<tr>
<th>Group</th>
<th>Higher EPDS score</th>
<th>Higher EPDS score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Time 2 PC</td>
<td>2.71</td>
<td>1.73</td>
</tr>
<tr>
<td>Time 2 MAQ</td>
<td>3.93</td>
<td>2.52</td>
</tr>
<tr>
<td>Time 2 LOC</td>
<td>12.14</td>
<td>2.98</td>
</tr>
<tr>
<td>Time 2 ASQcomp</td>
<td>3.57</td>
<td>3.85</td>
</tr>
<tr>
<td>Time 2 SE</td>
<td>31.28</td>
<td>3.73</td>
</tr>
<tr>
<td>Time 2 ESI</td>
<td>15.14</td>
<td>9.52</td>
</tr>
</tbody>
</table>

Table 35 indicates the significant differences between the groups by the variables at Time 2.

Table 35.
Univariate Comparisons of the Predictor Variables at Time 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 2 MAQ</td>
<td>0.92</td>
<td>2.04</td>
</tr>
<tr>
<td>Time 2 LOC</td>
<td>0.86</td>
<td>3.58</td>
</tr>
<tr>
<td>Time 2 ASQcomp</td>
<td>0.99</td>
<td>0.03</td>
</tr>
<tr>
<td>Time 2 SE</td>
<td>0.89</td>
<td>2.67</td>
</tr>
<tr>
<td>Time 2 PC</td>
<td>0.73</td>
<td>8.15*</td>
</tr>
<tr>
<td>Time 2 ESI</td>
<td>0.99</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*p <.05

DF 1, 24
The univariate analysis indicated that only personal control, $F(1, 24) = 7.32$, $p = .012$, discriminated significantly between the two groups. LOC, though not significant, appeared relatively important $F(1, 24) = 3.58$, $p = .092$.

The canonical discriminant function is shown in Table 36.

Table 36.
*The Canonical Discriminant Function at Time 2*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Eigenvalue</th>
<th>Can Corr</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function 1</td>
<td>0.64</td>
<td>0.61</td>
<td>10.44</td>
<td>0.11</td>
</tr>
</tbody>
</table>

The canonical discriminant functions indicated that the main function was not significant and accounted for 64.4% of the total explained variance between the groups. The function indicated that the predictors that best discriminated between the two groups were personal control ($r = -.69$) and LOC ($r = .45$). Table 37 shows the classification results for both groups.

Table 37.
*Predicted Group Membership Postnatally (Time 2)*

<table>
<thead>
<tr>
<th>Group</th>
<th>Higher EPDS score</th>
<th>Higher EPDS score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 2 (n = 14)</td>
<td>Time 3 (n = 12)</td>
</tr>
<tr>
<td>Higher EPDS scores Time 2</td>
<td>11 (78.6%)</td>
<td>3 (21.4%)</td>
</tr>
<tr>
<td>Higher EPDS scores Time 3</td>
<td>2 (16.7%)</td>
<td>10 (88.3%)</td>
</tr>
</tbody>
</table>

Of the women with higher EPDS scores at the first postnatal stage, 78.6% were correctly classified postnatally at Time 2. Of the group of women who had higher EPDS scores at the final postnatal assessment (Time 3), 88.3% were correctly classified. Overall, 80.8% of the original grouped cases were correctly classified.

**6.8.7 Results: Time 3**

Means and standard deviations of the variables are shown in Table 38.
Table 38.
Means and Standard Deviations of Variables by Group at the Final Postnatal Stage (Time 3)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Time 3 PC</th>
<th>Time 3 MAQ</th>
<th>Time 3 LOC</th>
<th>Time 3 ASQcomp</th>
<th>Time 3 SE</th>
<th>Time 3 ESI</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>3.85</td>
<td>4.08</td>
<td>12.15</td>
<td>3.42</td>
<td>32.08</td>
<td>13.23</td>
</tr>
<tr>
<td>SD</td>
<td>1.86</td>
<td>3.59</td>
<td>2.67</td>
<td>4.79</td>
<td>3.73</td>
<td>10.16</td>
</tr>
<tr>
<td>M</td>
<td>3.58</td>
<td>4.42</td>
<td>10.00</td>
<td>3.25</td>
<td>28.25</td>
<td>13.58</td>
</tr>
<tr>
<td>SD</td>
<td>1.16</td>
<td>2.57</td>
<td>5.51</td>
<td>3.93</td>
<td>4.78</td>
<td>7.33</td>
</tr>
</tbody>
</table>

Comparisons of the predictor variables at Time 3 are indicated in Table 39.

Table 39.
Univariate Comparisons of the Predictor Variables at Time 3.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Λ</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 3 MAQ</td>
<td>0.99</td>
<td>0.16</td>
</tr>
<tr>
<td>Time 3 LOC</td>
<td>0.94</td>
<td>1.59</td>
</tr>
<tr>
<td>Time 3 ASQcomp</td>
<td>1.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Time 3 SE</td>
<td>0.82</td>
<td>5.01*</td>
</tr>
<tr>
<td>Time 3 PC</td>
<td>0.99</td>
<td>0.18</td>
</tr>
<tr>
<td>Time 3 ESI</td>
<td>1.00</td>
<td>0.01</td>
</tr>
</tbody>
</table>

* p < .05

DF 1, 23

The univariate analysis indicated that self-esteem discriminated significantly between the two groups F(1, 23) = 5.01, p < .05.
The canonical discriminant function at Time 3 is shown in Table 40.

### Table 40.

**The Canonical Discriminant Function at Time 3**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Eigenvalue</th>
<th>Can Corr</th>
<th>$\chi^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function 1</td>
<td>0.51</td>
<td>0.58</td>
<td>8.23</td>
<td>0.22</td>
</tr>
</tbody>
</table>

The canonical discriminant functions indicated that the main function was not significant. The canonical function indicated that the factors that best discriminated between the groups were self-esteem ($r = .66$) and locus of control ($r = .37$).

The classification results for groups are shown in Table 41.

### Table 41.

**Predicted Group Membership Postnatally (Time 3)**

<table>
<thead>
<tr>
<th>Group</th>
<th>Higher EPDS scores</th>
<th>Higher EPDS scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 2 (n = 13)</td>
<td>Time 3 (n = 12)</td>
</tr>
<tr>
<td>Higher EPDS scores Time 2</td>
<td>12 (92.3%)</td>
<td>1 (7.7%)</td>
</tr>
<tr>
<td>Higher EPDS scores Time 3</td>
<td>4 (33.3 %)</td>
<td>8 (66.7%)</td>
</tr>
</tbody>
</table>

Of the women with higher EPDS scores at the Time 2, 92.3 % were correctly classified postnatally, at Time 3. Of the group with higher EPDS scores at the final postnatal assessment (Time 3), 66.7 % were correctly classified. Of the original grouped cases, 79.2 % were correctly classified.

### 6.8.8 Summary of Results

Antenatally, the canonical discriminant function accounted for 70.3% of the total explained variance, between the groups. The tests indicated the predictors that best
discriminated between the two groups were personal control and self-esteem. Women who had higher EPDS scores at 10-12 weeks after the birth had higher self-esteem scores before the birth and felt more in control of their lives since becoming pregnant. This was compared to the group of women who had higher EPDS scores later in the puerperium at 20-24 weeks.

At 10-12 weeks after the birth, the groups were more similar. The canonical discriminant functions indicated that the main function was not significant. The predictors that best discriminated between the two groups were personal control and LOC. However, at this time in the puerperium, women who had higher EPDS scores at 10-12 weeks after the birth, felt less in control of their lives than women in the other group and had a more external LOC than women with a higher EPDS score at Time 3. In contrast, women who had higher EPDS scores later in the puerperium, felt more in control of their lives since the birth of the baby and had a more internal LOC. This indicated that this group was more likely to attribute responsibility to themselves for outcomes, and were feeling more in control, since the birth of the baby.

At the last time of assessment (20-24 weeks after the birth) the canonical discriminant functions again found that the main function was not significant. The predictors that best discriminated between the two groups were self-esteem and LOC. Women with higher EPDS scores at 10-12 weeks after the birth had improved self-esteem with the lowering of their EPDS scores. However, this group continued to have a more external LOC. The group of women with higher EPDS scores at 20-24 weeks after the birth had a more internal LOC but did not have any improvement in self-esteem overall, with their mean scores indicating a downward trend.

6.9 Results: Research Question 6

6.9.1 Research Question 6

Do women with higher EPDS scores at different times postnatally during the course of the study (Higher EPDS Time 2 and Higher EPDS Time 3), differ from women who never had higher EPDS score (Lower EPDS) on background factors and reported feelings and attitudes towards their relationships and motherhood, antenatally and postnatally?
6.9.2 Data Analyses:

Analyses were conducted on data collected at each time of assessment to compare differences between women with higher EPDS scores at each time postnatally and women who never had higher EPDS scores during the study on factors associated with depression. The question was addressed by conducting Chi-squares. Information on the factors computed was collected from all participants at each stage of the study antenatally and postnatally. Three discrete groups were included (Lower EPDS at every time, Higher EPDS Time 2 and Higher EPDS Time 3). The assumptions of the test were considered before the analyses. Where expected cell sizes were less than the recommended number (<5), Fisher's Exact test was automatically computed by SPSS (Tabachnick & Fidell, 1996). Following the SPSS analyses, Chi-squares were computed manually to determine where the significant differences were between the groups. Only significant differences across the three groups are reported in the text.

**Within subjects variables at Time 1:**
- PH, FH, Ambivalence, Mood Change, Limited Social Support, Marital Status

**Within subjects variables at Time 2:**
- Mood change, “Blues” > 2 weeks, “Blues” < 2 weeks, Sleep disturbance,
- Feeling isolated/alone, Difficult/traumatic birth, Medical intervention, Limited social support, Relationship problems, Eating problems

**Within subjects variables at Time 3:**
- Mood change, Difficult/traumatic birth, Sleep disturbance, Mixed feelings about Motherhood, Relationship problems, Limited social support, Financial problems,
- Income less than $50,000 per annum, Single.

**Between subjects factor in each test:**
- Groups: Lower EPDS at every time, Higher EPDS Time 2,
- Higher EPDS Time 3
6.9.3 Results: Time 1

At Time 1 antenatally there was a significant association between group and past history of a mental health problem $\chi^2 (2, N = 141) = 13.363, p < .01$. More women with higher EPDS scores postnatally at Time 3 had a past history of a mental health problem than expected. More women with higher EPDS scores postnatally at Time 3 than expected also had a family history of a mental health problem, $\chi^2 (2, N = 141) = 14.204, p < .01$.

There was a significant association between group and ambivalence about the birth, $\chi^2 (2, N = 141) = 10.937, p < .01$. Significantly more women with higher EPDS scores postnatally at Time 3 than expected felt ambivalent about the baby.

More women with higher EPDS scores postnatally at Time 3 had a past history of a mental health problem than expected. More women with higher EPDS scores postnatally at Time 3 than expected also had a family history of a mental health problem, $\chi^2 (2, N = 141) = 14.204, p < .01$.

6.9.4 Results: Time 2

At 10-12 weeks following the birth (Time 2) there was a significant association between group and mood, $\chi^2 (2, N = 127) = 48.628, p < .001$. Significantly more women in the group who had higher EPDS at Time 2 postnatally were likely to believe they had experienced a significant mood change since the birth. More of this group also had sleep disturbance (over and above what they anticipated as a new mother), $\chi^2 (2, N = 127) = 22.942, p < .001$. More women in the group who had higher EPDS at Time 2 postnatally than expected also claimed they had suffered “The Blues” for an extended period, following the birth $\chi^2 (2, N = 127) = 23.383, p < .001$. There was a significant association between group and feeling supported, $\chi^2 (2, N = 127) = 9.512, p < .01$. More women in the group who had higher EPDS at Time 2 postnatally than expected felt they had significantly less social support following the birth. Significantly more also stated they were having relationship problems, $\chi^2 (2, N = 127) = 31.439, p < .001$.

There was a significant association between group and feelings of isolation, $\chi^2 (2, N = 127) = 7.662, p < .05$. Significantly fewer of the women with lower EPDS scores after the birth than expected were feeling isolated and alone. Fewer than expected also believed that they had experienced a difficult or traumatic delivery, $\chi^2 (2, N = 127) = 11.072, p < .01$. 

Chapter 6 - Results
Significantly more women in the group with higher EPDS scores at Time 3 than expected were concerned about weight problems at 10 to 12 weeks after the birth. There was a significant association between group and eating problems \( \chi^2 (2, N = 127) = 13.177, p < .01 \)

6.9.5 Results: Time 3

At 20-24 weeks following the birth, there was a significant association between group and mood change, \( \chi^2 (2, N = 118) = 23.061, p < .001 \). Significantly more women in the group who had higher EPDS scores at Time 2 continued to believe they had experienced a significant mood change since the birth.

There was a significant association between group and ambivalence about motherhood, \( \chi^2 (2, N = 118) = 22.122, p < .001 \). Significantly more women in the group who had higher EPDS scores 20-24 weeks after the birth had mixed feelings about motherhood at six months after the birth, \( \chi^2 (2, N = 118) = 22.122, p < .001 \).

There was a significant association between group and social support, \( \chi^2 (2, N = 118) = 29.236, p < .001 \). Significantly more of the women in the group with higher EPDS scores at Time 3 postnatally than expected perceived they had limited social support. More women in this group than expected also perceived they had more relationship issues, \( \chi^2 (2, N = 118) = 23.061, p < .001 \). More of the group of women with higher EPDS scores in the later period following the birth than expected also perceived they had sleep disturbance (over and above what they anticipated as new mothers), \( \chi^2 (2, N = 118) = 13.466, p < .001 \).

6.9.6 Summary of Findings

Significantly more women in the group with higher EPDS scores at Time 3 after the birth than expected had a past history and a family history of a mental health problem. Antenatally, significantly more women with higher EPDS scores postnatally at Time 3 than expected felt ambivalent about the baby. More women with higher EPDS scores postnatally at Time 2 perceived they had limited social support during the pregnancy.

At 10-12 weeks following the birth, more women in the group who had higher EPDS at Time 2 postnatally were likely to believe they had experienced a significant mood change since the birth. They also had increased sleep disturbance (over and above
what they anticipated as a new mother). More women in this group also believed they had suffered “The Blues” for an extended period following the birth. More women in the group who had higher EPDS at Time 2 postnatally than expected felt they had significantly less social support following the birth. Significantly more also stated they were having relationship problems.

Significantly fewer of the women with lower EPDS scores after the birth than expected were feeling isolated and alone. Fewer than expected also believed that they had experienced a difficult or traumatic delivery.

Significantly more women in the group with higher EPDS scores at six months after the birth were concerned about weight problems in the weeks following the birth.

At 20-24 weeks following the birth significantly more women in the group who had higher EPDS scores at Time 2 continued to believe they had experienced a significant mood change since the birth. Significantly more women in the group who had higher EPDS scores 20-24 weeks after the birth had mixed feelings about motherhood at six months after the birth. More of the women in the group with higher EPDS scores at Time 3 postnatally perceived they had limited social support, and also claimed they had more relationship problems. More of the group of women with higher EPDS scores in the later period following the birth also perceived they had continued sleep disturbance (over and above what they expected as new mothers).
Chapter 7

Discussion

The previous Chapter described the results of the questions in detail. This final discussion Chapter begins by reiterating a synopsis of each research question, and associated hypotheses. This is followed by a succinct explanation of the key results from each analysis. The findings are then presented and discussed in the light of previous research. Clinical implications, emanating from the findings, are offered for each question. An overall summary draws together the salient findings, and a range of implications for practice is given. In the final section, the limitations of the study are discussed. This is followed by suggestions for future research.
7.1: Research Question 1

The overall aim of this research was to examine the role of cognitive factors, in the process of higher EPDS scores, in first time-mothers. Six research questions and related hypotheses were developed to explore this overall aim.

The first question was to explore which cognitive variables (after controlling for past history of a diagnosed mental health problem and social support) significantly differentiated groups of women with higher EPDS scores postnatally and groups of women who never had higher scores on the EPDS at any of the different times of assessment (Time 1, Time 2 and Time 3).

Research Question 1: Time 1

In the antenatal period (Time 1), are there significant differences in the cognitive profile (personal control, self-esteem, attributional style, worrying style, maternal attitudes, and LOC) of women with higher EPDS scores postnatally and women who did not have higher EPDS scores at every time, after controlling for past history of a mental health problem and social support?

Research Question 1: Time 2

In the early postnatal period (Time 2), are there significant differences in the cognitive profile (personal control, self-esteem, attributional style, worrying style, maternal attitudes, and LOC) of women with higher EPDS scores postnatally and women who did not have higher EPDS scores at every time, after controlling for past history of a mental health problem and social support?

Research Question 1: Time 3

In the later postnatal period (Time 3), are there significant differences in the cognitive profile (personal control, self-esteem, attributional style, worrying style, maternal attitudes, and LOC) of women with higher EPDS scores postnatally, and women who did not have higher EPDS scores at every time, after controlling for past history of a mental health problem and social support?

7.1.1 Question 1: Hypotheses

The hypotheses stated that, when grouped and compared, all women with higher EPDS scores postnatally would differ significantly from women who did not have
higher EPDS scores at every time of assessment (from the antenatal period – Time 1 to the final time – Time 3). Antenatally (Time 1), after controlling for personal history of a mental health problem and social support, the two groups would be less likely to differ significantly on the cognitive measures of personal control, maternal attitudes, attributional style, worrying style and LOC. This would be because fewer of the women with higher EPDS scores postnatally, at Time 2, would have dysfunctional cognitive profiles antenatally.

Postnatally (Time 2 and Time 3), after controlling for personal history of a mental health problem and social support, it was predicted that the combined group of women with higher EPDS scores postnatally would be more likely to differ significantly from women who did not have higher EPDS scores. This was expected on the cognitive measures of personal control, self-esteem, maternal attitudes, attributional style, worrying style and LOC, at every time (Hawton, Kirk, & Clark, 1996). This would be because the women who had higher EPDS scores at Time 2 postnatally would have associated cognitive dysfunctional profiles during the time of higher EPDS scores. This would increase the differences between the two groups. At Time 3 postnatally the cognitive differences between groups would be more pronounced, with strong differences on the cognitive measures. This would be because some women with higher EPDS scores at Time 2 postnatally would have some residual dysfunctional cognitions (Sherrington et al., 2001; Williams, 1992). Moreover, some would continue to have higher EPDS scores (Kumar & Robson, 1984; Whiffen & Gotlib, 1988). Additionally, the women who first experienced higher EPDS scores following the birth at the later time (Time 3) would have increased dysfunctional cognitions at that time. This expectation was based on proposals that women who have depression later in the puerperium are more likely to have similar profiles to those experiencing depression at other times in the life cycle (Kumar & Robson, 1984; Warner et al., 1997). Furthermore, cognitive dysfunction is associated with low mood (Williams, 1992).

7.1.2 Question 1: Summary of Results

The hypothesis, that the two groups of women were less likely to be significantly different on the cognitive measures antenatally, was partly upheld. After controlling for past history of a mental health problem and social support, there was an omnibus group difference across the composite dependent variables overall, on each occasion. However, this was relatively small antenatally, but was significant at both
postnatal times. This provided evidence that, while the two groups did differ significantly before the birth on the measures used, when comparisons with the same cohorts were made at different times (antenatally and postnatally), the group differences noted at each time of assessment on the cognitive measures changed.

Indeed, it is particularly interesting that when the combined group of women who had higher EPDS scores at either Time 2, or Time 3 postnatally were assessed as one cohort, and compared with the group who never experienced higher EPDS scores after the birth of the baby, only the extent to which women worried over everyday stressors, independently and significantly differentiated one group from another, during the time of the pregnancy. However, it was found that neither self-esteem, nor feeling more or less in control over one’s life, differed significantly between two groups in the antenatal period. A further important point was that, although the level of perceived social support mediating maternal attitudes and self-esteem within the groups was not significant, due to the Bonferroni adjustment, the significance level was very conservative, and the group was comparatively small. This indicates that the type of thoughts that some women have about motherhood are influenced to some extent by the level of social support that perceive they have during their pregnancy. Social support also affects their self-concept. This emphasises the importance of feeling supported during this critical period. This may be particularly important for some women, and not others. It must be remembered that this analysis was conducted with the combined groups of women who experienced a higher EPDS after the birth.

Following the birth (Time 2 postnatally), the level of perceived social support significantly affected self-esteem. This suggests, again, that this factor is influenced to some extent by women's perceptions of the quality of their social support in the early months following the birth. There was also a significant overall effect of the combined cognitive influences, which differed significantly between groups of women with higher EPDS scores and those with lower EPDS scores postnatally. The differences between the two groups, observed at Time 2, were strong and varied. Significant differences were found on personal control, self-esteem, and maternal attitudes, as well as worry over everyday stress.

Again, there was a large and significant difference between the two groups overall, on the cognitive measures at the later postnatal period (Time 3), after controlling for past history of a mental health problem and social support. Similar to Time 2 postnatally, the differences were on maternal attitudes, self-esteem, worry over
everyday stressors, and sense of personal control over one’s life. At this final time of assessment, however (Time 3 postnatally), only maternal attitudes varied as a function of social support. This suggests that the reported level of social support did not significantly affect the level of self-esteem, in the later months of the puerperium. Importantly, however, maternal attitudes did continue to vary, as a consequence of perceived social support.

7.1.3 Question 1: Discussion

These findings highlight that, during the antenatal period, the combined group of women with higher EPDS scores, at either time of assessment following the birth, were significantly more worried than women with lower EPDS scores about a range of everyday stressors. However, in the first weeks following the birth, the differences observed between the two groups were more apparent and divergent, on a wider range of factors. This would suggest that the events that occurred in the intervening period of time, between the antenatal assessment and the first weeks following the birth, led to additional cognitive differences between the two groups to those already experienced antenatally.

The results of the analyses beg the question why women’s perceptions of themselves, and their attitudes to motherhood, changed in the intervening period from the antenatal to the postpartum time. There are several possibilities. It may be argued that, to some extent, it was the changes in circumstances and women’s differing perceptions about their control over the events. These factors differentiated the group of women with higher EPDS scores in the postnatal period from women who had lower EPDS scores during the same period. Indeed, variations in attitudes, women’s perceptions of their control over their environment, and feelings about themselves strongly differentiated the two groups from each other during the puerperium. This confirms other findings in this study that dysfunctional cognitions are experienced during periods when women have higher EPDS scores. This is when compared to women who are not experiencing more distress at that time.

There was some evidence that women with higher EPDS scores and with perceived lower social support both in the pregnancy and in the first weeks after the birth were more likely than women who had lower EPDS scores to report more dysfunctional maternal attitudes. These included feelings of ambivalence about the role change, and more rigid and idealistic expectations of themselves as mothers. It has been
suggested that women who have poor social support have fewer role models to assist in their development as new mothers (Fowles, 1998; Lee, 1997). It may be that, as mothers with higher EPDS scores had fewer supports, they were not privy to important information about caring for a new baby. In addition, they did not have the benefit of maternal experience and personal reassurance. This is very important to new mothers in the antenatal period and early weeks after the birth (Barclay & Lloyd, 1996).

Evidence in support of this comes from Kumar and Robson (1984) who found that women who had current difficulties with their mothers were more likely to suffer from PND. The lack of a secure relationship with an important role model, potential informant, and possibly provider of instrumental, as well as emotional support, may make a great difference. This may impact upon how the new mother thinks and feels about herself as a mother, in the early weeks after the birth. However, in these circumstances, others may be able to assist. Thorpe and Elliott (1998) suggested that various forms of social support, such as self-help groups and home visits by child health nurses, assist women to normalise their experiences. These supports also assist new mothers to reframe their responses to potentially stressful experiences, such as the crying of a baby. For example, a new mother can view crying as a negative emotional reaction from the baby, causing anxiety and apprehension, or she can learn to consider it to be an important, but not necessarily negative, communication, that requires diagnosis and management. This latter response gives the mother more of a sense of control over the situation (Thorpe & Elliott, 1998).

Another reason for differences between primiparous women with higher EPDS scores and the group who had lower EPDS scores in the puerperium may be linked to the birth, and the period following it. This is a time when some new mothers experience enormous stress (Fisher et al., 1997; O’Hara et al., 1984). The loss of confidence and control that some women experience at this time may exacerbate anxiety (Lee, 1997). Worry is a significant component of anxiety (Borkovec et al., 1983; Boyce, 1994). Moreover, anxiety and excessive worry can affect concentration and decision-making (Deffenbacher, 1978). It is posited that, following the birth, cognitive distractions, such as worry, also impact upon the ability of new mothers to engage in appropriate diagnosis of the baby’s needs. Failure to respond to the baby appropriately is likely to result in poor reinforcement from the baby, such as increased distress responses. This will further alter women’s perceptions of their ability to cope with the challenges of motherhood (Brown et al., 1994). Women with higher EPDS scores in the postnatal
period were already worrying to a higher degree before the birth, about a range of problems. The issues surrounding the period of the birth, together with poor social support, could have compounded the stressors experienced by the new mother. This may have augmented the propensity for more tension, and created the circumstances for an additive model of stress. This may have contributed to low mood, and possibly further anxiety, as the new mother increasingly felt less able to cope (Brown and Harris, 1978; Cutrona, 1982).

In these unique circumstances, where some primiparous women may feel they have increasing stressors, and few avenues for support, the new mothers may feel increasingly helpless in the first weeks after the birth. The feelings of helplessness may be exacerbated by faulty attribution to self for failure as a mother, when already feeling low. Feeling unable to cope and perceptions of having limited ability to exercise personal control over the situation (Leathers et al., 1997), at a time of great importance to them, may worsen their lack of confidence. This may ultimately damage their self-image, if it continues without resolution (Mazure et al., 2000). Although women with higher EPDS scores at 10-12 weeks after the birth did have comparatively high self-esteem, their mean scores were lower at the time when they had higher EPDS scores postnatally. Adding to the difficulties, the absence of appropriate role models to advise and reassure new mothers can exacerbate their propensity to believe they are failures (Mauthner, 1998). As a result of these negative feelings about their capacity to cope, new mothers may eventually make fewer attempts to manage the wide range of pressing demands and chores that they feel duty-bound to complete as a new mother (Oakley, 1981). This expectation of domestic competence, even soon after the birth of a baby, is linked to societal norms, and perceived pressures, from significant others (Maushart, 1997).

It is argued by some researchers (Brown et al., 1994; Elliott, 1989) that there is a socially-created vulnerability that contributes to depressive symptoms after the birth of a baby. This stems from the common body of knowledge, shared by women in western societies, that links positive experiences to motherhood. As highlighted by one of the respondents in the qualitative interviews in this study (Chapter 4), visual images in the media are one example of the perpetuation of positive metaphors for motherhood. The values and expectations underpinning these impressions can trigger additional negative feelings and thoughts in the postnatal period in some new mothers, when positive experiences are fewer than anticipated (Marshall, 1993; Olioff, 1991). The norms and
expectations of motherhood, learnt from upbringing, and underpinned by society in general, effect the common perception that mothers and motherhood will be “good”. There is some anecdotal evidence to suggest that the social context of western societies encourage myths and norms that leave some new mothers with little understanding of the realities of motherhood, until they have their own experiences (Brown, Small, & Lumley, 1997; Nicolson, 1998). This idealisation of the role can lead some new mothers to perceive that simple remedies should not be used to alleviate some of their stress. For example, giving a screaming baby a dummy, or not breastfeeding, may cause others to label them “bad mothers” (Brown et al., 1994). More importantly, they may perceive themselves to be “bad mothers”, causing feelings of shame, anxiety, and sometimes, anger. These negative feelings, resulting from cognitive perceptions of motherhood norms, can contribute to increased distress in an already stressful environment and result in a higher EPDS score.

New mothers also have higher expectations of instrumental support from the partner, than is often the reality, following the birth (Belsky, 1985). This can be particularly important for new mothers relying heavily on their partner in the absence of other supports, such as immediate family and friends. Many relatively new Western Australian migrant women do not have such supports available, at this critical time. Nevertheless, women’s expectations of their partners can also be unrealistic, particularly when the male partner has been working all day, and may have little understanding of the realities of managing a small baby. The resulting dissatisfaction with the partner (Lee, 1997) at a time when this is probably the most important relationship in her life (Stuchbery et al., 1998) may be the ultimate stressor, in an increasingly unmanageable environment. Although the partnership tensions are unlikely to be the only issue, it is clearly very important to the new mother to feel emotionally secure. It had been found that satisfactory partner support is associated with a decrease in depressive symptoms in new mothers (Misri, Kostaras, Fox, & Kostaras, 2000). Furthermore, there is some evidence that women’s satisfaction with their support system is an important predictor of PND and related disorders. However, the size of the network is not relevant to their positive or negative perceptions (Brugha et al., 1998). The findings, in this study, further emphasise that women’s perceptions of their support systems, rather than the number of supports, strongly influence either satisfaction or further tension and stress.

In contrast, women who had lower EPDS scores following the birth, though more likely to feel less in control of their lives during pregnancy, felt more in control of
their lives, when assessed 10-12 weeks after the birth. It is known that successfully managing stressors can improve psychological functioning. Gaining mastery over potentially uncontrollable stressors can further enhance the sense of personal control (Basoglu et al., 1997). The perception of adequate instrumental and emotional support from the partner and/or significant others, for women who had lower EPDS scores, may have underpinned the psychological and emotional well-being of these new mothers (Mauthner, 1998). These feelings of being supported, whatever the reality, possibly strengthened their ability to cope with the new experiences and tasks of motherhood (Stuchbery et al., 1998). Furthermore, strong feeling of being supported may also have underpinned the development of more positive maternal feelings and attitudes.

The differences in cognition between the two groups (higher EPDS postnatally and lower EPDS postnatally) were observed to be more evident at 10-12 weeks following the birth, when significant differences were found on a range of variables. Importantly, however, the combined group of women with higher EPDS scores after the birth were able to be predicted before the birth based on the worrying levels that they exhibited in the second trimester of pregnancy, and their perceptions of their support system. This links to other findings that emphasise the importance of worry antenatally to the subsequent onset of depression after the birth (Cox et al., 1982). The importance of satisfactory social support to new mothers is also well documented (Brugha et al., 1998).

In summary, this question explored which cognitive variables (after controlling for a past history of a diagnosed mental health problem and social support) significantly differentiated groups of women with higher EPDS scores postnatally, and groups of women who never had higher scores on the EPDS at the different times of assessment (Time 1, Time 2 and Time 3). It was found that women who had higher EPDS scores in the postnatal period did differ significantly from women who did not have higher EPDS scores at each time of assessment (antenatally and postnatally at 10-12 weeks postpartum and 20-24 weeks postpartum). However, antenatally, the only independent variable that differed significantly between the two groups was the amount of worry over everyday stressors that women reported. Therefore, before the birth, the combined cohort of women who had higher EPDS scores in the postnatal period was not likely to be more cognitively dysfunctional than other women who were pregnant at that time, on measures such as maternal attitudes and self-esteem. Nevertheless, they were more worried about everyday problems. However, at 10-12 weeks after the birth there were
strong and significant differences between the groups on a range of factors measured in this study. The findings that dysfunctional cognitions are present during periods of distress may be linked to some recent evidence. It has been found that there are physiological changes in the brain structure, in the presence of unipolar depression, that have the potential to interfere with psychological stability (Harrison, 2002).

At both times postnatally, there were significant differences between the groups on personal control. Those who did not have a higher EPDS were feeling more in control of their lives after the birth. As may be anticipated, women who had a higher EPDS in the postnatal period felt less in control of their lives and were experiencing difficulties with motherhood, having more dysfunctional maternal attitudes. Furthermore, the combined group of women who had higher EPDS scores at some time after the birth also had significantly lower self-esteem, compared to new mothers who did not experience more distress at any time before or after the birth. More worry over everyday stressors was also significantly different between the groups, at both times postnatally.

7.1.4 Question 1: Clinical Implications

Importantly, when assessed during the second trimester antenatally, on the measures used in this study, women who had higher EPDS scores in the postnatal period could be differentiated from women who had lower EPDS scores both antenatally and postnatally. The second trimester of the pregnancy appears to be an appropriate time for assessment before the birth, as many of the early physiological issues that may confound the assessment process, such as morning sickness and adjustment to pregnancy, have generally passed. Anecdotally, women commented that they would have answered some questions differently if they had been experiencing some of the physical problems and psychological dilemmas experienced in the first three months of the pregnancy. Nevertheless, when assessing in the second trimester, it is essential to check whether some of the negative responses to questions given by pregnant women are linked to ongoing somatic disturbances.

In both postnatal periods, at 10-12 weeks and 20-24 weeks after the birth, there were strong and significant differences between the two groups of women, at each time. These were on cognitive factors such as self-esteem, personal control, everyday stressors and maternal attitudes. The significant factors were easily assessed using simple and short self-report measures. These findings provide evidence that women
with higher EPDS scores do differ on some important factors that can be objectively measured. This is important at a time when some women may be denying they have problems. However, it is vital also to be aware of the timeframes currently recommended for assessment. Some women with higher EPDS scores later in the puerperium did not present with a higher EPDS score in the first weeks following the birth. Other researchers have also found a group of women who appear to have a later onset of increased distress rather than earlier in the puerperium, when they appear to feel more confident and in control (Kumar & Robson, 1984).

Unfortunately, the earlier weeks of the postnatal period, generally around six to eight weeks, are when screening is usually recommended (Holden, 1994). This is also the time that GPs and community health services are now primed to be aware of the possibility of psychological disturbance in the new mother (NMHS, 2000; Pope, 1995). If it is considered important to identify distressed mothers as soon as possible, and minimise the impact of PND or other psychological problems, both for the mother and the family, then the implementation of an additional assessment at a later time in the puerperium needs to be considered.

7.2: Research Question 2

The second question asked whether women with higher EPDS scores in the puerperium, who had either high (dysfunctional) or low (functional) maternal attitudes, were more likely to differ on other variables known to be important in depression occurring at other times in the life-cycle. These included past history of a mental health problem, poor social support, LOC, attributional style, worrying style, personal control, self-esteem and level of EPDS scores.

Research Question 2: Time 1

Does the group of women with higher dysfunctional maternal attitudes and with higher EPDS scores postnatally differ on a past history of a mental health problem, social support, EPDS score, and cognitive factors, from the group of women with higher EPDS scores postnatally with lower, more functional maternal attitudes, in the antenatal period?

Research Question 2: Time 2

Does the group of women with higher dysfunctional maternal attitudes and with higher EPDS scores postnatally differ on a past history of a mental health problem,
social support, EPDS score and cognitive factors, from the group of women with higher EPDS scores postnatally with lower more functional maternal attitudes, 10-12 weeks after the birth?

**Research Question 2: Time 3**

Does the group of women with higher dysfunctional maternal attitudes and with higher EPDS scores postnatally differ on past history of a mental health problem, social support, EPDS score and cognitive factors, from the group of women with higher EPDS scores postnatally with lower more functional maternal attitudes, 20-24 weeks after the birth?

### 7.2.1 Question 2: Hypotheses

The formulation of the hypotheses for this set of analyses were based on the Warner et al. (1997) proposal that higher maternal attitudes may be a key antecedent factor in the onset of depression in a subset of new mothers, after the birth of a child. If this was the case, it was anticipated that women with higher EPDS scores postnatally may differ from each other on other cognitive measures. The differentiating factor would be whether they had lower, functional, or higher, dysfunctional, maternal attitudes. It was proposed that one subset of women with higher EPDS scores and higher, more dysfunctional maternal attitudes may not experience dysfunctional cognitions, known to be important to depression occurring at other times in the life cycle. The second subset, who would also have higher EPDS scores at some time postnatally, would have lower, functional maternal attitudes. This group would be more likely to be significantly associated with other factors known to be important to emotional disturbance occurring at other times in the life-cycle (Warner et al., 1997). This was assessed at each time (Time 1 antenatally, and Time 2 and Time 3 postnatally).

### 7.2.2 Question 2: Summary of Results

The hypothesis that the subset of women with higher EPDS scores postnatally and more functional maternal attitudes may differ significantly from the other subset on other factors, known to be important to emotional disturbance occurring at other times in the life-cycle, was not supported.
Antenatally (Time 1), the two subsets that had higher EPDS scores after the birth with dysfunctional (higher) or functional (lower) maternal attitudes were found to differ significantly on self-esteem. That is, women with lower self-esteem antenatally, who had higher EPDS scores following the birth, were more likely to have dysfunctional maternal attitudes. Therefore, it appears dysfunctional (higher), rather than functional (lower), maternal attitudes before the birth are more likely in women who have lower self-esteem. This does not support the hypothesis.

At 10-12 weeks following the birth, women with higher, more dysfunctional maternal attitudes who also had higher EPDS scores when assessed in the postnatal period, felt less in control, had significantly lower perceived social support, and had a more dysfunctional attributional style, than other women who also had higher EPDS scores, but had functional (lower) maternal attitudes.

The link between increased cognitive dysfunction and higher dysfunctional maternal attitudes was further supported later in the puerperium (20–24 weeks). Women with higher dysfunctional maternal attitudes at approximately six months after the birth consistently ranked higher on the depression measure of EPDS. This provides some evidence that those with lower self-esteem and higher dysfunctional maternal attitudes were generally experiencing more symptoms of depression. Consistent with this, they also again ranked significantly higher on negative attributional style and were more likely to have excessive worry over everyday stressors.

7.2.3 Question 2: Discussion

In effect, the factors associated with higher dysfunctional maternal attitudes and higher EPDS scores in the postnatal period were in contrast to those proposed by Warner et al. (1997). Higher dysfunctional maternal attitudes antenatally, rather than lower and functional maternal attitudes, were more likely to be linked to other factors, known to be important in depression occurring at other times in the life-cycle. These findings lend support to the idea of a pre-existing diathesis of higher dysfunctional maternal attitudes and lower self-esteem in one subset of women. The findings indicated that this profile may trigger a more dysfunctional attributional style during the stressful events surrounding the birth of the baby and the months that follow it. This seems to result in a more self-deprecating style after the birth, where women in this group (higher dysfunctional maternal attitudes and lower self-esteem) are more likely to blame themselves for negative events.
Nevertheless, a more dysfunctional attributional style does not necessarily have a proximal relationship with higher EPDS score. Those with lower self-esteem and higher dysfunctional maternal attitudes antenatally were more likely to have a higher EPDS score at six months in the puerperium. This ties in with the literature on attributional style, which supposes that a negative attributional style precedes depression (Abramson et al., 1978; Peterson & Seligman, 1984; Pettersen, 1987). However, the revised learned helplessness model also posits that lower self-esteem results from self-attribution for negative events, which in turn contributes to feelings of depression.

For those who already had lower self-esteem before the onset of increased distress, there is the possibility that low mood was evident before the pregnancy, either diagnosed or undiagnosed (Sherrington et al., 2001). Moreover, women with lower self-esteem may have pre-existing attitudes about motherhood that prime them for failure in this role. Perhaps linked to this idea, higher dysfunctional maternal attitudes were significantly associated with lower self-esteem, both antenatally and at six months following the birth. Furthermore, more new mothers with higher EPDS scores at six months after the birth had a previous history of a mental health problem. This group also had more severe symptoms of depression, experiencing significantly higher EPDS scores than other new mothers who had scores of more than the cut-off of 9 on the EPDS, at the earlier postnatal assessment Time (10-12 weeks). Interestingly, then, during the early puerperium at 10-12 weeks, self-esteem was not linked to higher dysfunctional maternal attitudes.

It was already noted that women who had higher EPDS scores and more dysfunctional maternal attitudes at 10-12 weeks following the birth were less likely to have lower self-esteem. However, higher dysfunctional levels of maternal expectations were concurrent with the episode of distress in the women who had higher EPDS scores 10-12 weeks after the birth. These findings lend support to the possibility that some women, who are not cognitively dysfunctional prior to the birth, but have higher EPDS scores and associated dysfunctional cognitions after the birth, are responding to other factors, linked to their social and cultural environment. These may be supposed to be predominantly related to stressors, occurring around the period of childbirth and the weeks that follow it, that are not anticipated (Marshall, 1993; Olioff, 1991). This also links to the proposal discussed earlier, that women who had higher EPDS scores 10-12
weeks after the birth were more likely to attribute blame to themselves when facing negative situations during the period of emotional disturbance (rather than before).

In summary, the question asked whether women with higher EPDS scores in the puerperium, who had either higher (dysfunctional) or lower (functional) maternal attitudes, were more likely to differ on other variables, known to be important in depression occurring at other times in the life-cycle. These were a past history of a mental health problem, poor social support, LOC, attributional style, worrying style, personal control, self-esteem and level of EPDS scores. It was found that higher dysfunctional maternal attitudes were linked to less felt control, significantly lower perceived social support, and a more dysfunctional attributional style. Women with higher and more dysfunctional maternal attitudes also ranked higher on the measure of EPDS. This indicated that women with more dysfunctional maternal attitudes were also likely to be experiencing more symptoms of depression, than women with lower, more functional, maternal attitudes.

An important finding to highlight from this study was that dysfunctional maternal attitudes were associated with higher EPDS scores, at both times in the puerperium. In effect, women were more maternally rigid and idealistic and had more negative feelings about the baby, at the time when they were feeling emotionally and psychologically stressed. For women experiencing higher EPDS scores later in the period following the birth, this may link to the ideas posed by Beck (1976) that “depressogenic schemata” may be dormant, but can be evoked during very stressful situations. Beck claims that at times of high stress, individuals with pre-existing negative schemata tend to view their circumstances from an increasingly negative perspective, often overemphasising the impact of an event or circumstance.

However, it can be argued that for women with higher EPDS scores 10-12 weeks after the birth, the stress of childbirth and the surrounding circumstances, underpinned by learnt views of motherhood, rather than a pre-existing diathesis, triggered more extreme maternal attitudes. This, in turn, created additional stress for some new mothers. Additional stressors may have led to ambivalence about the baby that resulted in less positive reinforcement, and more guilt, anger and frustration for the new mother. Moreover, perceived poor social support from the partner and other significant people in the family may have increased the distress of new mothers in the early postpartum period.
Nevertheless, for half of the women with higher EPDS scores 10-12 weeks after the birth, this higher level of distress was short-lived and resolved spontaneously before the final postpartum assessment, at six months. This may be because the stressful episode was not underpinned and maintained by ongoing cognitive vulnerability. In effect, it was a transient negative reaction to an unknown and very stressful event, exacerbated by poor perceived social support. A further point is that this group may have had additional protective factors that assisted recovery. Sherrington et al. (2001) found that women with higher self-esteem had a better prognosis, and earlier recovery from depression, than women with lower self-esteem.

7.2.4 Question 2: Clinical Implications

These findings provide some evidence that higher, dysfunctional maternal attitudes are more likely to be associated with factors known to be important to depression occurring at other times in the life-cycle. Nevertheless, the findings indicate that before having the baby, pregnant women generally have relatively similar maternal attitudes.

However, after the birth, the experience of motherhood, mediated by perceived social support, influences the extent to which women continue to experience dysfunctional attitudes about motherhood. Women who perceive they have more social support, are less likely to have dysfunctional maternal attitudes. Furthermore, the findings from analyses so far, appear to indicate that dysfunctional maternal attitudes are associated with, but not predictive of, higher EPDS scores at 10-12 weeks after the birth. This has important implications for prevention. To minimise some of the issues arising because of more rigid and perfectionist maternal attitudes, it may be possible to pair first-time mothers with female role models. It is proposed these role models and mentors be called upon to offer support, information and guidance, perhaps prior to, and in the first weeks after, the birth. Given basic training, alongside their own knowledge and expertise in motherhood, practised mothers can provide a wealth of experience to normalise the variety of situations, thoughts, and feelings of new mothers. This may minimise, or modify, higher maternal goals and impractical expectations after the birth in first-time mothers (Elliott et al., 1988). Furthermore, it is likely that women will accept appropriate, and low-key, community based support, if it is offered. Thompson et al. (2002) found that 40% of women in a large study reported that would have
appreciated help and advice in the first eight weeks after the birth, though few actively sought assistance or support.

7.3: Research Question 3

The aim of this question was to determine the cognitive variables (measured in the second trimester of pregnancy) that predicted higher EPDS scores following the birth at two points in time:

- Ten-12 weeks following the birth
- 20-24 weeks following the birth.

Given the prominence in the literature of both a past history of a diagnosed mental health problem (Appleby et al., 1994; Bergant, Heim, Ulmer, & Illmensee, 1999) and poor social support (Barclay & Kent, 1998; Brugha et al., 1998) as antecedents of PND and related mood problems, it was considered important to control for these in the analyses.

Research Question 3: Time 2

Ten to 12 weeks after giving birth, do antenatal cognitive factors predict higher EPDS scores in first time mothers, after controlling for personal history of mental health problems and social support?

Research Question 3: Time 3

Twenty to 24 weeks after giving birth, do antenatal cognitive factors predict higher EPDS scores in first time mothers, after controlling for personal history of mental health problems and social support?

7.3.1 Question 3: Hypotheses

The hypotheses were that the predictors of higher EPDS scores would differ at different times of measurement in the puerperium. Women with higher EPDS scores at 10-12 weeks following the birth may be less likely to be predicted by already existing dysfunctional cognitions. This would be because they were more likely to be reacting to the stressors inherent in the birth of a first child, dysfunctional maternal attitudes, and the early postnatal period of adjustment (Kumar & Robson, 1984; Warner et al., 1997).

Women who had higher EPDS scores in the later months following the birth (20-24 weeks) would be more likely to be predicted by a past history of a mental health
problem and residual dysfunctional factors associated with depression and associated disorders. These would include low self-esteem, ELOC, dysfunctional attributional style, high worrying style, and feeling less in control (Sherrington et al., 2001).

7.3.2 Question 3: Summary of Findings

Poor social support and a past history of a diagnosed mental health problem were significant antecedents in a regression model predicting higher EPDS scores, 10 to 12 weeks after the birth. However, these findings indicate that the first hypothesis was only partly supported. Indeed, only two of the women with higher EPDS scores in the first weeks and months following the birth (Time 2) had a past history of a mental health problem. However, as anticipated, social support did have some influence on higher EPDS scores, highlighting that social support, as found previously, was linked to the onset of more depressive symptoms (Brugha et al., 1998). After controlling for past history of a diagnosed mental health problem and social support, more worry over everyday stressors and higher sense of personal control over one's life were the only significant antenatal predictors of a higher EPDS scores, 10-12 weeks after the birth of the baby.

Interestingly, the antenatal measures of dysfunctional maternal attitudes, LOC, attributional style and lower self-esteem did not predict a higher score on the EPDS, 10-12 weeks after the birth. These findings further support the hypothesis that there was a significant subset of women who were not cognitively predisposed to higher postnatal distress, when assessed during early pregnancy. The measures thought to be associated with depression, including self-esteem and a predisposition to a past history of a mental health problem, were not significant in this group. Furthermore, this study also found that higher maternal attitudes antenatally did not predict a discrete group of women who had higher EPDS at 10-12 weeks in the puerperium, as proposed by Warner et al. (1997). However, higher more dysfunctional maternal attitudes were associated with a higher EPDS score, as shown previously.

In contrast, at six months after the birth, the results indicated that a past history of a mental health problem was more strongly associated with a higher EPDS score. However, past history and social factors only accounted for 5.4% of the variance in the EPDS score. After controlling for these factors, the second stage of the stepwise regression model of cognitive variables was again significant. The association between cognitive variables and higher EPDS score was much stronger at this later stage in the
puerperium, when it accounted for 24.8% of the change. Hence, the hypothesis that some women with higher EPDS scores in the later months of the puerperium were experiencing increased symptoms of depression, at least in part due to a pre-existing vulnerability, or diathesis, was upheld. The total model in the regression accounted for approximately one third of the variance in higher EPDS scores. The significant predictors of higher EPDS scores, after controlling for a past history of a mental health problem and social support, were lower self-esteem and more worry over everyday stressors. Higher, more dysfunctional maternal attitudes did have some predictive value, but once the ESI was entered, dysfunctional maternal attitudes no longer played a role in significant prediction of higher EPDS score. This indicates some shared variance between these two factors.

7.3.3 Question 3: Discussion

Previous researchers have speculated that women becoming depressed at different times in the puerperium may be experiencing differing forms of depression (Kumar & Robson, 1984; Warner et al., 1997). The findings in this study suggest that a higher EPDS score in the first three months after the birth of a first child is less likely to be related to past history of a mental health problem than anticipated. However, a past history of a mental health problem is more likely in new mothers with higher EPDS scores later in the puerperium. This was also found in other studies of primiparous women (Kumar & Robson, 1994; Righetti-Veltema et al., 1998). An existing vulnerability, linked to dysfunctional cognitions, was also shown to be less relevant in predicting a higher EPDS scores in new mothers 10-12 weeks after the birth, as found in a more recent study (Grazioli & Terry, 2000).

However, cognitive dysfunction antenatally accounted for more of the variance in predicting higher EPDS scores at 20-24 weeks after the birth. There also appears to be a link between the later group, and more severe symptoms of depression as found in the results of research question two. Moreover, the findings indicate that women who have higher EPDS scores 10-12 weeks after the birth differ in some cognitive processes when pregnant. This is when compared to new mothers who experience higher EPDS scores later in the puerperium. Furthermore, for the cohort of women who had higher EPDS scores at 10-12 weeks after the birth, most of the altered cognitions associated with the period of distress were not evident before the onset of the higher EPDS score. As such, it can be argued that dysfunctional cognitions, other than increased worry, are
less likely to be antecedents to a higher EPDS score postnatally at 10-12 weeks. Nevertheless, they are present at the time when new mothers experience higher EPDS scores (Blackburn & Twaddle, 1996; Nue et al., 2001).

Given that cognitive factors were less important in predicting a higher EPDS score 10-12 weeks after the birth, it is argued that issues other than predisposing factors must play a vital role in causing a higher EPDS score in some women around the time of childbirth. Adaptation to any major transition involves some level of stress (Nesse, 2000). During the first months after the birth, all new mothers naturally have some level of difficulty and adjustment that is associated with learning to manage the many tasks of motherhood (Fowles, 1998; Nicolson, 1998). Since the group of women with higher EPDS scores 10-12 weeks after the birth perceived they were feeling more in control of their lives in the first months of pregnancy, it is proposed that they were potentially overconfident. Therefore, they were less primed for the unanticipated difficulties that might occur as a result of the birth and the first weeks following the event (Littlewood & McHugh, 1997). This group of women, who had higher EPDS scores at 10-12 weeks postpartum, may have experienced more emotional and psychological disturbance, as a result of the birth and subsequent period, where little control over their environment was feasible (Arizmendi & Affonso, 1987).

Feeling more or less in control of one’s life before the birth, a factor that had an impact on higher EPDS scores earlier in the puerperium, was not a significant predictor of a higher EPDS score at the later time period of 20-24 weeks. This links to the point that the vast majority of other pregnant women in the cohort who had lower EPDS scores and were not cognitively vulnerable in the period following the pregnancy felt either the same or less in control of their lives when pregnant. It seems that a global feeling of being less in control of one’s life before the birth, is a common issue faced by many women during pregnancy. It does not necessarily lead to psychological distress after the birth. However, it does lend some support to findings that women report more anxiety, and generally feel less confident and assured, before the birth, as may be expected. It can be argued, though, that women who felt less in control of their lives before the birth were better prepared for the major upheaval that accompanies new motherhood. In comparison, affective and cognitive responses linked to feeling incompetent and out of control were experienced by some new mothers in the first weeks after the birth. This was after initially perceiving themselves to be more in control of their lives during pregnancy. This early confidence may have contributed to a
higher EPDS score at 10-12 weeks postnatal. An important point, linked to changes in perception of control over one's life, may be that many of the women with higher EPDS score at 10-12 weeks postnatally perceived that they had experienced a traumatic delivery. Furthermore, their feelings about this did not change throughout the six months following the birth, even though some no longer had higher EPDS scores at Time 3 postnatally. There is some evidence that a loss of control experienced by women during the childbirth is linked to depression (Czarnocka & Slade, 2000). This may be particularly important, and have more implications, for those women who initially felt more empowered in the antenatal period.

In contrast, women who suffer from a higher EPDS later in the puerperium at 20-24 weeks may experience changes that initially have a positive impact on their cognitive processes, during the first months following this major life event. There is some evidence that negative cognitive perceptions may be modified in the first weeks after the birth, due to the elation and optimism experienced by some pregnant and new mothers (Lane et al., 1997; Lee, 1997). Potentially this group may be more cognitively vulnerable to depression or other disorders because of a past history of a mental health problem and lower self-esteem (Kumar & Robson, 1984).

However, this cohort may, nevertheless, experience a time of hope and happiness that initially masks a potential cognitive vulnerability. Furthermore, unlike the group who had higher EPDS scores at 10-12 weeks postpartum, having traumatic experiences around the birth may not be as damaging in the short term. Firstly, women who had higher EPDS scores later in the puerperium were already likely to have lower self-esteem. Their self-image was not further depleted by the experience. In fact, their self-esteem and their sense of control over their lives increased after the birth. Secondly, women who had higher EPDS scores later in the puerperium were already feeling less in control of their lives. The lack of control experienced during the childbirth may not have had the same psychological impact as for the other group who felt more in control before the birth yet had higher EPDS scores at 10-12 weeks. The issues for the group who had higher EPDS scores later in the puerperium, though potentially different, did result in some psychological change. However, this did not result in more symptoms of depression in the first months following the birth. In fact, they felt more in control of their lives when assessed 10-12 weeks postnatally.

However, a higher EPDS in the later puerperium appears to be more strongly linked to other aspects of dysfunctional thinking that were already proposed to be
related to PND and other mood disturbances (O’Hara, 1995; Warner et al., 1997). For example, women who had higher scores on the depression measure six months following the birth were also more likely to have poor self-esteem antenatally. This factor has been widely identified as being associated with general depression (Sherrington et al., 2001) and in a few studies, PND and related disorders (Hall et al., 1990). Nevertheless, the role of self-esteem as a direct predictor of depression around the time of childbirth, is not clear. To some extent, the problem in defining the role of various factors in the process of depression, is linked to the methodologies used in many previous studies. For example, proximal and distal relationships between variables cannot be tested in cross sectional studies, where concepts such as self-esteem are only compared in cohorts of depressed and non-depressed participants. When using this method, it is only possible to assume there is a causal relationship between these factors in models of depression. There is no direct evidence (Bernazzani, Saucier, David, & Borgeat, 1997).

In summary, this question examined which cognitive variables (measured in the second trimester of pregnancy) predicted higher EPDS scores following the birth at 10-12 weeks following the birth, and at 20-24 weeks following the birth. The findings from this prospective study provide some evidence that distal cognitive factors, such as low self-esteem, tendency to worry more, and to a lesser extent, dysfunctional maternal attitudes, measured up to 12 months prior to the onset, can predict higher EPDS scores occurring in the puerperium. However, the strength of these relationships varied with time. At 10-12 weeks after the birth, the variance accounted for by cognitive factors, while significant, was only 18.2%, whereas at 20-24 weeks after the birth more than 30% of the variance was attributed to the same group of factors. Furthermore, at approximately six months postpartum, there was no longer a significant association between higher EPDS score and perceived poor emotional support during the pregnancy, after entry into the model of everyday stressors and self-esteem. Nevertheless, support was an issue at the time of distress. For women who had higher EPDS later in the puerperium, perception of poor support was linked to the period of low mood, although it was not a predictor of it before the birth. It may be that women with higher EPDS later in the puerperium became more aware of the need for support when the initial “honeymoon period” of motherhood was over. Another point is that this group may have perceived their support system more negatively, because they were experiencing low mood at that time. Perception of poor support is often associated with both general depression (Sherrington et al., 2001) and PND and related disorders.
(Brugha et al., 1998). However, cognitive factors, such as self-concept, were more important in predicting low mood at this time.

Crucial to a fundamental argument in this thesis, these findings lend further support to the proposal that women with higher EPDS scores during the puerperium did not have common cognitive profiles on various measures antenatally. This evidence highlights that comparing groups of women who never have higher EPDS scores at any time of assessment and women who have higher EPDS scores in the first six months of the puerperium is likely to confound any predictive model of depression that may be posited. Accounting for time differences in onset, and the potential for subsets with various situations and issues, is critical (Kumar & Robson, 1984; Warner et al., 1997). The analyses used for question one are an example. Comparing women who had higher EPDS scores in the first six months of the puerperium, and women who never had higher EPDS scores at any time, resulted in the finding that women who had a higher EPDS score after the birth had significantly lower self-esteem to the group of women who never had higher EPDS scores. Later analyses found this was not the case for all women with higher EPDS scores after the birth. The group of women with higher EPDS scores 10-12 weeks after the birth did not have significantly lower mean self-esteem to those who never had a higher EPDS score. This highlights the potential for some confounding of results when assessing differences between combined groups of women, while failing to allow for different times of onset. Furthermore, there are important clinical implications.

7.3.4 Question 3: Clinical Implications

The cognitive vulnerability, or diathesis, found in women who had higher EPDS scores 20-24 weeks after the birth may have originated due to a wide range of factors and circumstances before the pregnancy. Though not independently significant in the regression model, past history of a mental health problem was a factor in the group with later onset. Approximately one third of women who had higher EPDS scores later in the puerperium, had experienced a previous episode of depression, anxiety or eating disorder. This suggests that antenatal assessment incorporating a question on whether women have experienced a diagnosed mental health problem in the past is warranted for first–time mothers. However, it has more relevance for those who have higher EPDS scores later in the puerperium. As a result, a history of a mental health problem will not be a consistently relevant factor, in assessment. Nevertheless, it will assist practitioners
to identify a subset of women who are already vulnerable before they experience the additional stressors linked to childbirth.

These findings indicate that groups of women who are likely to have higher EPDS scores following the birth of their first baby can be predicted by assessing women in the antenatal period. Furthermore, is appears dysfunctional cognition prior to the birth, on measures such as self-esteem, maternal attitudes and worrying style, can draw attention to those women who are more likely to have higher EPDS scores later in the puerperium. The later-onset group also experienced more symptoms of depression than the subset of women with higher EPDS scores earlier in the puerperium.

Nevertheless, the study also indicates differences in the influence of cognitive factors, in women who have higher EPDS scores at different times in the puerperium. While it seems it is possible to predict women who will have higher EPDS scores at different stages after the birth, more information is required. It is important to understand how women’s cognitions change over time, when compared with each other, as well as to women who do not have higher EPDS during the puerperium. The processes of the variables, during the pregnancy and puerperium, in groups of women who have an onset of higher EPDS scores, at different times in the puerperium, need further explanation (Boyce & Mason, 1996).

7.4: Research Question 4

Question 4 compared cognitive differences in groups of women with higher EPDS scores at different times postnatally (Time 2 and Time 3) and women who had lower EPDS scores throughout the period of the study. The question examined whether groups of women with higher EPDS scores at different times postnatally differed from each other, as well as women with lower scores on the EPDS at every time, across and between times, on each of the variables. These were maternal attitudes, personal control, self-esteem, worry over everyday stressors, LOC and attributional style.

7.4.1 Research Question 4: Maternal Attitudes

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally, at different times (Time 2 and Time 3) and women who
do not have higher EPDS scores at every time, during the study, on maternal attitudes at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time during the pregnancy and first six months of motherhood, within the groups (higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time, during the study) on maternal attitudes, at Time 1, Time 2 and Time 3?

7.4.2 Maternal Attitudes: Hypotheses

It was hypothesised that, after controlling for past history and social support, women with higher EPDS scores at Time 2 would have significantly different maternal attitudes to women who had lower EPDS scores at every time (Time 1, Time 2 and Time 3). Additionally, women with higher EPDS scores at Time 3 would have similar maternal attitudes to women who had lower EPDS scores, at every time during the study.

7.4.3 Maternal Attitudes: Summary of Findings

The findings from these analyses provide further evidence that the role of maternal attitudes, as measured by the maternal attitudes questionnaire, is complex (Fowles, 1998). After controlling for past history of a mental health problem and social support, there was a significant difference between the three groups, over time, on maternal attitudes (Table 19). As hypothesised, the significant difference between the groups was in those women who had lower EPDS scores at every time, and the group of women with higher EPDS scores at 10-12 weeks after the birth. However, women with higher EPDS scores at Time 3 also had significantly different maternal attitudes, to the women who had lower EPDS scores at every time. Interestingly, this significant difference in maternal attitudes, seen at different times within the groups, emphasised that the way some groups of women perceived motherhood and their expectations of themselves as mothers changed over time. It appears that, to some extent, attitudes are modified in either direction, following the birth, by the way that women experience motherhood. Some groups of women have lower, less dysfunctional maternal attitudes. Other women have higher, more dysfunctional maternal attitudes after the birth.
7.4.4 Maternal Attitudes: Discussion

Of particular interest was not only that some women became more extreme in their attitudes towards motherhood during the period of highest EPDS scores, but that those who had lower EPDS scores at every time, became less demanding of themselves following the birth. For mothers who had lower EPDS scores at every time, this was in a positive, but unexpected way. When assessed following the birth, their attitudes towards their maternal responsibilities, and expectations of themselves, had become less demanding. It is argued that the shift in attitudes, from one of initially expecting a higher standard of performance as mothers to one where less was expected, potentially gave them the opportunity to succeed where they may have failed. In effect, women who had lower EPDS scores at every time appeared to reframe, revise or relax their maternal attitudes and expectations after the birth. This shift may ease the burden for new mothers at a time of high stress. A significant main effect for maternal social support between groups also provided evidence that maternal attitudes varied as a function of the women’s perceptions of their support network, as highlighted in earlier analyses.

Perhaps the positive affective experiences of new mothers who had lower EPDS scores at every time were triggered by their strong maternal feelings, and attachment towards the baby (Allbright, 1993), together with a supportive environment (Cutrona, 1982; Stuchbery et al., 1998). It can be speculated that these positive experiences encouraged a revised attitudes of themselves as mothers. This allowed them to be more flexible and pragmatic about their role change in the early months of most difficulty and adjustment. This positive trend in maternal attitudes was also apparent in women who did not have higher EPDS scores, until later, in the puerperium. However, as the maternal attitudes of the group with higher EPDS scores at 20-24 weeks were already higher than new mothers who had lower EPDS scores before the birth, their mean scores were still comparatively higher than that group in the weeks following the birth.

Important to an overall understanding of the process of change in different subgroups of women, it was found that new mothers who had higher EPDS scores at 10-12 weeks following the birth had a shift in maternal attitudes in the opposite direction to the other two groups, at that point in time. Rather than adopting attitudes towards motherhood that offered an opportunity to achieve some mastery over the new tasks by setting different goals and expectations of themselves, these mothers became more demanding and rigid in their appraisal and expectations of themselves as mothers. More
rigid demands on the self may have been part of their response to feeling out of control (Rotter, 1986). As discussed earlier, part of the reason for feeling out of control may have stemmed from their traumatic experience of childbirth, and the first weeks that followed the birth. It is argued that this then triggered an ambivalent response to the baby and exacerbated negative attitudes towards motherhood. Several women discussed negative feelings towards the baby that then led to other negative feelings, such as guilt in the qualitative enquiry interviews. Furthermore, as referred to earlier, some of the new mothers who had a higher EPDS score 10-12 weeks after the birth may not have had mentors or role models available to debrief them on their childbirth issues. If accessible, this home-based support may have assisted them to normalise their experiences and adapt to this very stressful time. Possibly related to the points raised regarding changes in feelings of control, the group of women with higher EPDS scores at 10-12 weeks after the birth continued to have increasingly more dysfunctional maternal attitudes throughout the period of the study. On the contrary, women who never had higher EPDS scores continued to have lower functional maternal attitudes up to six months after the birth and felt increasingly more in control of their lives after the birth.

7.4.5 Maternal Attitudes: Clinical Implications

Maternal attitudes changed positively over the time between the pregnancy and the first weeks following the birth in those who did not have higher EPDS scores at that time (10-12 weeks postnatal). It can be argued that this positive change in maternal attitudes created a psychological environment that was potentially less demanding, at a time of major transition and change. It may be that appropriate information can be provided during the antenatal stage. This could minimise the potential for expectations of self after the birth that exacerbate the possibility for feelings of failure as a mother (Elliott et al., 1989). Furthermore, there may be some benefit in early support in the puerperium. Although debriefing alone may not be the total answer, there is some evidence that regular and systematic child health nurse counselling, in the early weeks of motherhood, is efficacious (Holden, Sagovsky, & Cox, 1989). Support from other women, either individually or in groups, can alleviate some of the negative mood experienced by some new mothers in the early weeks after the birth (Clement & Elliott, 1999). This is important to address, as feelings of failure can have a major impact on other feelings, cognitions and consequently, relationships (Beck, 1976). Very importantly, the more negative attitudes towards motherhood, and the baby, experienced
by some new mothers may persist and create long-term difficulties for the mother-baby dyad (Webster et al., 1994).

7.4.6 Research Question 4: Personal Control

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally, at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time, during the study, on sense of personal control, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time, during the study) on sense of personal control, at Time 1, Time 2 and Time 3?

7.4.7 Personal Control: Hypotheses

It was hypothesised that women who never had higher EPDS scores during the course of the study would feel significantly more in control of their lives when pregnant, and at both times following the pregnancy, than women with higher EPDS scores at Time 3 postnatally; women who never had higher EPDS scores and women with higher EPDS scores at Time 2 postnatally would feel significantly more in control of their lives when pregnant than women with higher EPDS scores at Time 3 postnatally; and women with higher EPDS scores at Time 2 postnatally, would feel less in control, than either of the other two groups, after the birth at 10-12 weeks.

7.4.8 Personal Control: Summary of Findings

The hypothesis that there would be a significant difference in personal control, over time, within the groups, was upheld. However, pregnant women who never had higher EPDS scores generally felt less in control of their lives antenatally. This was not anticipated. However, this group felt increasingly more in control of their lives after the birth, at both times of assessment. This was despite the fact that they, like both groups who experienced higher EPDS scores postnatally, were also experiencing the challenges of new motherhood. These findings support Fleming et al. (1990) who found that women who were not clinically depressed, nevertheless felt more dysphoric and anxious.
prior to the birth, and up to one month after. These feelings may also be associated with feeling out of control (Beck, 1976).

Women who had higher EPDS scores six months after the birth also felt a much lower sense of personal control during the pregnancy. Unexpectedly, analogous to the group who did not have higher EPDS scores, they also felt more in control of their lives antenatally at 10-12 weeks postpartum. Contrary to their early experience of new motherhood, however, the group of women who had higher EPDS scores in the later months of the puerperium experienced a decreasing sense of control over their lives, by six months.

7.4.9 Personal Control: Discussion

One of the most interesting points was that women who had higher EPDS scores in the early weeks following the birth felt more in control of their lives than either of the other two groups antenatally. In contrast, by 10-12 weeks postnatal, they felt less in control of their lives than either of the others, at any time during the pregnancy or follow-up. This would be expected, as they were experiencing higher EPDS scores at this time. While they still felt less in control, by the final time of assessment, when the babies were approximately six months old, they felt somewhat more in control of their lives when compared with the group of women with higher EPDS scores at that later time. Nevertheless, the group of women with higher EPDS scores at Time 2 postnatally still felt less in control of their lives than they were since having the baby. These findings provide some evidence in support of Beck (1976) who proposed that loss of control is an important factor in the process of becoming depressed.

Consequently, after feeling more in control of their lives before the birth, the lack of control that the group of women with higher EPDS scores at Time 2 postnatally experienced in the weeks and months following the birth of the baby may have been an indication that were experiencing problems. Unanticipated difficulties, resulting in reduced confidence in their own mothering skills and abilities, in the first weeks after the birth (Littlewood & McHugh, 1997), can cause feelings of ambivalence about the mother role in some new mothers (Maushart, 1997). Less pleasure than expected from motherhood can also leave women feeling unhappy and unfulfilled (Allbright, 1993). It can be argued that these negative emotional feelings and thoughts then lead to self-deprecation and disparagement (Maushart, 1997) as women generally expect to feel good after childbirth (Lee, 1997) and believe other mothers are coping (Nicolson,
1998). These negative feelings ultimately have the potential to impact on new mothers’ relationships with their baby (Sinclair & Murray, 1998; Sharp et al., 1995; Walling, 1998) and their partners (Areias et al., 1996).

7.4.10 Personal Control: Clinical Implications

The findings indicate that assessing whether women feel more or less in control of their lives, at various times during the pregnancy and puerperium, can give a basic insight into their psychological and affective state at that time, as proposed by Beck (1976). An important point, highlighted by other researchers (Fisher et al., 1997; Nicolson, 1998), is that women may feel less out of control if they are empowered by changes in medical, clinical and social practices, during the time leading up to the birth, the birth itself, and the days following the event (Elliott et al., 2000; Lane et al., 1997).

7.4.11 Research Question 4: Self-esteem

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time during the study on self-esteem, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time, during the study) on self-esteem, at Time 1, Time 2 and Time 3?

7.4.12 Self-esteem: Hypotheses

It was hypothesised that women with higher EPDS scores at Time 2 postnatally would have significantly different self-esteem (lower) to women who did not have higher EPDS scores at Time 2 postnatally. Furthermore, this group (women with higher EPDS scores at Time 2) would have significantly different self-esteem (higher) to women who had higher EPDS scores later in the puerperium (Time 3), at two points of time; antenatally (Time 1) and again at Time 3, postnatally. However, it was proposed that at Time 2 postnatally both groups with higher EPDS scores in the postnatal period would have lower self-esteem than the group who had lower EPDS scores at every time.
It was also hypothesised, that women with higher EPDS scores at Time 3 postnatally would have significantly different self-esteem to the group with lower EPDS scores at every time (Time 1, Time 2 and Time 3).

7.4.13 Self-esteem: Summary of Findings

Self-esteem did not change significantly over time within groups, indicating that self-esteem was a relatively constant factor in women from pregnancy to six months postpartum. However, the analysis indicated some trend towards lower self-esteem following the birth in the group of women who had higher EPDS scores at 10 to 12 weeks postnatally. This is one indication that this group was experiencing additional stress, during an already difficult period. Nevertheless, they did not have significantly different self-esteem to the group with lower EPDS scores at every time.

An important point was that self-esteem between groups differed as a function of social support. This provided some evidence that the way women felt about themselves, and their competencies, was related to the perceived strength and efficacy of their relationships during pregnancy, and in the months following the birth. This point was highlighted in recent research on relationships during the pregnancy and puerperium (Matthey et al., 2000). Furthermore, after taking into account the effects of a past history and maternal social support, a strong and significant difference between the groups over time on self-esteem remained. It was shown that the significant difference between the groups was in the group of women who had higher EPDS scores six months after the birth. Overall, their self-esteem scores were significantly lower than either of the other two groups across time.

7.4.14 Self-esteem: Discussion

These findings indicate that the group of women who had higher EPDS scores in the first weeks following the birth was not significantly differentiated by self-esteem from groups of women who did not have higher EPDS scores before or after the birth. This is important, as it gives further emphasis to the point that self-esteem may not be a useful predictor in identifying the group of women with higher EPDS scores 10-12 weeks after the birth. This was highlighted by previous findings in this research.

However, the events that occurred between the first and second assessment clearly had an effect on the self-opinion regarding their efficacy and worth of women with higher EPDS scores 10-12 weeks after the birth. Importantly, though some of these
women no longer had higher EPDS scores six months following the birth their mean self-esteem was still lower than during the time before they had the baby. Yet both of the other groups of women appeared to have some increase in self-esteem in the intervening year between the first and third assessment times.

In contrast to the events experienced by the group of women who had higher EPDS scores at around 10-12 weeks, the group of women who had higher EPDS scores at six months postpartum experienced different trends in their perceptions of self. Prior to the birth, this group of women, who had higher EPDS scores at 20-24 weeks, had a significantly lower mean self-esteem than either of the other groups of women. However, in the first weeks after the birth, the group of women with higher EPDS scores six months following the birth appeared more confident initially, and had higher personal self-esteem, than at any other time during the study.

This pattern may be support for the idea that some women experience a "honeymoon period" following the birth, as highlighted earlier. It has been proposed that some women undergo a period of elation in the early postpartum period, possibly related to a mild episode of bipolar affective disorder. This may result from a combination of biological, psychological and emotional effects (Lane et al., 1997). However, it can be speculated that, as more time passes, other factors surface that may impact adversely on these new mothers. Poor perceived social support, and associated feelings of isolation, are some factors that can impact on mood during the puerperium (Barnett & Gotlib, 1988). Furthermore, comparatively higher expectations of themselves as mothers may gradually create, rather than reduce, stress. Linked to this, increasing worry over partnerships and other more practical problems, may also be additional issues that possibly trigger increased distress. Interestingly, Fleming et al. (1990) noted that women experienced a general decline in positive feelings towards their partners, from pregnancy to several months into the postpartum period. Furthermore, men are more likely to become depressed if their partner had a previous history of a mental health problem (Areias et al., 1996). These factors may compound to cause higher stress later, rather than sooner in the puerperium, in an additive model of stress (Brown & Harris, 1978). This may be exacerbated by an underlying diathesis in some new mothers.
7.4.15 Self-esteem: Clinical Implications

Self-esteem was comparatively stable within the groups. This is consistent with studies that have proposed that self-esteem is a relatively stable construct, although it can be influenced temporarily by traumatic and stressful episodes (Trzesniewski et al., 2003). As might be anticipated, from other evidence and theories on this factor, in relation to depression (Bednar et al., 1989; Hall, 1990), new mothers with higher EPDS scores later in the puerperium had significantly lower self-esteem than other new mothers. However, what was interesting was that self-esteem in the group of women who had higher EPDS scores 10-12 weeks following the birth could not be differentiated antenatally from women who did not have higher EPDS scores. As discussed in an earlier section, this indicates that self-esteem is not a consistent antecedent to a higher EPDS score occurring in new mothers during the early months after the birth. In determining women who may experience higher EPDS scores earlier in the period following the birth, other factors must also be considered in the evaluation of risk.

7.4.16 Research Question 4: Worry Over Everyday Stressors

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women with higher EPDS scores postnatally, at different times (Time 2 and Time 3), and women who do not have higher EPDS scores at every time, during the study, on worry over everyday stressors, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time, during the pregnancy and first six months of motherhood, within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time, during the study) on worry over everyday stressors, at Time 1, Time 2 and Time 3?
7.4.17 Worry Over Everyday Stressors: Hypotheses

It was hypothesised that worry would be lower in women who never had a higher EPDS score at any time in the study (Time 1, Time 2 and Time 3). Antenatally, women with higher EPDS scores at Time 2 postnatally would not have significantly different worry levels to women who never had higher EPDS scores during the period of the study. However, after the birth, women with higher EPDS scores at Time 2 postnatally would have significantly different worry levels to women who never had higher EPDS scores during the period of the study. The new mothers with higher EPDS scores at Time 3 postnatally would have significantly different worry levels to women who did not have higher EPDS scores at every time (antenatally at Time 1, postnatally at Time 2 and Time 3).

7.4.18 Worry Over Everyday Stressors: Summary of Findings

Despite the time of the study being a major period of transition and adjustment for these new mothers, worry over everyday stressors did not increase or decrease significantly within any of the groups, from the pregnancy to the puerperium. This supports the hypothesis that worry would be consistent in the women who did not have higher EPDS scores at any time during this study and women who had higher EPDS scores at Time 3 postnatally. However, the hypothesis that worry would not be more significant in women who had higher EPDS scores at Time 2 postnatally was not upheld. The findings highlighted that the level of worry was a relatively consistent factor that did not change significantly in groups of women as a result of any intervening event, such as the birth.

Furthermore, even after controlling for past history of a mental health problem and maternal social support, which may have been expected to mediate between level of worry and higher EPDS score, there was a significant difference between the three groups over time. The hypothesis that women who did not have higher EPDS scores, would worry less at each time than women with higher EPDS scores at Time 3 postnatally was supported.

However, women who had higher EPDS scores at 10-12 weeks following the birth were more worried both antenatally and postnatally about a range of issues, than either of the other two groups. This indicates women with higher EPDS scores at Time 2 in the postnatal period were excessively worried before, as well as after, the birth.
Review of the participants raw scores on the ESI measure used in this study indicated that the issues included the status of their past relationships, and expected changes in financial circumstances as a result of the pregnancy. While these results were not anticipated, as noted earlier, Gotlib et al. (1991) found some evidence of a link between more escape-avoidant behaviours. These can include worry in the antenatal period and the onset of PND. In contrast, the group of women who did not have higher EPDS scores at any time worried significantly less than either of the other two groups. This was both antenatally and postnatally. Although not significant, there was an indication that a past history of mental health problems modified the extent to which women worried over daily problems.

7.4.19 Worry Over Everyday Stressors: Discussion

It seems there is increasing evidence, that anxiety and depression have no clear boundaries (Piccinelli, Rucci, Ustun, & Simon, 1999). Anxiety is commonly reported to be associated with AND (Boyce & Mason, 1996; Shear & Mamman, 1995) and PND (Stuart, Couser, & Schilder, 1998). Nevertheless, there was no clear link with anxiety in this study from the verbal reports of the women with higher EPDS scores at Time 2 postnatally, when assessed before the birth. When asked in the protocol if they felt more anxious when pregnant, this group of women was more likely to reply in the negative. This may appear to be a paradox, as the cognitive experience of worry is often linked with the affective feeling of anxiety (Deffenbacher, 1978). However, Cox et al. (1982), also suggested that worry appeared to be associated with PND, yet anxiety did not predict PND at around three months postnatally in the same study. It was unclear how anxiety was measured or defined. It may be speculated that while women with higher EPDS scores at Time 2 postnatally, were ruminating over a range of practical issues, they did not associate their concerns with the concept of “anxiety” because they were generally feeling optimistic and in control before the birth. However, anxiety may have become an issue as the pregnancy progressed further.

It is also important to note that both groups who had higher EPDS scores in the postnatal period, and were more worried, did not have satisfactory social support when pregnant, as discussed earlier. It may be that there is a link between poorer social support and the extent to which women worry over a wide range of factors when pregnant. Unfortunately, it is not clear whether these women were more inclined to worry before the pregnancy, or whether worry was triggered by the impending birth in
some women. This is of particular interest in women who had higher EPDS scores at 10-12 weeks after the birth.

**7.4.20 Worry Over Everyday Stressors: Clinical Implications**

The index assessing worry over everyday stressors is a relatively simple measure to administer, and appears to predict effectively women who may be likely to experience higher EPDS scores at either time (Time 2 or Time 3 postnatally) following the birth. Importantly, the level of worry is comparatively stable over time, and can therefore be utilised for either predictive or assessment purposes.

**7.4.21 Research Question 4: Locus of Control**

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences, between groups of women with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time during the study on LOC, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time during the pregnancy and first six months of motherhood within the groups (Higher EPDS Time 2 and Time 3 postnatally, and women who do not have higher EPDS scores at every time, during the study) on LOC at Time 1, Time 2 and Time 3?

**7.4.22 LOC: Hypotheses**

It was hypothesised, that women with higher EPDS scores at Time 2 postnatally would have no significant differences in LOC levels to women who did not have higher EPDS scores at every time; new mothers with higher EPDS scores at Time 2 postnatally would have a higher internal LOC each time (Time 1, Time 2 and Time 3) compared to women with higher EPDS scores at Time 3 postnatally; and those new mothers who had higher EPDS scores at Time 3 postnatally would have a more external LOC than women who did not have higher EPDS scores at every time (Time 1, Time 2 and Time 3).
7.4.23 LOC: Summary of Findings

Surprisingly, after controlling for a past history of mental health problem and social support, there was no significant difference in LOC over time, between any of the groups. As such, only the first hypothesis was upheld. However, women who had higher EPDS scores 10-12 weeks after the birth did have a more external orientation than either of the other two groups at the first time of assessment. Furthermore, although not significant, there was a comparatively large difference in scores of women who had higher EPDS scores at Time 2 postnatally and the group who had higher EPDS scores at Time 3 postnatally.

7.4.24 LOC: Discussion

In considering why the LOC was not a significant predictor, it may be useful to note that a more external LOC is commonly found in younger, rather than more mature, people (Carton & Nowicki, 1995). It is therefore associated with younger age. The participants in this study had a mean age of 26 years, and this may be why fewer were likely to have a more extreme external LOC antenatally. Moreover, though a more external LOC was unusual in women in this study, adolescent women were not strongly represented in the sample of those who had higher EPDS scores, as found in some other studies (Cutrona, 1982; O'Hara et al., 1991). This is very interesting, and it is proposed that younger women were less likely to have higher EPDS and fewer chronic symptoms of depression because they had experienced fewer negative or adverse life events before the pregnancy. Linked to this, there was less potential for young women to have residual cognitive dysfunctions caused by previous adverse life events or previous mood disorders (Williams, 1992). Another important point related to this is that many teenage participants in this study had family supports during the period of the study.

Interestingly, while there was little difference in LOC in any of the groups antenatally, women who had higher EPDS scores 10-12 weeks after the birth tended to become more external, during the period of increased symptomatology. Dimitrovski et al. (1987) also found that women tended to become more extreme in their orientation, during the period of depression. It can be speculated that this process of externalisation may have occurred in response to feeling out of control, either due to the process of birth, as referred to earlier, or other factors surrounding the early weeks following the birth. It has been suggested that externalisation of adverse outcomes allows individuals the opportunity to deny responsibility and avoid the threat of anticipated failure.
(Russell, 1985). As such, utilising this as a strategy may have been self-protective. It may be speculated that it limited the impact on the self-esteem of women with higher EPDS scores at Time 2 postnatally. It was possibly one of the reasons why some women in this group appeared to have recovered spontaneously or at least had EPDS scores below the cut-off by Time 3 in the postnatal period.

7.4.25 LOC: Clinical Implications

Consistent with Rotter’s later emphasis on viewing behaviour in context (Rotter, 1990), it has been asserted that an external orientation can be more adaptive, where there is little opportunity for control (Strickland, 1989). Studies that have examined environments such as institutions, where residents had little control over their situation, found that external LOC was associated with better adjustment and feelings of satisfaction (Brewin & Shapiro, 1984). It can be argued that pregnancy and the early postnatal period are also times where little personal control can be exerted. As such, an external LOC may not be overly disadvantageous to psychological health at this time. It may be important for practitioners to consider and debate the implications of this when working with women and devising programs to support them. This will need to be considered in context, as some issues around childbirth, such as medical management during the process of childbirth, may not be controllable.

7.4.26 Research Question 4: Attributional Style

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences between groups of women, with higher EPDS scores postnatally at different times (Time 2 and Time 3) and women who do not have higher EPDS scores at every time, during the study, on attributional style, at Time 1, Time 2 and Time 3?

After controlling for past history of a diagnosed mental health problem and maternal social support, are there significant differences over time during the pregnancy and first six months of motherhood within the groups (Higher EPDS Time 2 and Time 3 postnatally) and women who do not have higher EPDS scores at every time, during the study) on attributional style at Time 1, Time 2 and Time 3?
7.4.27 Composite Attributional Style: Hypotheses

The hypotheses were that women with higher EPDS scores, at Time 2 postnatally, would have significantly lower composite ASQ antenatally, to the group of women who never had higher EPDS scores. That is, new mothers who had higher EPDS scores at Time 2 postnatally would have significantly higher composite ASQ to women who had higher EPDS scores at Time 3, when assessed antenatally (Time 1) and again when assessed at Time 3 postnatally. In addition, it was predicted that those women with higher EPDS scores at Time 3 postnatally would have significantly lower composite ASQ, at each time (Time 1, Time 2 and Time 3) when compared to women who did not have higher EPDS scores at every time during the period of the study.

7.4.28 Composite Attributional Style: Summary of Findings

The hypotheses on attributional style differences were not upheld. Nevertheless, though the interaction between composite attributional style and group was not significant, there were some interesting trends. Of note was that a more dysfunctional composite attributional style after the birth was significantly associated with a higher depression score, at both times in the postnatal period. During the pregnancy, women who first had higher EPDS scores at 10-12 weeks following the birth had higher global attributional scores than either of the other two groups. This indicated that they were more likely than the other groups to be making positive attributions during the pregnancy. The implication was that they were less likely to be blaming themselves for negative events, and were more self-rewarding, for positive events. However, this group of new mothers with higher EPDS scores at 10-12 weeks after the birth was attributing responsibility to themselves for negative events during the actual time of lower mood. This trend, to show a preference for a more negative attributional style, continued at six months after the birth. A similar shift was also noted in those with higher EPDS scores at Time 3 postnatally. The attributional style of this group was increasingly negative following the birth, and was most dysfunctional during the period when they had higher EPDS scores at six months after the birth.

7.4.29 Composite Attributional Style: Discussion

Importantly, a more dysfunctional global attributional style was noted in both groups of women with higher EPDS scores following the birth. However, any conclusions must be tentative, as these findings did not reach significance. Nevertheless,
as theorised by Abramson et al. (1978), a more negative attributional style, at least for women who had higher EPDS scores six months after the birth, preceded the onset of increased symptoms of depression. For those who had higher EPDS scores at 10-12 weeks following the birth, a more dysfunctional attributional style was proximal to a higher EPDS score. This was therefore associated with, rather than predictive of, the episode of increased distress. It can be speculated that this reflected the helpless feelings experienced, during the period of higher EPDS scores. These were discussed earlier, in relation to perceived maternal competence. There have been inconsistent findings in regard to the importance of attributional style as an antenatal predictor of PND and related disorders. While O’Hara et al. (1982) found attributional style to be a significant predictor of PND, O’Hara et al. (1984) and Whiffen (1988) indicated that attributional style was not significant in predicting PND and related disorders. The results in this study, therefore, are consistent with the later research. These findings beg the question as to why attributional style has had mixed results, when assessed in new mothers. There may be several reasons.

Firstly, women with higher EPDS scores at 10-12 weeks following the birth had more positive attributional styles antenatally than either of the other two groups. These results lend support to other evidence, accumulated in this study, that this cohort of women was generally feeling confident and in control in the antenatal period. However, a more negative attributional style was noted in the weeks after the birth in this group. This was in the same period that this group of women with higher EPDS scores at Time 2 was reporting other negative thoughts and feelings. Women who had higher EPDS scores around six months after the birth also became more dysfunctional in their attributional style after the birth. However, this preceded a higher EPDS score. This sequence was more in keeping with the process of depression, described by Abramson et al. (1978). These results lend further support to the idea that studies that have failed to separate groups of women with higher EPDS scores, at different times following the birth, may have had mixed findings. It is proposed that these were confounded, because women were at different cognitive stages in the process of increased distress. The findings in this study further underpin the theory that women with higher EPDS scores, at different times in the puerperium, are experiencing different symptoms, at different times during the process.

Nevertheless, a second issue is that the measure itself may have some problems. There is concern in the literature regarding the reliability and various aspects of validity.
of the attributional style measure (Butters, McClure, Siegart, & Ward, 1997). The repeated-measures analyses conducted in this study found that the attributional style score was not consistent within groups, indicating that this modified measure was potentially invalid for this level of individual group analysis. A further salient factor was that the scale was substantially modified, because women had problems in interpreting the questions. It became clear during the pilot that there were two issues. The first was face validity, in that this cohort of women had great difficulty in relating the questions to their own situations, when using the imaginary scenarios posed. Some women questioned the relevance of the situations. Others experienced difficulty in understanding what the questions required of them. A second point was that it was clear, from verbal responses during completion of the questionnaire, that some women had misconstrued the meaning of the question, or were inconsistent in their written responses. This was despite the fact that a researcher was present, to clarify the questions.

7.4.30 Composite Attribution Style: Clinical Implications

Other researchers have experienced similar difficulties with the administration and content of the instrument. Some have devised modified questionnaires, asking the respondent to use their own experiences when formulating their responses (Butters et al., 1997). A large longitudinal study on motherhood, conducted at the women’s hospital in Perth, revised the scenarios to incorporate those specifically related to motherhood, in an attempt to overcome these issues. However, women continued to have problems with responding, and the use of this questionnaire was discontinued (D. Wilmoth, personal communication, July 1999). While the ASQ could have been discarded in this study, it was decided that it should remain to inform other researchers, who may attempt to modify the scale for future research into cognition.

7.4.31 Question 4: Summary of Discussion

In summary, there were some important differences in the way the discrete groups changed over time. Those with higher EPDS scores at 10-12 weeks following the birth were more likely to be optimistic and perceive they were in control of their lives before the birth. They were generally looking forward to motherhood and had few concerns about their ability to cope, although they had some daily worries over relationship issues and other factors. However, during the period they experienced
higher EPDS scores, at 10-12 weeks after the birth, this group expressed more dysfunctional maternal attitudes and a negative attributional style. These thoughts, feelings and attitudes potentially created more demands and additional stress on themselves, during this very difficult time. As would be expected, increased expectations of themselves in the mother role, in the early weeks after the birth, was also associated with feeling less in control. This may have been related to their experiences of the birthing process, or other stressors, related to the major transition to motherhood.

However, women with higher EPDS scores in the later puerperium experienced a different cognitive pattern of shifts and changes. New mothers, with an onset of higher EPDS scores later in the postnatal period at 20-24 weeks, felt less in control of their lives during pregnancy. They had lower self-esteem and higher, more dysfunctional, maternal attitudes. Nevertheless, even though it can be argued that social and environmental stressors potentially increased during the intervening period, the early puerperium resulted in an increase in their confidence. This group, who had higher EPDS scores at Time 3, felt more in control of their lives at 10-12 weeks after the birth. Furthermore, at Time 2, women with higher EPDS scores later in the puerperium, were more similar in profile to women who never had higher EPDS scores, than at any other period in the study. In effect, women who had higher EPDS scores at Time 3 had similar trends in some psychological processes in the first weeks following the birth to women who never had higher EPDS scores. This was reflected in that they were feeling more in control of their lives and experienced changes to their maternal attitudes in a more positive direction, from the antenatal to postnatal period. Their self-esteem was also higher than at any other time in the study. These factors may have been important in delaying the onset of higher EPDS scores, for this group of women. This was despite the fact they had significantly lower self-esteem, and were more likely to worry, than women who never had higher EPDS scores.

7.5: Research Question 5

This question asked the extent to which participants in each postnatal group (Time 2 and Time 3 onset) were correctly classified, based on the cognitive factors. It also asked which of the variables included in the analysis best discriminated between the two groups of women. The question was posed at each time during the study (antenatally at Time 1, and postnatally at Time 2 and Time 3).
Research Question 5: Time 1

To what extent does the cognitive profile indicate the two groups (Time 2 and Time 3) are correctly classified at Time 1 antenatally?

Which of the cognitive measures best discriminate between women who have higher EPDS scores commencing at different times postnatally (Time 2, Time 3) when assessed at Time 1?

Research Question 5: Time 2

To what extent does the cognitive profile indicate the groups (Time 2 and Time 3) are correctly classified at Time 2 postnatally?

Which of the cognitive measures best discriminate between women who have higher EPDS scores commencing at different times postnatally (Time 2, Time 3) when assessed at Time 2?

Research Question 5: Time 3

To what extent does the cognitive profile indicate the groups (Time 2 and Time 3) are correctly classified at Time 3 postnatally?

Which of the cognitive measures best discriminate between women who have higher EPDS scores commencing at different times postnatally (Time 2, Time 3) when assessed at Time 3?

7.5.1 Question 5: Hypotheses

It was hypothesised that women with higher EPDS scores at Time 2 in the postnatal period (10-12 weeks after the birth) and women with higher EPDS scores at Time 3 postnatally (20-24 weeks after the birth) would be correctly classified by group, antenatally (Time 1), that is, prior to the onset of higher depressive symptoms after the birth.

Furthermore, it was hypothesised that new mothers with higher EPDS scores at Time 2 postnatally would be significantly discriminated from women with higher EPDS scores at Time 3 postnatally, on the variables of interest. It was anticipated that this would occur in the following way:

Women with higher EPDS scores at Time 2 would have the following profile: LOC (more internal); attributional style (more functional); personal control (feeling
more in control of their lives); worrying level (less worried); maternal attitudes (less dysfunctional); and self-esteem (higher).

It was hypothesised that women with higher EPDS scores at Time 2 postnatally, and women with higher EPDS scores at Time 3 postnatally, would again be correctly classified by group when assessed 10-12 weeks after the birth (Time 2). In addition, the group of women with higher EPDS scores at Time 2 postnatally would be significantly discriminated from the group of women with higher EPDS scores at Time 3 postnatally, on two of the variables: LOC (more internal); and self-esteem (higher).

At Time 3 postnatally, it was again hypothesised that women with higher EPDS scores at Time 2, and women with higher EPDS scores at Time 3, would be correctly classified by group. At this time, new mothers with higher EPDS scores at Time 2 postnatally, would be significantly discriminated from women with higher EPDS scores at Time 3 postnatally. This would be in the following way: on LOC (more internal); attributional style (more functional); personal control (feeling more in control of their lives); worrying level (less worried); maternal attitudes (less dysfunctional); and self-esteem (higher).

### 7.5.2 Question 5: Summary of Findings

Notably, all of the women with higher EPDS scores at the first postnatal time (Time 2) were correctly classified antenatally, indicating that the combined cognitive variables included in the analysis characterised the differences within the groups (Drew & Bishop, 1999). Furthermore, 75% of the group of women who had higher EPDS scores at the final postnatal assessment was also correctly classified at Time 1, when the women were pregnant. While this finding is less convincing, it is also positive, as it indicates that a large percentage of women in this group who have higher EPDS scores much later in the puerperium (Time 3) can be characterised by their cognitive profile, before the birth. This was also shown in the regression analyses. The variables that best discriminated between the two groups, antenatally were personal control (women with higher EPDS scores after the birth at Time 2 felt more in control of their lives antenatally) and self-esteem (women with higher EPDS scores after the birth at Time 2 had higher self-esteem antenatally). While the groups did not differ antenatally on any of the other cognitive factors, the main function was significant, and accounted for more than 70% of the total explained variance between the groups. As such, only 30% of the
variance between the groups was explained by other factors. The hypotheses for Time 1 were, therefore, partly supported.

These findings reveal that women feeling less in control of their lives and with significantly lower self-esteem before the birth, who have higher EPDS scores later in the puerperium, can be discriminated antenatally from those who are more likely to have higher EPDS scores in the first 10-12 weeks following the birth. Furthermore, the profile of cognitive variables characterised all women in the group. It also classified 75% of the group with higher EPDS scores at Time 3 postnatally. This is a vital point, as it indicates, again, that there are significant and measurable differences between women who may have higher EPDS scores in the puerperium. Furthermore, these can be identified during the period before the birth. At this time, pregnant women are easily accessible to practitioners in the community, and assessment and follow-up procedures can be implemented.

The classification of groups, performed during the analyses at Time 2 postnatally, found that the combined cognitive factors in the group of women with higher EPDS scores at the first postnatal stage (Time 2) were less clearly differentiated from the other group. This further supported indications from other analyses that some of the women with higher EPDS at Time 2 postnatally were now more cognitively similar to the other group than at the antenatal stage. This is a salient point, as it indicates that women, who previously appeared to be clearly differentiated from women who were already more cognitively vulnerable in the antenatal period, were now presenting with similar thinking styles to women who had a pre-existing vulnerability. Hence, the two groups were more cognitively similar at this time than anticipated, and the hypotheses were not upheld.

7.5.3 Question 5: Discussion

The factors that best discriminated between the two groups were personal control and LOC. In reviewing the mean changes in groups of women overall, from the antenatal to the postnatal times, it seems that the most important change was that women who had higher EPDS scores at 10-12 weeks following the birth felt significantly less in control of their lives at that time. In contrast, women who had higher EPDS scores later in the puerperium felt much more in control of their lives, after the birth. This reversal of feelings of personal control, in both groups, was an important finding. It indicated their perspectives on control over their lives were
negatively associated with their depression scores. As noted earlier, this provides some evidence in support of the process of depression posited by Beck (1976). It was interesting to observe that, overall, the two groups did not differ cognitively to any significant extent at 10-12 weeks after the birth. This indicates that women who had higher EPDS scores at either time in the puerperium were displaying relatively similar cognitive group profiles on the combined measures postnatally. This finding gives further support to earlier results in this study that indicate that both groups of women who have higher scores in the puerperium have some cognitive dysfunction after the birth. Nevertheless, women with higher EPDS scores later in the puerperium (Time 3) were not detected at Time 2 by the EPDS measure. It can be speculated that one reason for this was that they felt in control and confident at this time.

The LOC further differentiated the two groups to a greater extent than any of the other variables. This was primarily because women who had higher EPDS scores six months following the birth shifted towards a more internal orientation during the early period following the birth. This occurred as the other group (with higher EPDS scores at Time 2) simultaneously moved to a more external orientation. This shift, proximal to the birth, implies that the group of new mothers with higher EPDS scores at Time 3 postnatally was generally more likely to report more responsibility for outcomes to themselves. This process, of internal attribution for outcomes, possibly enabled this group to self-appraise more positively at this time, and also contributed to their more affirmative emotional state. As noted previously, Lane et al. (1997) have proposed that some women experience a period of elation following the birth.

In considering the findings on LOC, it is interesting to note that in several studies on the role of LOC in depression around childbirth, the raw scores have been dichotomised. Women have been allocated to either external or internal LOC groups, based on their scores being either above or below the total group mean (Dimitrovsky et al., 1987). If this method had been applied in this study, when both groups were assessed 10-12 weeks after the birth, a similar outcome would be observed. Women with higher EPDS scores at Time 2 postnatally would be classified as “more external”, while those with a higher EPDS score at Time 3 postnatally would be categorised as “more internal”. This method of analysis may provide some evidence for an association between LOC types (internal and external) with measures of depression. However, it is clear from this study that the results of such an analysis are very limited without consideration of other factors. Differing methods used to analyse the data may be one
reason why there are conflicting findings on the role of LOC in depression, and the evidence for a role for this factor in PND and related disorders is unclear and inconsistent (O’Hara & Swain, 1996).

7.5.4 Question 5: Clinical Implications

The dynamic shifts in self-appraisal of responsibility for outcomes and feelings of control are important considerations in assessment and program planning for new mothers who may have higher EPDS scores, following the birth. In effect, the group who had higher EPDS scores at Time 3 (20-24 weeks after the birth) was feeling positive and in control during the first months of the puerperium. They were more likely to see themselves as being responsible for the outcome of situations. This was at a time when they were generally functioning better than either during the pregnancy, or later, in the period after the birth. This effect may be similar to that found by Dimitrovski et al. (1987) who noted that there was a trend towards a more extreme internal or external orientation after the birth, in women who suffered from PND. It also links to the idea that some women may feel elated in the weeks following the birth (Lane et al., 1997). It may be that the positive feelings, experienced by women at this time, can be considered when planning early intervention and monitoring programs. These strategies may have some role in minimising the onset of later distress.

At Time 3 (20-24 weeks after the birth), the group classification indicated that more of the women who had higher EPDS scores at the final postnatal assessment time were characterised by the combined cognitive profile, reflecting that more of this group were reporting similar cognitive styles during the period of highest distress. Interestingly, the women with higher EPDS scores at Time 2 postnatally were almost all correctly classified by their cognitive profile at six months. Yet, half of the group who had higher EPDS scores at Time 2 postnatally had recovered spontaneously by the third point of assessment (had EPDS lower than 10). Remission of symptoms has also been found in other longitudinal research (Kumar & Robson, 1984). This highlights the importance of offering a range of interventions. Since some incidences of higher EPDS scores appear to resolve spontaneously over time, more specific assessments may be required to differentiate this subset. Medication, CBT or other treatments may not be necessary for all women presenting with increased symptoms of distress in the first months after the birth.
However, some of the women in the group, who had higher EPDS scores at Time 2 postnatally, were still clearly cognitively vulnerable and at risk of ongoing distress later in the puerperium. This was confirmed by the univariate comparison of factors. This analysis indicated that the group of women with higher EPDS scores at Time 2 postnatally only differed from the other group on one factor. Those with higher EPDS scores at Time 2 postnatally had higher mean self-esteem. They were therefore similar to the later onset group on other important cognitions. In considering the relevance of this, it is important to note that the women with higher EPDS scores at Time 3 postnatally, were at their most distressed at this time, and therefore were more likely to have associated increased cognitive dysfunction (Williams, 1992).

The similarity of cognitive styles between the two groups at Time 3 postnatally is important. It highlights that some of the group of women with higher EPDS scores at Time 2 postnatally continued to experience comparatively similar cognitions to those who had higher EPDS scores at six months after the birth. Both groups were worrying excessively over everyday stressors and had more dysfunctional maternal attitudes. Both groups also felt less in control of their lives and had a more negative attributional style. Given these findings, it is clear that the group of women with higher EPDS scores at Time 2 postnatally remained in a relatively susceptible cognitive-affective state. These findings provide some further evidence for the idea that some people have residual dysfunctional cognitions after an acute episode of emotional distress is resolved (Nue et al., 2001). This supports earlier proposals that there is a need for some early community-based intervention with women experiencing higher EPDS scores, after the birth. This may minimise the possibility of chronic ongoing depression in some women, particularly those who do not seek support (England et al., 1994).

7.6: Research Question 6

The last question asked whether a higher EPDS score postnatally was more likely to be associated with other factors known to be important to PND. Some of these factors were also discussed by women who had experienced PND and participated in the consultation process. These included having more relationship difficulties, perceptions of a more traumatic birth, mixed feelings about motherhood and feeling isolated and alone.
**Research Question 6:**

Are groups of women who had higher EPDS scores postnatally more likely than those who did not have higher EPDS scores at every time to be significantly associated with factors known to be important to PND and the family relationships at each time (Time 1, Time 2 and Time 3)?

### 7.6.1 Question 6: Hypotheses

It was hypothesised that women with higher EPDS scores postnatally (at Time 2 and Time 3) would be more likely than those who never had a higher EPDS score to feel more ambivalent about motherhood before the birth. It was also proposed that these two groups would be more likely to perceive themselves as having had a traumatic birth. It was anticipated they would have more breastfeeding problems and have more negative feelings about motherhood. Women with higher EPDS scores postnatally would also perceive they had more problems with their partner relationship and less support from their social system.

### 7.6.2 Question 6: Discussion

Comparing women who never had higher EPDS scores with the two groups who experienced higher EPDS scores for the first time at different stages of the puerperium indicated some important differences within the groups on factors that are thought to contribute to PND. These have implications for practitioners in devising programs for women with higher EPDS scores, in both the antenatal and postnatal periods.

In the antenatal assessment, significantly more women with higher EPDS scores at six months postnatally reported a past history and more had a family history of a mental health problem than expected. Two women in the group with higher EPDS scores at 10-12 weeks after the birth reported they had a past history of a mental health problem. Neither of them had been prescribed specific treatment for this condition before the pregnancy. In contrast, a third of women with higher EPDS scores later in the puerperium at 20-24 weeks had been prescribed some form of previous treatment.

The group of women with higher EPDS scores 10 to 12 weeks postnatally included more women than expected who perceived they had limited social support during the pregnancy. Importantly, significantly more of the women who had higher EPDS scores six months postnatally felt ambivalent about the pregnancy. This is now
thought to be an issue for the later relationship between the mother and the baby (Cooper & Murray, 1998; Sharp et al., 1995; Walling, 1998). While more new mothers who had higher EPDS scores 10-12 weeks after the birth were single compared to low scoring women in the antenatal stage, few reported problems with their partner during the pregnancy. This changed after the birth.

At Time 2 postnatally, more women in the group who had higher EPDS scores 10-12 weeks after the birth were aware they had some difficulties. They were more likely to report, anecdotally, that they had experienced a significant mood change during the pregnancy. Many also indicated that they had experienced low mood following the birth. More than expected also claimed they had suffered the blues for an extended period following the birth (Areias et al., 1996). These findings provide some evidence in support of the view that women can accurately report on their affective state in retrospect (Kumar & Robson, 1984). Perhaps related to the mood changes experienced, women with higher EPDS scores at Time 2 perceived they had increased sleep disturbance (over and above what they expected as new mothers).

All of the women with higher EPDS scores at Time 2 postnatally stated that they believed they had experienced undiagnosed PND, yet none actively sought professional support. Therefore, despite all of their difficulties, none of the women with higher EPDS scores at Time 2 postnatally was having any specific treatment for a mental health problem, at that time. Nevertheless, most were aware there were avenues for professional and community supports, if they wanted to access them. For example, the woman with the highest depression score on the EPDS (19) reported she had consulted her GP on several occasions on unrelated issues. This again provides some evidence in support of other research where it was found that women tend to minimise the symptoms of depression (Righetti-Veltema et al., 1998). It also ties in to findings from other studies that found that women often do not seek professional help in the first weeks after the birth (Brown et al., 1994; Thompson et al., 2002).

Importantly, at a time when new mothers most need to feel supported, more of the women with higher EPDS scores at Time 2 or Time 3 postnatally were feeling isolated and alone. This was possibly associated with a belief that they had limited social support (Barnett & Gotlib, 1988). As has been found in other studies, the focus of their social needs, at this time, was more likely to be linked to their relationship with their partner (Stuchbery et al., 1998). Unfortunately, significantly more of the women who had a higher EPDS at Time 2 claimed they were having relationship problems at
this time. The main reasons given by more than 50% of the women in this group, were a lack of physical and emotional support, task sharing and help with the baby. Other reasons included partner jealousy or resentment of the focus of the attention to the baby. Similar findings were indicated in a study on the role of fathers in the puerperium (Turner & Kowalenko, 1997). A few of the women also reported other issues, such as cultural differences on child-rearing practices, financial problems and sex problems. One woman reported ongoing physical abuse and another ongoing infidelity. Many of these issues in the partner relationship have been found in other studies (Kumar & Robson, 1984; Delmore-Ko et al., 2000; Webster et al., 1994).

It may well be that some couples decide to have a child in the hope of cementing their relationship. Unfortunately, it appears that a poor partner relationship is not improved by the birth of a child (Delmore-Ko et al., 2000). On the contrary, in the first few weeks and months, relationship problems appear to be exacerbated. This contributes further to the low mood and anxiety that some women experience around this time. Some of the main contributing factors are linked to expectations of each other, within the partnership (Belsky & Rovine, 1990). Many women, antenatally, claimed that their partners would help with household chores and management of the baby, far more than the partner was able, or willing, postnatally. This was demonstrated by participants' responses, related to their expectations of instrumental support from the partner, on the maternal social support measure.

In cases where women were single, it may be that there was a relationship between poor support and this factor. Researchers found that marital status emerged as the strongest predictor of support from the father (Sagrestano et al., 1999). Less commitment by the father may therefore be linked to marital status. Certainly, this perceived lack of commitment leads to tensions between couples and unresolved difficulties can impact upon the mother-infant interaction (Cooper & Murray, 1998; Milgrom & McLeod, 1996).

In both groups of women with higher EPDS scores postnatally, around 20% more believed that they had experienced a difficult or traumatic delivery, than had been subjected to a medical intervention, during the process of giving birth (according to the hospital medical records). This perception may have been one of the reasons that women with higher EPDS scores at 10-12 weeks after the birth were found to feel less in control when assessed in the postnatal period. Perhaps related to the perceived traumatic experience, as well as the other factors, more also reported that they had
breastfeeding difficulties and bonding problems (Barclay & Lloyd, 1996). This also links to findings that these women had higher, more dysfunctional, maternal attitudes. More women in the higher scoring groups also perceived that they had financial problems compared to the group of women who did not have higher EPDS scores. This may be one of the reasons that these women worried more throughout the period of the study. Nevertheless, the reported income levels were relatively similar between the groups.

At six months following the birth, more women in the group with higher EPDS scores postnatally in the first weeks following the birth (Time 2) continued to report negative perceptions of their own psychological state. They also identified a range of issues around childbirth, even though half no longer had higher EPDS scores at six months. More continued to report that they had experienced a significant mood change since the birth. More also believed they had suffered the blues for an extended period following the birth. They also consistently reported they had experienced a difficult, or traumatic, birth. Not surprisingly, then, around 40% of women with higher EPDS scores at Time 2 postnatally, had mixed feelings about motherhood. To some extent, this ambivalence may also have been linked to circumstantial issues, as more continued to report they had financial problems. Nevertheless, the mean income of this group was better than some of the other groups of new mothers.

However, there were also some improvements in a range of important areas at six months following the birth for this group. None of the women with higher EPDS scores at Time 2 postnatally felt they had bonding problems with the baby at six months. This is consistent with findings by Fleming et al. (1990). They found that feelings towards the baby improved over time. Secondly, fewer had relationship problems than at the earlier period following the birth. This may have been related to the point that none were now single and they felt more secure (Sagrestano et al., 1999). However, another explanation may be that this group of new mothers was more accepting of the reality, and limitations, of partner support. Furthermore, at this point, the baby was more likely to be settled into a routine, which may have had a positive effect on the parental relationship.

Significantly more of the group of women who experienced a later onset of higher EPDS scores at the six-month period following the birth also perceived they had a difficult or traumatic delivery. This group had significantly more women than expected with mixed feelings about motherhood. However, there were key differences
between the two groups of women who had higher EPDS scores at different times postnataally. More women in this group continued to have more sleep disturbance (over and above what they expected as new mothers). They were also more likely to report having poorer social support and claimed to have increased relationship problems later in the puerperium. This had been found in other studies (Fleming et al., 1990; Milgrom & McLeod, 1996).

7.6.3 Question 6: Clinical Implications

The comparison between women with higher EPDS scores and those who never had higher EPDS scores indicates that women with higher EPDS scores were already demonstrating differences in mood and affect, as well as other factors, prior to the birth. Administering a checklist of relatively simple questions (Appendix 3, antenatal details and Appendix 4, postnatal details) can readily identify some of these. Given that women are experiencing a major transition, it may be that some would benefit from antenatal classes, focusing more specifically on emotions and cognitions (Elliott et al., 1989).

Postnataally, it appears that though the vast majority of women experiencing increased symptoms of depression, were aware that they could access specialised support services, few did so. Child Health Nurses have opportunities to engage new mothers, and offer support and information in a “normal” setting with other new mothers. This strategy may make a great difference to the way women perceive and experience motherhood (Gerrard et al., 1993).

7.7: Summary

This study is the first of its kind in this area, to explore systematically the processes of changing cognitions in the course of more depressive symptoms, during a period of major transition in new mothers over time. It raises some issues in terms of the methodology used to explore mental health problems generally, as well as during the time around new motherhood. This study also highlights the issue debated in the literature of the role of cognitions as antecedents, or associated, factors in depression and other disorders (Teasdale, 1996; Williams, 1992). The findings point to the idea that interpretation of results in studies, requires further enunciation and consideration in respect to prediction versus association. Furthermore, while the disquiet over classification of a range of affective disorders is already articulated by some examining
other disorders, this study further informs the debate on labelling and classification in PND, alongside a few other researchers (Brugha et al., 1998; Elliott, 1999; Small, Lumley, Donohue, Potter & Waldenstrom, 2000).

This study has provided further evidence that the period around the time of childbirth is the trigger for the first episode of an acute emotional disturbance in the life of some new mothers (Brockington, 1996; Cooper & Murray, 1988). For the cohort of first-time mothers in this study, this was the first episode of higher distress for the majority of the women with higher EPDS scores at both times (Time 2 and Time 3) following the birth.

A further salient factor to emerge from this research is that there is a further subset of women who will experience a higher EPDS in the later months after the birth. Furthermore, unless additional measures are used to assess women at the commonly used time for screening of new mothers, this subset may be missed. The specifier for postpartum onset requires that the onset be within four weeks of the birth (DSM-IV, 1994). This would preclude at least half of the women who experienced higher EPDS scores, and periods of increased cognitive vulnerability, during the first six months after the birth. Hence, definition may be problematic and need further consideration. Perhaps more importantly, however, is the need to identify women promptly. Poor identification and treatment of depressive symptomatology is a key issue in later chronicity (England et al., 1994).

For those women who were cognitively dysfunctional and experienced higher EPDS scores in the early weeks after the birth the importance of worry in the predictive regression model indicated that these women were very concerned about a range of issues. Circumstantial factors were certainly important in the pregnancy, with many women worrying about the status of their relationship (being de facto or single), owing money, feeling safe in their neighbourhood, and not having enough time to fit everything in that they wanted to do. This last point may have been related to the fact that many were working full-time during the pregnancy.

However, these concerns were not directly linked to problems in the relationship, as few indicated this as an issue. However, they may have been linked to the timing of the pregnancy. Some of the women who were single when they became pregnant reported an unplanned pregnancy to be a specific issue. This also had implications for their financial situation. Concerns regarding moving from two to one income, in times of high commitments such as a mortgage and car repayments, were
causes of some worry. For some women, the status of their relationship appeared to be a problem, at a time when security and safety needs are of primary concern - when they are pregnant with their first child. Furthermore, and perhaps linked to the issues just highlighted, there were indications that more of the women who had higher EPDS scores after the birth were ambivalent about the impending child.

Interestingly, other measures typically associated with PND and related disorders, such as lower self-esteem (Hall et al., 1996) a past history of a mental health problem (O’Hara & Swain, 1996) and higher, more dysfunctional maternal attitudes (Warner et al., 1997), were not significant in predicting a higher EPDS score during the early weeks after the birth. Nevertheless, a very important point is that during the period when this group of women had higher EPDS scores their cognitive profiles were similar to the Time 3 group, who were more cognitively dysfunctional before the birth. As highlighted by the results of the investigation, during the period of higher EPDS scores at 10-12 weeks after the birth, this cohort of women was experiencing a range of disturbed cognitions.

Indeed, women had higher, more dysfunctional, maternal attitudes, when they had higher EPDS scores. Dysfunctional maternal attitudes are important factors that are likely to influence many aspects of women’s relationships in the postpartum period. They indicate a preoccupation with an expected maternal “performance” that is rigid and idealistic. This maternal style may be particularly exacerbated by postnatal stress resulting from the perception of poor social support (Grazioli & Terry, 2000). This study found some evidence in support of this link, as maternal attitudes varied, as a function of perceived low levels of instrumental and emotional support. This highlights that these factors play a mediating role in how women perceive themselves as mothers, and affect their interactions with the baby, both before and after the birth. There was some evidence that some interpersonal difficulties, and other problems, were occurring during this period. These women felt less in control of their lives, claimed to feel isolated and alone, had more perceived relationship problems and felt less supported. This emphasises the important function of appropriate, and meaningful, social support, to the pregnant woman and new mother.

Dysfunctional maternal attitudes were also associated with a more negative attributional style and becoming more external in their LOC preference. The thoughts, feelings, behaviours and attitudes associated with these dysfunctional factors have the ability to result in long-term difficulty for the woman, as well as her relationships with
her partner and baby. Very importantly, women with higher EPDS at 10-12 weeks after the birth were also personally aware that they were experiencing low mood and increased anxiety. Nevertheless, few attempted to seek additional community, or medical, supports. This provides other evidence that new mothers with higher EPDS scores may engage in avoidant behaviours, as noted in various studies (Brown et al., 1994).

Overall, this group of women did not have significantly lower self-esteem than women who did not have higher EPDS scores when they were compared before the birth. Even so, the self-esteem of the group with higher EPDS scores at Time 2 postnatally was depleted by the experiences surrounding new motherhood. This was indicated by the mean score of this cohort at both times of assessment postnatally. Indeed, it may be that some women with higher self-esteem, who are also more inclined to worry, are more likely to experience some level of depression in times of adaptation and change because of the use of avoidant behavioural strategies. One method of successfully coping with high stress situations is avoidance (Bednar et al., 1989). Some women with higher self-esteem may use this strategy as a way to minimise the potential for failure. However, once a woman is committed to having a baby, she cannot easily escape from the physical reality of the situation, and it would be necessary to engage other coping strategies that may replace physical evasion, such as excessive worry. Researchers speculate that worry may serve to hinder complete processing of more disturbing thoughts or images. It has the effect of reducing, or averting, negative emotion and blocks emotional processing by preventing the full accessing of fear information in memory. This can be very reinforcing (Borkovec et al., 1983) and may have been a more acceptable method of dealing with the issues of motherhood, rather than admitting failure and the need for support.

Some research found that high self-esteem was the best predictor of lower levels of depressive symptoms found in late pregnancy and the early postpartum (Fontaine & Jones, 1997). An important point linked to this is that there is some evidence that higher self-esteem is strongly associated with a shorter period of depression (Sherrington et al., 2001). The current study provided some support for these findings. Some of the new mothers with higher EPDS scores at 10-12 weeks postnatally recovered spontaneously within a few weeks of the 10-12 week assessment. This is similar to findings by other researchers (Kumar & Robson, 1984). Indeed, half of the women with higher EPDS scores at 10-12 weeks recovered spontaneously, within the first six months following
the birth. The reasons for the improvement were unclear, though this group of women generally felt more in control of their lives again and believed their relationship problems had dissipated at the last period of assessment. Very importantly, they also felt some improvement in their attachment to the infant. While all new mothers experience a difficult transition period, women with higher EPDS scores at Time 2 postnatally appeared to utilise some self-protection strategies during the time of high stress. Indeed, they were more inclined, at their most vulnerable time, to attribute responsibility for outcomes to external sources. While this change did not mean they differed significantly from other women on the LOC measure, as in other studies (Hayworth et al., 1980; O'Hara et al., 1982), the trend towards this preferred style, may have meant their self-esteem was to some extent “protected”. Arguably, this reframing meant that some were able to recover spontaneously from the potential crisis that they had experienced following the birth, with little residual psychological damage. Nevertheless, the group, overall did not return to the antenatal levels of satisfaction on the variables assessed. This has been found in other research (Belsky, 1985) and gives some credence to the idea that dysfunctional cognitions may persist, after an acute episode of mood disturbance (Sherrington et al., 2001).

However, the subset of women who had higher EPDS scores, with the onset in the later months after the birth, appears to have already been cognitively vulnerable. This supports other reported findings on a range of biological and social factors. These include a past history of a mental health problem (Wilson et al., 1996), family history (O'Hara et al., 1984), a higher depression score during pregnancy, in some of the women (Arieas et al., 1996) and pre-existing relationship problems (Barnett & Gotlib, 1988). As noted, while there was more likelihood that women with higher EPDS scores at Time 3 postnatally had suffered from a diagnosed mental health problem before the pregnancy, only 30% had a previously diagnosed mental health problem. Others, who had a pre-existing cognitive vulnerability may therefore have been either suffering from the effects of an undiagnosed mental health problem in the past that was left unresolved (Williams, 1992). Another possibility is that they had faulty information processing, resulting from hereditary factors, their upbringing or socialisation (Blackburn & Twaddle, 1996; Gut, 1989). These factors may have resulted in lower self-esteem, and dysfunctional maternal attitudes that meant they were more cognitively vulnerable to a dysfunctional response following a very stressful event such as childbirth (Beck, 1986).
Self-esteem is considered to be strongly associated with PND (Affonso & Arizmendi, 1986; Fontaine & Jones, 1997; Hall et al., 1996). However, before this study, little had been understood about changes in self-esteem prior to, during, and after, a period of acute stress, and the potential vulnerability to distress in new mothers. This study found that women with lower self-esteem in the antenatal period also had fewer social supports. Furthermore, there was a significant association between supports and self-esteem at the highest times of potential stress (the antenatal period and the first weeks after the birth). This direct link was no longer noted at six months after the birth, possibly because lower self-esteem, at this later time, was more directly related to other pre-existing factors, such as those arising from a previous history of a mental health problem.

However, there were some interesting trends and anomalies that further differentiated the women with higher EPDS scores later in the puerperium from the earlier group (women with higher EPDS scores at Time 2). While the group of women with higher EPDS scores at Time 3 postnatally appeared to experience similar worrying levels to women with higher EPDS scores in the early postnatal period, there were differences. This group experienced more positive cognitions for a period after the birth. At Time 2, 10-12 weeks after the birth, they felt more in control of their lives, had higher self-esteem, and somewhat lower expectations of themselves as mothers. This provides some evidence to support other researchers who have proposed that stressors alone do not predict depression (Paykel et al., 1980). Furthermore, it emphasises the differences between the two groups at the time when postnatal screening is often undertaken by professionals.

Unfortunately, for women with an onset of higher EPDS scores at Time 3 in the puerperium, the period of increased confidence dissipated, possibly as the reality that little else had changed became clearer. This may also have been linked to the social resources available to these women in the antenatal and postnatal period. Problems with the relationship continued to be a strong influence on higher EPDS scores. Women with relationship problems also had more ambivalence about motherhood. Anecdotal reasons given for dissatisfaction by those who continued to report relationship problems were mainly linked to lack of support for self and help with the baby. More women also articulated that arguments about general issues were more of a problem at this stage. Thus, as time went by, the social situation, for women with higher EPDS scores at Time 3 postnatally, appeared to deteriorate. There is also some evidence that more men may
also succumb to depression later in the puerperium (Boath et al., 1998; Deater-Deckard, Pickering, Dunn, & Golding, 1998). This may further add to the tension and stress, already experienced by new mothers in their relationships.

In conclusion, there is some evidence, from this study, that women who have higher EPDS scores in the postnatal period differ from each other in their cognitive processes. This may be linked to the time of onset of increased distress. Furthermore, the study highlighted some important information on cognitive factors that predict more distress in the period after the birth as well as those that are concomitant with mood problems. This has implications for screening, prevention and treatment practices in mood disturbance occurring around the time of childbirth.

7.8: Implications for Practice

Further consideration is needed of the definition and terms used to describe what is now commonly called PND and related disorders. If classification is important for recognition, and with that, resources for research, prevention and treatment, then further refinement of terms is necessary. The classification system currently used is worthy of review. This may incorporate some exploration of other terminology to reflect better the different experiences of women facing distress, around the period of childbirth. This may be particularly relevant because of the range, and variation of issues experienced by first-time mothers, at different times in the puerperium. The later onset in some new mothers is an example. Classification therefore requires further discussion, debate and research, in relation to the onset and prevalence of PND and related mood disorders (Clement & Elliott, 1999).

Other salient findings from this study indicate the need for more precise screening of women in the antenatal period. The EPDS is a very useful tool that will identify many of the women, who are likely to experience increased distress and a percentage who have mild moderate or severe depression following the birth, if a cut-off of 10 or more is used (Cox et al., 1987). However, it is necessary to be cognisant that many of the women, who screen higher antenatally will be responding to the anxiety experienced by women during the early months of pregnancy, particularly if the baby is unplanned (Seguin et al., 1999). It was anticipated that there would be false positives in this study, as a lower cut-off of 9/10 was used on the EPDS antenatally to ensure all women who may be at risk of higher symptoms and distress after the birth, were
identified. In this study, two-thirds of women with higher scores antenatally were no longer found to have higher EPDS scores after the birth. Interestingly, these figures are similar to those reported in other studies where women were assessed using other methods, instruments and clinical interviews (Kumar & Robson, 1984). Therefore, this study provides further evidence that many women who score higher antenatally will not have higher EPDS scores postnatally (Kumar & Robson, 1994; NMHS, 2000). It is important to consider this when advising pregnant women of their scores, and possible implications. Furthermore, additional screening procedures are required.

Another important point, highlighted by this study, is that many new mothers suffering from acute distress during the puerperium, may be missed by the current screening system used by practitioners in WA, as well as others nationally and internationally (Holden, 1994). Even using a cut-off of 9/10, which is a lower cut-off than recommended for clinical use, some women, who become distressed after the birth, are undifferentiated antenatally by the EPDS. Some of these, who experience a higher EPDS during the early weeks following the birth, may be identified, if a systematic process of postnatal screening is also in place. Nevertheless, the majority of women, experiencing more symptoms of depression in the later period, at 20-24 weeks may be missed by both of these systems. This is because they will appear to be coping 10-12 weeks after the birth when screening is implemented most widely.

More refined assessment techniques are required. Based on the findings from this study, it is argued that administering the ESI alongside the EPDS antenatally, and asking women whether they feel more or less in control of their lives since becoming pregnant, will greatly increase the ability of clinicians to focus on women requiring some intervention after the birth. This is also important, because it has been shown in this study that the majority of first-time mothers, with higher EPDS scores in the early postnatal period neither had a past history of mental health problem nor did they score higher on the EPDS antenatally. Indeed, awareness of practitioners must be raised about the EPDS. It is not the total answer and other factors need to be considered (Leverton & Elliott, 2000). This study also highlights that a later assessment period is also warranted, if it is important to identify new mothers experiencing the onset of symptoms as late as six months after the birth that result in increased distress for the family.

For treatment purposes, more targeted and relevant methods can be implemented with first-time mothers, on the basis of these findings. Medication appears to have few benefits over counselling in PND (Appleby et al., 1997). It has even less of a role when
adjustment problems appear to be the fundamental issue for some women. It seems important, therefore, to review the need for the use of either medication or CBT. This is particularly relevant for those women who are more likely to recover spontaneously within weeks, after a period of normalisation and adjustment to unexpected aspects, of new motherhood. It might be useful to consider more cost-effective methods, such as child health nurse facilitated new mothers groups, self-help groups and other practical systems of support, in the first three to four months. These may assist many women to adjust more rapidly to their new role (Gerrard et al., 1993). More importantly, these groups would help to normalise, what are often hidden and unspoken feelings and thoughts, that can have a great impact on the woman in the early months (Elliott, 1989). This would also support the quality of the family relationships, in the longer term.

Nevertheless, it is clear that for those with a personal vulnerability (O'Hara, 1995), there may be complex underlying issues. These cannot be dealt with in sufficient depth in the group environment (Cox, 1989). However, more sophisticated and costly methods such as CBT, or other interventions such as medication, that may be needed for more complex problems, can better be utilised, when women requiring them are clearly identified. This is the subset of women who have their onset earlier in the puerperium, and are likely to have ongoing problems for a range of reasons. The other cohort is new cases later in the puerperium who have a pre-existing vulnerability. For others, who experience a time of elation early in the puerperium, it may be when the honeymoon period is clearly over. These groups of women can be more readily identified after the adjustment period. During this time, some women may recover, once they appreciate the change to their lives. For the recovery group, this may occur through new mother groups, or in frank discussions with their Child Health nurse, where they can normalise their experiences and learn to establish a routine. However, for women with complex issues, more in-depth counselling or medical treatment may be required.

A final issue for consideration from this study is that of cognitive dysfunction, and its role in a higher EPDS score after the birth of a baby. For some new mothers, there was a pre-existing diathesis of low self-esteem and in some cases, a past history of a mental health problem. However, many of the new mothers did not have these issues prior to the birth. Nevertheless, dysfunctional cognition was present during periods of distress. Furthermore, at the last time of assessment, at least half of the new mothers, who had experienced increased distress after the birth, continued to experience dysfunctional cognitions, even after their overt symptoms of low mood had abated. This
highlights the possibility that some women may continue to experience ongoing
dysfunction and are possibly more at risk for a major depression further into the period
after the birth. This is particularly salient for those who do not seek support (England et
al., 1994). Some training, for those who work with new mothers, on the role of
cognition in the process of new motherhood and increased distress, is clearly warranted.

7.9: Reflections on the Limitations of the Study

The clinical importance of the magnitude of the different scores on various
measures in women who had higher EPDS scores, and women with lower EPDS scores,
is difficult to determine. This is because there are, as yet, little normative data to assist
practitioners to establish the clinical importance of cognitive changes (Dozois, Covin, &
Brinker, 2003).

In this study, due to the comparatively small number of women with higher
EPDS scores, it can only be noted that the measure used to determine self-esteem levels,
and women’s subjective perceptions of stress, caused by everyday hassles, did appear
important. These two factors had relatively large mean differences in scores between
groups of women with higher and lower EPDS scores.

Furthermore, though the differences were smaller, the range of mean scores
overall in the women on maternal attitudes was substantively different between the
groups. As personal control was a single item, and it was noted that the mid-point score
of 4 was equivalent to feeling the same as before becoming pregnant, there was a clear
difference in the mean scores of women in the groups. That is, more women with lower
EPDS scores felt less in control of their lives before the birth but more in control after
the birth. Women with higher EPDS scores after the birth at 10-12 weeks postnatal
experienced the opposite in relation to feeling in control. It was also clear that women
with higher EPDS scores after the birth at 20-24 weeks postnatal felt less in control of
their lives when experiencing more symptoms of depression.

In retrospect, it may have been useful to develop a more substantive scale to
measure personal control more accurately. A comprehensive tool would give more
information, and confirm or discount the association with a higher EPDS score,
reflected by the single measure of control used in this study. However, the main aim in
this study was to ascertain the relevance of well-known cognition measures, such as the
LOC and the ASQ, in the process of a higher EPDS score in new mothers during the
puerperium. Given other researchers have defined “control over one’s life” to be measured by these instruments, it was determined that the issue of control over one’s life was comprehensively addressed by the use of both of these instruments. Future research should, perhaps, further develop tools to measure this concept. It would also be relevant to evaluate whether other self-control scales, such as the Rehm scale (Rehm, 1977), tap into a similar concept to the single item measure of feeling more or less in control of life used in this study.

Another issue was the sample size. It was anticipated that while 15-20 % of women may have moderate to severe depression, as many as 30%-40% of women would have some increased symptoms of depression during the postnatal period. This has been found in other Australian and international studies (Carter, 1992; Fergerson, Jamieson & Lindsay, 2002; Hiscock, & Wake, 2001; Thirkettle & Knight, 1985). Unfortunately for this study, this was not the case. Whether this was because first-time mothers are generally less likely to suffer from PND and related disorders (Kumar & Robson, 1984) or because local systems had already been developed to inform women of the possibility of PND, and offer some support to vulnerable women, was not clear. However, there is some evidence for both of these possibilities (Elliott, 1989). This inevitably affected the choice of appropriate statistical analyses for each hypothesis. In some cases, non-parametric tests were used. While it was considered that the main parametric tests used had sufficient power to detect important differences, more participants would have been preferable. The size of the sample for some tests may have resulted in Type 2 error on some variables. Other studies conducted in WA will need to take these factors into consideration, when determining the sample size required.

The method of collecting data also requires some reflection. The strengths and weaknesses of the modes of administration were highlighted briefly in the discussion in the method chapter, on why the face-to-face method was considered to be the optimum strategy for collection of the data. However, some women could not be available for an interview. A small percentage of women who delivered their babies at JHC lived hundreds of kilometres from Perth. Others expressed a preference for a mailed protocol after the birth for various reasons, such as work commitments. The need to accommodate these issues was managed by maintaining ongoing contact with the women by telephone and ensuring that where possible, any mood change was identified. There is no evidence to suggest that the protocols were completed any differently based on the varying mode of administration in the later stages. In fact, actual participation
rates improved. Fewer women refused to participate from Time 2 to Time 3 than from Time 1 to Time 2. This indicates that whether or not the women completed the protocol in the presence of the researcher was not an issue for compliance. Moreover, a personal role in the process by the research team may have assisted retention. Another possible problem may have been comprehension of certain instruments. It was highlighted that some women had problems with the LOC and ASQ at the first point of contact. However, those matters were resolved at Time 1, when a researcher was present at all times of administration of the protocol. All participants, therefore, had been privy to clarification of any problems resulting from the style, language or expression used in the questionnaires.

One possible issue was that fewer women may have failed to disclose their mood state when responding in isolation to the protocol. Some women with lower mood may therefore have been missed, where there was no opportunity for observation and interaction between the researcher and the participant. However, as noted elsewhere, the percentages of women with lower mood in this study were smaller than in other similar studies. This possibility therefore seems unlikely, as there were almost as many new cases of higher EPDS score and distress at Time 3 as were identified at Time 2. Yet, arguably, there may have been many more stressors in the early weeks after the birth, as women adjusted to their new role and circumstances (Fleming et al., 1990).

Other issues to be considered were the initial difficulties, experienced by some women, in comprehension of certain instruments. However, the vast majority of women, particularly those who had higher EPDS scores, was very compliant and cooperative at every stage of the study. Nevertheless, it may be useful, in future studies, to limit the number of more complex questionnaires used at any one time. Furthermore, the need to be available to answer queries, and check that each questionnaire in the protocol is fully completed, may be minimised by this strategy.

7.10: Future Research

Future research into the distress experienced by some new mothers, before and following the birth of the baby, can extend the limited findings of this study. This may include the following areas:

- Maternal attitudes have emerged as one factor that impacts on the psychological well-being of women. However little is understood about how these attitudes are
overtly and covertly promoted in general society or how women come to acquire such attitudes, before motherhood. Perhaps a study of how women’s magazines and newspapers report issues of motherhood may be useful. This has been evaluated, in terms of information dissemination through the popular press on PND (Marinez, Johnstone-Robledo, Ulsh, & Chrisler, 2000). However, the evolvement and perpetuation of positive myths have not yet been systematically evaluated. Another interesting study may be a discourse analysis, looking at how women “talk” about motherhood before and after the birth of the first baby. Brown et al. (1994) conducted a wide-ranging qualitative study of new mothers, but this could be extended to compare the views of women before and after pregnancy.

- It is also unclear how those women who are not distressed during this period come to cope with the expectations of society, themselves, and as importantly, their partners, at this time. While some other cultures have rituals and practices that highlight the importance of motherhood, western societies offer little formal support or recognition of the major upheaval that motherhood entails (Nicolson, 1998). As yet, little time is allowed for women to adjust, and learn the many new skills that are needed, to become successful mothers (Sagrestano et al., 1999). More information is required to raise the awareness of western societies to the problems inherent in new motherhood, and recommend more strategies to assist new mothers through the process.

- How self-esteem changes, or remains relatively constant, over time, in response to environmental circumstances, is of interest. It may be that higher self-esteem is a protective factor that minimises the longer term impact of the shock of childbirth in first-time mothers who are not expecting to face difficulties at this time. This requires further examination.

- Alongside these issues, LOC and attributional style may have been more influential in the process of depression in a larger study. It may be useful to replicate this study on a much larger sample throughout WA, or Australia. This will provide a clearer picture on the modifications required to utilise these instruments more effectively with new mothers.

- Finally, it may be useful to further examine the measure of personal control, and attempt to expand the items. This may more comprehensively reflect the concept
of the increased or decreased “sense of control of their lives” felt by women both antenatally and postnatally.

7.11 Personal Postscript

Careful consideration was given to the design, parameters and processes of the study, and the potential consequences of various strategies, prior to implementation. A key issue was the ethical responsibilities inherent in conducting a study in which interviews would be carried out with some women would have serious emotional disturbance. The methodology was, therefore, designed to ensure that women were supported as much as possible during collection of the data. While it was recognised that this may impact on the outcomes, it has subsequently been shown that only one woman, identified as having a higher EPDS score following the birth, dropped out of the study. This indicates that women were willing to participate, possibly because of the continuity of the process and ongoing personal contact maintained with women throughout the study. Their continued participation led to the collection of new and important information on how women’s cognitions change over time during pregnancy, and the first few months following the birth. All of this information was considered valuable. Importantly, it may further our knowledge on the cognitive processes of first-time mothers. I am extremely grateful for their contribution to the study, during the time when many of them were facing major challenges, in preparing for, and adjusting to, the realities of motherhood.
References


Appendices
Appendix 1

Narrative Framework Interview Checklist
Narrative Framework Interview Checklist

Women were interviewed using a narrative framework.

Introduction

“Tell me your story of the experience of Postnatal Depression. Begin by telling me what caused or contributed to it. Start wherever you like”.

Points for Probing and Exploration:

- What did you expect before you had the baby?
- What terms would you use to describe what motherhood meant to you before the birth of your first child?
- Did the reality meet the expectations?
- How did your partner support/not support you?
- Tell me about some good days/bad days
- What were the highs and lows?
- What was the worst time?
- How did you cope? What did you do?
- Did you think others experienced the same as you? Why/why not?
- Where did you seek support? Did you get it?
- If you felt better than now, what would be different?
- If you feel better now, what has changed?
Appendix 2

Planning Study: Letter to Participants and Consent Form
A Preliminary Study on The Experience of Postnatal Depression

My name is Anne Pratt and I am currently completing a PhD at Edith Cowan University. The main study will be conducted in an attempt to learn more about Postnatal Depression. Prior to this, I am very interested in discussing how the birth of the baby has impacted on women and their families to inform me on the issues faced by women like yourself. Your participation would involve telling your own story of the birth of your child, and how you felt in the months afterwards.

The interview will be conducted at a time and place suitable to you. It is anticipated that this interview will take approximately one and a half to two hours. The interview will be taped with your approval, and information from it will be analysed to provide background information on the issues of Postnatal Depression based on your responses. All information will be strictly confidential and will be stored in accordance with guidelines that will be explained to you in the interview. Your participation is purely voluntary, and you may withdraw at any time without affecting your treatment.

Researcher Signature------------------------------------------Date----------------
CONSENT FORM

If you agree to participate in this study please sign the consent form below and return it to me in the reply paid envelope attached. You can telephone me on 9400 5168 and an appointment will be arranged at a time convenient to you. Alternatively, I will contact you on receipt of this form.

I--------------------------------------------- have read and understand the information and understand any questions will be answered to my satisfaction. I agree to participate in this study, knowing that I can withdraw at any time.

Participant Signature-------------------------------Date-------------

Contact Telephone Number---------------------------------------------

Times to call: anytime day only evening only

Witness Signature---------------------------------------------Date-------------

If you would like more information or have any questions on the research please telephone Anne Pratt on 9400 5168 or my supervisors Dr Rosie Rooney or Dr Moira O’Connor on 9400 5551
Appendix 3
Participant Questionnaire at Time 1
Thank you very much for your assistance. Your responses will assist in furthering our knowledge of the thoughts and feelings of women both antenatally and postnatally and will ultimately help other women.

Anne Pratt
Edith Cowan University
9400 5168
Antenatal Details

Name:  
Address:  
Tel:  

Marital Status:  Age:  Education Level:  
Employed:  Usual Occupation:  

1. Past history of diagnosed mental health problem  
(Please tick YES or NO for each item and describe any problems in more details)

Diagnosis:  
No. of episodes:  Last episode:  
Current treatment:  Previous treatment(s):  

2. Family history of diagnosed mental health problem  
Who:  When:  Diagnosis:  

3. Ambivalence (mixed feelings) about the pregnancy  
Why:  

4. High anxiety level, including panic attacks  

5. Significant mood changes (eg. unhappy, tearful or rapid shifts)  

6. Sleep disturbance (Too much/Too little)  

7. Relationship problems (eg. no partner, conflict with partner)  
State the issue:  

8. Limited support or help available  
(eg no close friends, no extended family)  

9. Previously seen by psychiatrist, psychologist or social worker  
why:  when:  length of treatment:  

10. Felt less/more in control since being pregnant  
less  same  more  
1  2  3  4  5  6  7  

11. Current income to household (before tax)  
under $20,000  
$20 - 35,000  
$35 - 50,000  
$50 - 65,000  
$65,000+  

12. Number of adults contributing to household income  

Appendix 3
The Maternal Attitude Questionnaire
(Warner, Appleby, Whitton, & Faragher, 1997).

The next questions are seeking your opinion about motherhood. Below is a series of statements about being a mother. In each case please circle the answer which most applies to you.

I think my baby will be very demanding
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I will be proud of being a mother
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I think I will be disappointed by motherhood
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I expect having a baby will make me happy
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I think I will sometimes regret having my baby
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I think I will be the only person who can look after my baby
- Strongly agree
- Agree
- Disagree
- Strongly disagree

To be a good mother I should be able to cope well all the time
- Strongly agree
- Agree
- Disagree
- Strongly disagree

It will not be my fault if my baby is unwell or unhappy
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I think I will resent not having enough time to myself after I have my baby
- Strongly agree
- Agree
- Disagree
- Strongly disagree

I do not expect my daily life to be any more difficult when my baby is born
- Strongly agree
- Agree
- Disagree
- Strongly disagree

If I find being a mother difficult I will feel a failure
- Strongly agree
- Agree
- Disagree
- Strongly disagree

If I love my baby I should be with him/her all the time
- Strongly agree
- Agree
- Disagree
- Strongly disagree
If other people help me look after my baby I will feel a failure
Strongly agree       Agree       Disagree       Strongly disagree

I think I will resent the way my life is restricted after having my baby
Strongly agree       Agree       Disagree       Strongly disagree
The Everyday Stress Index  
(Hall, Williams & Greenberg1985).

Please circle one number to indicate how much each of the following problems worry upset or bother you from day to day, ranging from not at all (0) through to bothered a great deal (3).

**Not at all (0) Occasionally bothers me (1) Often bothers me (2) Bothers me a great deal (3)**

<table>
<thead>
<tr>
<th>Problem</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>Having too many responsibilities</td>
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<tr>
<td>Taking care of family members</td>
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<tr>
<td>Owing money or getting credit</td>
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<tr>
<td>Not enough money for basic necessities such as</td>
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<td>food, clothing, housing, health care</td>
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<tr>
<td>Not enough time to do things you want to do</td>
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<tr>
<td>Problems with transportation</td>
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<td>Problems with your job/not having a job</td>
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<td>Problems with housing</td>
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<tr>
<td>Concerns about the health of a family member</td>
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<td>Problems with friends and neighbours</td>
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<td>Problems getting along with your family</td>
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<tr>
<td>Problems with being married/single</td>
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<td>Feeling safe in your neighbourhood</td>
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<tr>
<td>Difficulty with your partner</td>
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<tr>
<td>Problems with holding a job</td>
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<td>Trouble finding employment</td>
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The Attributional Style Questionnaire (Revised)
(Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982).

Please read each of the four situations and vividly imagine it happening to you.
Decide what you believe to be the one major cause of the situation if it happened to you.
Answer the questions about the cause by circling one number per question. Do not circle the words. Go on to the next situation.

YOU MEET A FRIEND WHO COMPLIMENTS YOU ON YOUR APPEARANCE.

Write down the one major cause: ____________________________

Is the reason for your friend's compliment due to something about you or something about other people or circumstances?

Totally due to other people or circumstances

In the future, when you are with your friend, will this cause again be present?

Will never again be present

Will always be present

Is the cause something that just affects interacting with friends, or does it also influence other areas of your life?

Influences just this particular situation

Influences all situations in my life

A FRIEND COMES TO YOU WITH A PROBLEM AND YOU DON'T TRY TO HELP HIM/HER.

Write down the one major cause: ____________________________

Is the cause of your not helping your friend due to something about you or something about other people or circumstances?

Totally due to other people or circumstances

In the future, when a friend comes to you with a problem, will this cause again be present?

Will never again be present

Will always be present

Is the cause something that just affects what happens when a friend comes to you with a problem, or does it also influence other areas of your life?

Influences just this particular situation

Influences all situations in my life

Appendix 3
YOU MEET A FRIEND WHO ACTS IN A HOSTILE WAY TOWARDS YOU.
Write down the one major cause: ____________________________________________

Is the cause of your friend acting hostile due to something about you or something about other people or circumstances?

Totally due to other
people or circumstances 1 2 3 4 5 6 7 Totally due to me

In the future when interacting with friends, will this cause again be present?

Will never again
be present 1 2 3 4 5 6 7 Will always be present

Is the cause something that just influences interacting with friends, or does it also influence other areas of your life?

Influences just this
particular situation 1 2 3 4 5 6 7 Influences all situations in my life

YOUR PARTNER (BOYFRIEND/HUSBAND) HAS BEEN TREATING YOU MORE LOVINGLY.
Write down the one major cause: ____________________________________________

Is the cause of your partner (boyfriend/girlfriend) treating you more lovingly due to something about you or something about other people or circumstances?

Totally due to other
people or circumstances 1 2 3 4 5 6 7 Totally due to me

In future interactions with your spouse (boyfriend/girlfriend), will this cause again be present?

Will never again
be present 1 2 3 4 5 6 7 Will always be present

Is the cause something that just affects how your spouse (boyfriend/girlfriend) treats you, or does it also influence other areas of your life?

Influences just this
particular situation 1 2 3 4 5 6 7 Influences all situations in my life
The Locus of Control Scale
(Rotter, 1966).

Below is a list of opinion statements. Choose the one statement from each pair with which you agree more strongly. Be sure to choose the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. There are no right or wrong answers.

**PLEASE WORK QUICKLY AND FIND AN ANSWER FOR EVERY CHOICE**

If you think that you agree with both statements, be sure to choose the one that you agree with more.
If you find that you disagree with both statements choose the one that you disagree with less.

Each statement in a pair is lettered either A or B. Please circle or underline the appropriate one

1. A. Many of the unhappy things in people's lives are partly due to bad luck.
   B. Peoples misfortunes result from the mistakes they make.

2. A. One of the major reasons why we have wars is because people don't take enough interest in politics
   B. There will always be wars, no matter how hard people try to prevent them.

3. A. In the long run people get the respect they deserve in this world.
   B. Unfortunately, an individual's worth often passes unrecognised no matter how hard he tries.

4. A. The idea that teachers are unfair to students is nonsense.
   B. Most students don't realise the extent to which their grades are influenced by accidental happenings.

5. A. Without the right breaks one cannot be an effective leader.
   B. Capable people who fail to become leaders have not taken advantage of their opportunities.

6. A. No matter how hard you try some people just don't like you.
   B. People who can't get others to like them don't understand how to get along with others.

7. A. I have often found that what is going to happen will happen.
   B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

8. A. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
   B. Many times exam questions tend to be so unrelated to course work that studying is really useless.

9. A. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
   B. Getting a good job depends mainly on being in the right place at the right time.

10. A. The average person can have an influence in government decisions.
    B. This world is run by the few people in power, and there is not much the little guy can do about it.

11. A. When I make plans, I am almost certain that I can make them work.
    B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.

12. A. In my case getting what I want has little or nothing to do with luck.
    B. Many times we might just as well decide what to do by flipping a coin.

13. A. Who gets to be the boss often depends on who was lucky enough to be in the right place at the right time first.
    B. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
Appendix 3

14. A. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
   B. By taking an active part in political and social affairs the people can control world events.

15. A. Most people don’t realise the extent to which their lives are controlled by accidental happenings.
   B. There is really no such thing as “luck”.

16. A. It is hard to know whether or not a person really likes you.
   B. How many friends you have depends upon how nice a person you are.

17. A. In the long run the bad things that happen to us are balanced by the good ones.
   B. Most misfortunes are the result of lack of ability, ignorance, laziness or all three.

18. A. With enough effort we can wipe out political corruption.
   B. It is difficult for people to have much control over the things politicians do in office.

19. A. Sometimes I can’t understand how teachers arrive at the grades they give.
   B. There is a direct connection between how hard people study and the grades they get.

20. A. Many times I feel that I have little influence over the things that happen to me.
   B. It is impossible for me to believe that chance or luck plays an important role in my life.

21. A. People are lonely because they don’t try to be friendly.
   B. There’s not much use in trying too hard to please people, if they like you, they like you.

22. A. What happens to me is my own doing.
   B. Sometimes I feel that I don’t have enough control over the direction my life is taking.

23. A. Most of the time I can’t understand why politicians behave the way they do.
   B. In the long run the people are responsible for bad government on a national as well as a local level.
The Edinburgh Postnatal Depression Scale  
(Cox, Holden & Sagovsky, 1987).  
British Journal of Psychiatry, 150(7).

<table>
<thead>
<tr>
<th>No. OF WEEKS (Pregnant)</th>
<th>Date baby expected:</th>
<th>Date Today:</th>
</tr>
</thead>
</table>

As you are pregnant, we would like to know how you are feeling. Please tick or underline the answer which comes closest to how you have felt in the PAST SEVEN DAYS, not just how you feel today.

Below is an example already completed.

<table>
<thead>
<tr>
<th>1. I have felt happy</th>
<th>6. Things have been getting on top of me</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, all the time.</td>
<td>Yes, most of the time I haven't been able to cope at all.</td>
</tr>
<tr>
<td>Yes, most of the time.</td>
<td>Yes, sometimes I haven't been coping as well as usual.</td>
</tr>
<tr>
<td>No, not very often.</td>
<td>No, most of the time I have coped quite well.</td>
</tr>
<tr>
<td>No, not at all.</td>
<td>No, I have been coping as well as ever.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. I have been able to laugh and see the funny side of things.</th>
<th>7. I have been so unhappy that I have had difficulty sleeping.</th>
</tr>
</thead>
<tbody>
<tr>
<td>As much as I always could.</td>
<td>Yes, most of the time.</td>
</tr>
<tr>
<td>Not quite so much now.</td>
<td>Yes, sometimes.</td>
</tr>
<tr>
<td>Definitely not so much now.</td>
<td>Not very often.</td>
</tr>
<tr>
<td>Not at all</td>
<td>No, not at all.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. I have looked forward with enjoyment to things.</th>
<th>8. I have felt sad or miserable</th>
</tr>
</thead>
<tbody>
<tr>
<td>As much as I ever did.</td>
<td>Yes, most of the time.</td>
</tr>
<tr>
<td>Rather less than I used to.</td>
<td>Yes, quite often.</td>
</tr>
<tr>
<td>Definitely less that I used to.</td>
<td>Not very often.</td>
</tr>
<tr>
<td>Hardly at all.</td>
<td>No, not at all.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>4. I have blamed myself unnecessarily when things went wrong.</th>
<th>9. I have been so unhappy that I have been crying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, most of the time.</td>
<td>Yes, most of the time.</td>
</tr>
<tr>
<td>Yes, some of the time.</td>
<td>Yes, quite often.</td>
</tr>
<tr>
<td>Not very often.</td>
<td>Only occasionally</td>
</tr>
<tr>
<td>No, never.</td>
<td>No, never.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. I have felt scared or panicky for no very good reason</th>
<th>10. The thought of harming myself has occurred to me</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, quite a lot.</td>
<td>Yes, quite often.</td>
</tr>
<tr>
<td>Yes, sometimes.</td>
<td>Sometimes.</td>
</tr>
<tr>
<td>No, not much.</td>
<td>Hardly ever.</td>
</tr>
<tr>
<td>No, not at all.</td>
<td>Never.</td>
</tr>
</tbody>
</table>
The Maternal Social Support Index
(Pascoe, Loda, Jeffries, & Earp, 1982).

We are interested in the social support you have available to you both within your family, friends and the community. Please answer the following questions by writing down the answer or ticking the appropriate box.

Item 1.
Who prepares the meals in your home? ____ Does anyone else ever prepare meals? _____
Who does the grocery shopping? ____ Does anyone else ever do the shopping? _____
Who will discipline your child? ____ Anyone else? _____
Who fixes things around the house? ____ Anyone else? _____
Who does the inside cleaning? ____ Anyone else? _____
Who works outside around the house? ____ Anyone else? _____
Who pays the bills? ____ Anyone else? _____
Who takes care of car problems? ____ Anyone else? _____
Who will take your child to the doctor when he/she is sick? ____ Anyone else? _____
Who will see to it that your child goes to bed? ____ Anyone else? _____

2. How many relatives do you usually see once a week or more? _____________
Is this: Often enough ☐ Too often ☐ Not often enough ☐

3. How many people can you count on in times of need? _____________

4. How many people in your neighbourhood will be able to help you in taking care of your child for a couple of hours if needed? _____________

5. How happy are you with the way your partner lets you know what he feels or thinks?
Happy ☐ Not happy ☐ Not sure ☐

6. Are there people (over 14) other than your partner, either in your household or outside the home, with whom you have regular talks? Yes ☐ No ☐
Which of these people do you talk to the most? _____________
How happy are you with your talks with this person? Happy ☐ Not happy ☐

7. Do you belong to any social, religious, educational or political groups?
Yes ☐ No ☐ How many? _____________
If yes, how often do you attend meetings for each group?
Once per month or less ☐ More than once per month ☐
Are you a member of any committee, or do you have any other duties in any of these groups?
Yes ☐ No ☐
The Rosenberg Self-esteem Scale
(Rosenberg, 1965).

Please answer each question by circling the response that is closest to how you feel:


-------------------------------------------------------------------------------------------------------------------------------------

1. I feel that I am a person of worth, at least on an equal basis with others  1  2  3  4
2. I feel that I have a number of good qualities  1  2  3  4
3. All in all, I am inclined to feel that I am a failure  1  2  3  4
4. I am able to do things as well as most other people  1  2  3  4
5. I feel I do not have much to be proud of  1  2  3  4
6. I take a positive attitude towards myself  1  2  3  4
7. On the whole, I am satisfied with myself  1  2  3  4
8. I wish I could have more respect for myself  1  2  3  4
9. I certainly feel useless at times  1  2  3  4
10. At times, I think I am no good at all  1  2  3  4

Thank you for all of your time. Please return the questionnaire to the researcher.
If you would like a summary of the findings from the study when they are available please tick the box.

☐
Appendix 4

Questionnaire and Letter to Participants at Time 2 and Time 3
Thank you very much for your assistance. Your responses will assist in furthering our knowledge of the thoughts and feelings of women both antenatally and postnatally, and will ultimately help other women.

Anne Pratt
Edith Cowan University
9400 5168
Postnatal Details

Name: 
Employed (yes/no): 
Current Occupation: 
Hours per week (approx): 
Marital Status: 
Age: 
Education Level: 
Country of birth: 

Date: 
Tel: 

Q.1 Please underline or circle yes or no for each of the following questions

I feel I had a difficult or traumatic delivery
I experienced low mood for more than two weeks
I experienced low mood for less than two weeks
I have significant mood changes (e.g. unhappy, tearful or rapid shifts)
I have sleep disturbance (Too much/Too little)
I have eating disturbance (Too much/Too little)
In the main I feel my life is better since having the baby
I have had ongoing breastfeeding difficulties
I have insufficient knowledge of community resources available to me
I have problems with my family since having the baby
(Please explain briefly)
More times than not I feel disappointed with motherhood
I have bonding/attachment problems with the baby
I have more financial worries since having the baby
If yes, why?
Overall I feel happier since having the baby
I have mixed feelings about motherhood
If yes, why?
I have high anxiety levels, including panic attacks
I have relationship problems (e.g. no partner, conflict with partner)
State the issue:
I have limited support or help available
(e.g. no close friends, no extended family)
I have felt less/more in control of my life since the baby was born

less same more

1 2 3 4 5 6 7
Q2. Do you have a current or recent professionally diagnosed mental health problem? (if no, please go to Q3)  
Yes □ No □

When?  How long did it/has it lasted?

Who diagnosed it? (circle, underline or tick the answer)
GP Psychiatrist Child Health Nurse Other (please state)

What is the diagnosis (if known)?

What is/was the treatment?

Who is/was managing the treatment? (circle, underline or tick the answer)
GP Psychiatrist Psychologist/Social Worker Other (please state)

Q3. Do you have a previous history of diagnosed mental health problem? (If yes, describe any problems in more detail, if no, go to Q4)  
Yes □ No □

Diagnosis:
No. of episodes: Last episode: Previous treatment(s):

Q.4. Current income to household (before tax)

under $20,000 □

$20 - $35,000 □

$35 - $50,000 □

$50 - $65,000 □

$65,000+ □

Number of adults contributing to household income

Q5. Do you think you have had Postnatal Depression at any time since having the baby? (If not diagnosed as depressed by a professional)  
Yes □ No □

If Yes:

How old was the baby?  

How long did the depression last?  

What were the main reasons for the PND?  

Who helped you deal with the problem?
The Maternal Attitude Questionnaire  
(Warner, Appleby, Whitton, & Faragher, 1997).

Below is a series of statements about being a mother. In each case please circle the answer which most applies to you. The questionnaire is seeking your opinion on motherhood

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
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<tbody>
<tr>
<td>I think my baby is very demanding</td>
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<tr>
<td>I feel proud of being a mother</td>
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<tr>
<td>I am disappointed by motherhood</td>
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<tr>
<td>Having a baby has made me as happy as I expected</td>
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<tr>
<td>I sometimes regret having my baby</td>
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<tr>
<td>I am the only person who can look after my baby</td>
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<tr>
<td>To be a good mother I should be able to cope well all the time</td>
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<tr>
<td>If my baby is unwell or unhappy it is not my fault</td>
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<tr>
<td>I have resented not having enough time to myself since having my baby</td>
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<tr>
<td>My daily life has been no more difficult since my baby was born</td>
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<tr>
<td>If I find being a mother difficult I feel a failure</td>
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</table>
If I love my baby I should be with him/her all the time

Strongly agree  Agree  Disagree  Strongly disagree

If other people help me look after my baby I feel a failure

Strongly agree  Agree  Disagree  Strongly disagree

I resent the way my life has been restricted since having my baby

Strongly agree  Agree  Disagree  Strongly disagree
The Everyday Stress Index
(Hall, Williams, & Greenberg, 1985).

Please circle one number to indicate how much each of the following problems worry upset or bother you from day to day, ranging from not at all (0) through to bothered a great deal (3).

<table>
<thead>
<tr>
<th>Problem</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>Having too many responsibilities</td>
<td></td>
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<tr>
<td>Taking care of family members</td>
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<tr>
<td>Owing money or getting credit</td>
<td></td>
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<tr>
<td>Not enough money for basic necessities such as food, clothing, housing, health care</td>
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<tr>
<td>Not enough time to do things you want to do</td>
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<tr>
<td>Problems with transportation</td>
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<tr>
<td>Problems with your job/not having a job</td>
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<tr>
<td>Problems with housing</td>
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<tr>
<td>Concerns about the health of a family member</td>
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<tr>
<td>Problems with friends and neighbours</td>
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<tr>
<td>Problems getting along with your family</td>
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<td>Problems with being married/single</td>
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<tr>
<td>Feeling safe in your neighbourhood</td>
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<tr>
<td>Difficulty with your partner</td>
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<tr>
<td>Problems with holding a job</td>
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<tr>
<td>Trouble finding employment</td>
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The Attributional Style Questionnaire (Revised)
(Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982).

1) Please read each of the four situations and vividly imagine it happening to you.
2) Decide what you believe to be the one major cause of the situation if it happened to you.
3) Write this cause in the blank provided.
4) Answer the questions about the cause by circling one number per question. Do not circle the words.
5) Go on to the next situation.

SITUATION
YOU MEET A FRIEND WHO COMPLIMENTS YOU ON YOUR APPEARANCE.
1. Write down the one major cause: ____________________________
2. Is the reason for your friend’s compliment due to something about you or something about other people or circumstances?
   Totally due to other 1 2 3 4 5 6 7 Totally due to me
   people or circumstances
3. In the future, when you are with your friend, will this cause again be present?
   Will never again 1 2 3 4 5 6 7 Will always be present
   be present
4. Is the cause something that just affects interacting with friends, or does it also influence other areas of your life?
   Influences just this 1 2 3 4 5 6 7 Influences all
   particular situation situations in my life

A FRIEND COMES TO YOU WITH A PROBLEM AND YOU DON’T TRY TO HELP HIM/HER.
5. Write down the one major cause: ____________________________
6. Is the cause of your not helping your friend due to something about you or something about other people or circumstances?
   Totally due to other 1 2 3 4 5 6 7 Totally due to me
   people or circumstances
7. In the future, when a friend comes to you with a problem, will this cause again be present?
   Will never again 1 2 3 4 5 6 7 Will always be present
   be present
8. Is the cause something that just affects what happens when a friend comes to you with a problem, or does it also influence other areas of your life?
   Influences just this 1 2 3 4 5 6 7 Influences all
   particular situation situations in my life
YOU MEET A FRIEND WHO ACTS IN A HOSTILE WAY TOWARDS YOU.

9. Write down the one major cause: ________________________________

10. Is the cause of your friend acting hostile due to something about you or something about other people or circumstances?

   Totally due to other people or circumstances 1 2 3 4 5 6 7    Totally due to me

11. In the future when interacting with friends, will this cause again be present?

   Will never again be present 1 2 3 4 5 6 7    Will always be present

12. Is the cause something that just influences interacting with friends, or does it also influence other areas of your life?

   Influences just this particular situation 1 2 3 4 5 6 7    Influences all situations in my life

YOUR PARTNER (BOYFRIEND/HUSBAND) HAS BEEN TREATING YOU MORE LOVINGLY.

13. Write down the one major cause: ________________________________

14. Is the cause of your partner (boyfriend/girlfriend) treating you more lovingly due to something about you or something about other people or circumstances?

   Totally due to other people or circumstances 1 2 3 4 5 6 7    Totally due to me

15. In future interactions with your spouse (boyfriend/girlfriend), will this cause again be present?

   Will never again be present 1 2 3 4 5 6 7    Will always be present

16. Is the cause something that just affects how your spouse (boyfriend/girlfriend) treats you, or does it also influence other areas of your life?

   Influences just this particular situation 1 2 3 4 5 6 7    Influences all situations in my life
The Locus of Control Scale  
(Rotter, 1966).

Below is a list of opinion statements. Choose the one statement from each pair with which you agree more strongly. Be sure to choose the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. There are no right or wrong answers.

**PLEASE WORK QUICKLY AND FIND AN ANSWER FOR EVERY CHOICE**

If you think that you **agree** with both statements, be sure to choose the one that you **agree with more**.  
If you find that you **disagree** with both statements choose the one that you **disagree with less**.

Each statement in a pair is lettered either A or B. Please circle or underline the appropriate one

1. **A.** Many of the unhappy things in people's lives are partly due to bad luck.  
   **B.** Peoples misfortunes result from the mistakes they make.

2. **A.** One of the major reasons why we have wars is because people don't take enough interest in politics  
   **B.** There will always be wars, no matter how hard people try to prevent them.

3. **A.** In the long run people get the respect they deserve in this world.  
   **B.** Unfortunately, an individual's worth often passes unrecognised no matter how hard he tries.

4. **A.** The idea that teachers are unfair to students is nonsense.  
   **B.** Most students don't realise the extent to which their grades are influenced by accidental happenings.

5. **A.** Without the right breaks one cannot be an effective leader.  
   **B.** Capable people who fail to become leaders have not taken advantage of their opportunities.

6. **A.** No matter how hard you try some people just don't like you.  
   **B.** People who can't get others to like them don't understand how to get along with others.

7. **A.** I have often found that what is going to happen will happen.  
   **B.** Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

8. **A.** In the case of the well prepared student there is rarely if ever such a thing as an unfair test.  
   **B.** Many times exam questions tend to be so unrelated to course work that studying is really useless.

9. **A.** Becoming a success is a matter of hard work, luck has little or nothing to do with it.  
   **B.** Getting a good job depends mainly on being in the right place at the right time.

10. **A.** The average person can have an influence in government decisions.  
    **B.** This world is run by the few people in power, and there is not much the little guy can do about it.

11. **A.** When I make plans, I am almost certain that I can make them work.  
    **B.** It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.

12. **A.** In my case getting what I want has little or nothing to do with luck.  
    **B.** Many times we might just as well decide what to do by flipping a coin.
13. A. Who gets to be the boss often depends on who was lucky enough to be in the right place at the right time first.
   B. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

14. A. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
   B. By taking an active part in political and social affairs the people can control world events.

15. A. Most people don’t realise the extent to which their lives are controlled by accidental happenings.
   B. There is really no such thing as “luck”.

16. A. It is hard to know whether or not a person really likes you.
   B. How many friends you have depends upon how nice a person you are.

17. A. In the long run the bad things that happen to us are balanced by the good ones.
   B. Most misfortunes are the result of lack of ability, ignorance, laziness or all three.

18. A. With enough effort we can wipe out political corruption.
   B. It is difficult for people to have much control over the things politicians do in office.

19. A. Sometimes I can’t understand how teachers arrive at the grades they give.
   B. There is a direct connection between how hard people study and the grades they get.

20. A. Many times I feel that I have little influence over the things that happen to me.
   B. It is impossible for me to believe that chance or luck plays an important role in my life.

21. A. People are lonely because they don’t try to be friendly.
   B. There’s not much use in trying too hard to please people, if they like you, they like you.

22. A. What happens to me is my own doing.
   B. Sometimes I feel that I don’t have enough control over the direction my life is taking.

23. A. Most of the time I can’t understand why politicians behave the way they do.
   B. In the long run the people are responsible for bad government on a national as well as a local level.
As you have a new baby, we would like to know how you are feeling. Please tick or underline the answer which comes closest to how you have felt in the PAST SEVEN DAYS, not just how you feel today.

Below is an example already completed.

1. I have felt happy
   - Yes, all the time.
   - Yes, most of the time.
   - No, not very often.
   - No, not at all.

2. I have looked forward with enjoyment to things.
   - As much as I always could.
   - Not quite so much now.
   - Definitely not so much now.
   - Not at all.

3. I have blamed myself unnecessarily when things went wrong.
   - Yes, most of the time.
   - Yes, some of the time.
   - Not very often.
   - No, never.

4. I have been anxious or worried for no good reason.
   - No, not at all.
   - Hardly ever.
   - Yes, sometimes.
   - Yes, very often.

5. I have felt scared or panicky for no very good reason.
   - Yes, quite a lot.
   - Yes, sometimes.
   - No, not much.
   - No, not at all.

6. Things have been getting on top of me
   - Yes, most of the time I haven’t been able to cope at all.
   - Yes, sometimes I haven’t been coping as well as usual.
   - No, most of the time I have coped quite well.
   - No, I have been coping as well as ever.

7. I have been so unhappy that I have had difficulty sleeping.
   - Yes, most of the time.
   - Yes, sometimes.
   - Not very often.
   - No, not at all.

8. I have felt sad or miserable
   - Yes, most of the time.
   - Yes, quite often.
   - Not very often.
   - No, not at all.

9. I have been so unhappy that I have been crying
   - Yes, most of the time.
   - Yes, quite often.
   - Only occasionally.
   - No, never.

10. The thought of harming myself has occurred to me.
    - Yes, quite often.
    - Sometimes.
    - Hardly ever.
    - Never.
The Maternal Social Support Index
(Pascoe, Loda, Jeffries, & Earp, 1982).

We are interested in the social support you have available to you both within your family, friends and the community. Please answer the following questions by writing down the answer or ticking the appropriate box.

Item 1.

Who prepares the meals in your home? ______  Does anyone else ever prepare meals? ______
Who does the grocery shopping? ______  Does anyone else ever do the shopping? ______
Who will discipline your child? ______  Anyone else? ______
Who fixes things around the house? ______  Anyone else? ______
Who does the inside cleaning? ______  Anyone else? ______
Who works outside around the house? ______  Anyone else? ______
Who pays the bills? ______  Anyone else? ______
Who takes care of car problems? ______  Anyone else? ______
Who will take your child to the doctor when he/she is sick? ______  Anyone else? ______
Who will see to it that your child goes to bed? ______  Anyone else? ______

2. How many relatives do you usually see once a week or more? ________________
   Is this:  Often enough ☐  Too often ☐  Not often enough ☐

3. How many people can you count on in times of need? ________________

4. How many people in your neighbourhood will be able to help you in taking care of your child for a couple of hours if needed? ________________

6. How happy are you with the way your partner lets you know what he feels or thinks?
   Happy ☐  Not happy ☐  Not sure ☐

6. Are there people (over 14) other than your partner, either in your household or outside the home, with whom you have regular talks? Yes ☐  No ☐
   Which of these people do you talk to the most? ________________
   How happy are you with your talks with this person? Happy ☐ Not happy ☐

7. Do you belong to any social, religious, educational or political groups?
   Yes ☐  No ☐
   How many? ________________
   If yes, how often do you attend meetings for each group?
   Once per month or less ☐  More than once per month ☐
   Are you a member of any committee, or do you have any other duties in any of these groups?
   Yes ☐  No ☐
The Rosenberg Self-esteem Scale
(Rosenberg, 1965).

Please answer each question by circling the response that is closest to how you feel:

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<tbody>
<tr>
<td>1.</td>
<td>I feel that I am a person of worth, at least on an equal basis with others</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>I feel that I have a number of good qualities</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>All in all, I am inclined to feel that I am a failure</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4.</td>
<td>I am able to do things as well as most other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>5.</td>
<td>I feel I do not have much to be proud of</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>6.</td>
<td>I take a positive attitude towards myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>7.</td>
<td>On the whole, I am satisfied with myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>8.</td>
<td>I wish I could have more respect for myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>I certainly feel useless at time</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>10.</td>
<td>At times, I think I am no good at all</td>
<td>1</td>
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Dear

Study On Childbirth Stress in Women Who Are First-Time Mothers

As you know, I am currently conducting some research with first-time mothers who attended the Antenatal Clinic at Joondalup Health Campus during 1999. The main study that you have been participating in consisted of completing a questionnaire three times.

The first of these occasions was during your pregnancy and followed one of your visits to the Antenatal Clinic at Joondalup Health Campus. The second interview was when the baby was approximately three months old.

The third and final questionnaire is now due for completion and we agreed on the telephone that I should post it to you at this address. I would therefore be very grateful if you would answer the questionnaire attached and return it to me in the envelope provided. It is pre-paid and no stamp is required.

As you have now completed the questionnaire twice I am sure that you will not have any problems with it this time, however if you require any assistance please call me.

I would like to take this opportunity to thank you very much for your contribution to the research into childbirth stress and depression that can occur for some women around the time of childbirth. It would not have been possible without women like yourself giving some time to further our knowledge about this problem.

This is the first study of its kind to be conducted in the northern suburbs of Western Australia, and the information from it will help us better understand the issues for women locally and hopefully, contribute to improving our services for women in general, as well as for those who may be at risk of depression during the first few months following the birth.

I would like to reassure you again that all information given is confidential, and no names or identifying information will be used. If you require any clarification or would like to discuss any aspect of the study, please do not hesitate to contact me on 9400 5168.

I wish you all the best for the future.

Regards

Anne Pratt
RMN., BA., B(Psych)., M(Psych).
Dear

Study On Childbirth Stress in Women Who Are First-Time Mothers

As you know, I am currently conducting some research with first-time mothers who attended the Antenatal Clinic at Joondalup Health Campus during 1999. The main study that you have been participating in consisted of completing a questionnaire three times.

The first of these occasions was during your pregnancy and followed one of your visits to the Antenatal Clinic at Joondalup Health Campus. The second interview was when the baby was approximately three months old.

The third and final questionnaire is now due for completion and we agreed on the telephone that we should meet again for the final interview. The details agreed were as follows:

Time:
Date:
Place:

I would like to take this opportunity to thank you very much for your contribution to the research into childbirth stress and depression that can occur for some women around the time of childbirth. It would not have been possible without women like yourself giving some time to further our knowledge about this problem.

This is the first study of its kind to be conducted in the northern suburbs of Western Australia, and the information from it will help us better understand the issues for women locally and hopefully, contribute to improving our services for women in general, as well as for those who may be at risk of depression during the first few months following the birth.

I would like to reassure you again that all information given is confidential, and no names or identifying information will be used. If you require any clarification or would like to discuss any aspect of the study prior to our meeting, please do not hesitate to contact me on 9400 5168.

I look forward to seeing you again soon.

Regards

Anne Pratt
RMN., BA., B(Psych)., M(Psych).
Appendix 5

Ethical Considerations
In this study women were approached as follows:
Women were advised of the study by the midwife conducting their booking visit at the Antenatal Clinic and were asked if they are willing to discuss the study further with the researcher, who was available. The midwives at the Antenatal Clinic were consulted regarding the study, and agreed to assist with this process.
The researcher then handed the potential participant the letter explaining the purposes of the study and read through this with her to ensure that she understood the content of the letter. All issues of confidentiality, and reassurance that the participant could withdraw from the study at any stage were fully explained at this point. The researcher then answered any queries or questions regarding participation in the study. If the participant then expressed a willingness to participate, she was asked to sign the consent form in the presence of the researcher and a witness.

After the participant had signed the consent form in the presence of the researcher and a witness, the researcher explained that the woman could either complete the protocol then, (the clinic has a spare room for interviewing purposes) or, if they had insufficient time, an appointment was arranged for a date, time and place convenient to the participant.

The Researcher Role
As the questionnaire was a self-report inventory, the researcher’s role in the process of completion by the participant was to:

a) Answer any queries and clarify any instructions.
b) Collect and properly code the protocol, and ensure the information was handled in a confidential manner (as noted elsewhere, all researchers who collected the data were given training on data management. This was in accordance with NHMRC guidelines).
c) Debrief the woman following completion of the protocol, ensuring that the participant was not upset by the process in any way.
d) Provide the participant with a list of the agencies and individual counsellors if it appeared appropriate. Individuals were also offered a direct referral if preferred.
   • Only participants who complete the consent form in person were included in the study.
• All materials pertaining to the study were coded and securely stored in a locked filing cabinet during the study.
• Personal identifying information was maintained separately in a secure place.
• Personal contact was maintained by the chief researcher with all participants either in person or by telephone at the prescribed times of assessment.
Appendix 6

Letter to Participants and Consent Form

at Time 1, Main Study
A LOCAL STUDY ON POSTNATAL DEPRESSION

My name is Anne Pratt and I am currently completing a PhD at Edith Cowan University.

The birth of a child is an important event, but some women can experience additional stress at this time that leaves them feeling low. When these feelings last for longer than a few weeks following the birth of the baby it may be that new mothers are experiencing Postnatal Depression. This is a condition that can have serious effects on a woman’s life, and her family. I am very interested in identifying ways of minimising the impact of Postnatal Depression on women and their families. Though much work has been done in this area already, there are still some aspects of Postnatal Depression that deserve more attention. The proposed study will add to our knowledge of the issues that face women following the birth of the baby, and how some of these may contribute to the onset of Postnatal Depression in different groups of women. Hopefully, we can then more appropriately assist women who need more specialised or additional support.

Your involvement in this study would mean participating in three separate interviews over the next year that will be conducted at a time and place suitable to you. The first interview will coincide with your initial antenatal appointment. You will also be asked to meet with the researcher again following the birth at approximately 10 - 12 weeks, and a final follow-up at 20-24 weeks after the birth. All interviews will be at a time and place that is convenient for you. It is anticipated that each interview will take approximately one hour. Additional information may be accessed from medical records on the birth event and other demographic information.

All information will be strictly confidential and will be stored in accordance with guidelines that will be explained to you in the interview. Your participation is purely voluntary, and you may withdraw at any time without affecting your treatment.
CONSENT FORM

If you agree to participate in this study please sign the consent form below and you can complete the questionnaire now, or an appointment will be arranged at a time convenient to you.

I-------------------------------------------------have read and understand the information and any questions have been answered to my satisfaction. I agree to participate in this study, knowing that I can withdraw at any time.

Participant Signature-------------------------------Date--------------

Contact Telephone Number-----------------------------------------

Times to call: anytime day only evening only

Researcher Signature-----------------------------------Date--------

Witness Signature------------------------------------------Date----------

If you would like more information or have any questions on the research please telephone Anne Pratt on 9400 5168 or my supervisors Dr Rosie Rooney or Dr Moira O’Connor on 9400 5551.

Joondalup Health Campus have an Independent Complaints Officer who can be contacted by telephone. The person to assist you with any concern, or further information on this study is:

Diane Kogiopulos, Health Information Department, Telephone 9400 9494.

Anne Pratt
Appendix 7

Means of Key Variables at Each Time
# Means of Key Variables at Each Time

**The Edinburgh Postnatal Depression Scale (EPDS), 1987. (Cronbach Alpha .82).**

- T1 Range: 0-17, Mean: 6.06, SD: 4.04
- T2 Range: 0-16, Mean: 4.66, SD: 3.65
- T3 Range: 0-17, Mean: 4.78, SD: 3.94

**Rotter Locus of Control Scale (LOC), 1966. (Cronbach Alpha .65).**

- T1 Range: 3-21, Mean: 11.25, SD: 3.41.
- T2 Range: 0-21, Mean: 10.84, SD: 3.94.
- T3 Range: 2-21, Mean: 11.07, SD: 3.75.

**The Maternal Attitude Questionnaire (MAQ), 1997. (Cronbach Alpha .58).**

- T1 Range: 0-8, Mean: 3.48, SD: 1.97.
- T2 Range: 0-11, Mean: 2.26, SD: 2.11.
- T3 Range: 0-12, Mean: 2.41, SD: 2.13.

**Rosenberg Self-esteem Scale (SE), 1965 (Cronbach Alpha .58).**

- T1 Range: 20-40, Mean: 32.83, SD: 4.53.
- T2 Range: 20-40, Mean: 33.86, SD: 4.29.
- T3 Range: 21-40, Mean: 33.59, SD: 4.46.

**Everyday Stress Index (ESI), 1985. (Cronbach Alpha .84).**

- T1 Range: 1-34, Mean: 10.50, SD: 6.93.
- T3 Range: 0-29, Mean: 8.61, SD: 7.21.
Attributional Style Questionnaire (ASQ), 1982.
(Cronbach Alpha .78).

T1 Range: -3.50-15.00,  Mean: 4.73,  SD: 3.58.
T2 Range: -3.50-17.00,  Mean: 4.68,  SD: 3.97.
T3 Range: -4.50-15.50,  Mean: 4.35,  SD: 3.91.

Feeling more or less in control (PC).
T1 Range: 1-7,  Mean: 3.90,  SD: 1.01.
T2 Range: 1-7,  Mean: 4.41,  SD: 1.44.
T3 Range: 2-7,  Mean: 4.46,  SD: 1.33.

Past history of a mental health problem (PH).
Past history of a mental health problem is a one-item variable.

(Cronbach Alpha .85).

T1 Range: 8-19,  Mean: 13.80,  SD: 1.98.
T2 Range: 8-19,  Mean: 14.27,  SD: 2.16.
T3 Range: 5-19,  Mean: 14.42,  SD: 2.50.