Anxiety and Depression in Postpartum Women

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Abstract

This dissertation explored the concept of postpartum depression through theoretical, methodological, clinical and experiential frameworks. The aim of this research was to identify whether depression in postpartum women differed quantitatively or qualitatively to depression experienced at other times. The research design used cross-sectional and longitudinal analysis to compare childbearing women with matched controls. Postpartum women were not found to be at increased risk of depression. However, a consistent, but insignificant, peak was noted in levels of non-somatic depression, anxiety and stress in the early postpartum months. This effect was not evident in control group responses, and when analysed longitudinally was not found to be enduring in the postpartum sample.

Many researchers have identified anxiety as the most common symptom for women experiencing 'depression' during the postpartum period. However, as anxiety and depression within the general population are thought by many researchers to be distinct disorders, the view that anxiety contributes as a primary symptom to a postpartum depressive disorder is problematic. The Edinburgh Postnatal Depression Scale (EPDS) is the most widely used self-report instrument for identifying depression in postpartum women. This dissertation challenged the capacity of the EPDS to identify 'depression', firstly by comparing EPDS results with other self-report instruments designed to differentiate depression and anxiety, and secondly by analysing the content and factor structure of the EPDS.

Good convergent and poor divergent validity was found at each assessment for all scales. For example, although the EPDS intercorrelated highly with other depression scales, it also correlated highly with scales designed to measure anxiety and stress. Exploratory and confirmatory factor analyses on the EPDS consistently showed a two-factor solution with a six-item depression cluster (EPDSdepr) and a three-item anxiety cluster (EPDSanx). Further analysis of this data revealed that EPDSanx contributed more to the total EPDS score than EPDSdepr. The findings from this research challenge assumptions regarding postpartum women's susceptibility to psychopathology and the adherence to an exclusive depression framework at this time.

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Key to Abbreviations

AN	Antenatal assessment
BDI	Beck Depression Inventory
CES-D	Centre for Epidemiologic Studies – Depression Scale
CYH	Child and Youth Health
DASS	Depression Anxiety Stress Scale
DASSa	DASS anxiety subscale
DASSd	DASS depression subscale
DASSs	DASS stress subscale
DSM	*Diagnostic and Statistical Manual of Mental Disorders*
DSSI/sAD	Bedford & Fould's Anxiety and Depression Scale
HADS	Hospital Anxiety and Depression Scale
ICD	*International Classification of Disease*
ID&A	Irritability, Depression and Anxiety Scale
MASQ	Mood and Anxiety Symptom Questionnaire
MASQaa	MASQ anxious arousal subscale
MASQad	MASQ anhedonic depression subscale
MASQgda	MASQ general distress: anxiety subscale
MASQgdd	MASQ general distress: depression subscale
MASQmx	MASQ general distress: mixed subscale
EPDS	Edinburgh Postnatal Depression Scale
NPG	New Parent's Groups
PN1	First postnatal assessment
PN2	Second postnatal assessment
STAI	State-Trait Anxiety Inventory
STAIs	STAI state scale
STAIt	STAI trait scale
WCH	Women's and Children's Hospital

Declaration

This thesis has been submitted to the Faculty of Health Sciences, University of Adelaide for examination in respect of the Degree of Doctor of Philosophy.

This thesis contains no material that has been accepted for the award of any other degree or diploma in any University of other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference is made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying.

Ann-Louise Hordacre

31st May, 2002

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for enriching my life.

Chapter 1: General Introduction

Women's experiences at, and after, the births of their babies are extremely individual ranging from joy and happiness through to apprehension, worry and depression. Invariably, it is a time of extreme change. Often the time when a woman becomes a mother is also the time that she leaves full-time work to become a 'housewife'. This results in a decrease in the family income, and a change from 'his' and 'her' money, to 'their' money. Frequently, it is also a time of increased social isolation. No longer working, women do not have the opportunity for day-to-day interactions with colleagues and workmates. Moreover, caring for an infant full-time can be exhausting, breastfeeding can sap a woman's energy, as can waking during the night responding to infant demands for food and attention.

Motherhood is often understood, and commonly described, as instinctive and natural, and is seen as the very essence of womanhood. Yet, despite this, it is governed by socio-cultural rules – rules that are also seen as natural and normal, with deviations from these rules viewed as abnormal. These socio-cultural rules suggest that women should be joyous at the birth of a child, and if they are not, then there must be something wrong with them.

For at least the last two and a half thousand years, there have been suggestions that at least some women experience mental illness after childbirth. In the last thirty-five years, this has come to be described as postpartum, or postnatal, depression. Although many have disputed the temporal specificity of this disorder to the postpartum period, few have challenged the 'depressive' nature of the disorder. This is intriguing

given that postpartum women often describe anxiety symptoms as a predominant feature of this condition.

Both lay people and health professionals commonly use depression as an umbrella term to describe the experience of negative emotions. Accordingly, the term depression is used descriptively to explain any emotion along a continuum from a transitory period of worry or unhappiness, to a clinically diagnosed episode of chronic Major Depressive Disorder or Bipolar Disorder. As such, it is laden with varying connotations regarding aetiology, symptoms and treatment. In the last twenty years, the term postpartum, or postnatal, depression has entered the vernacular. Today, postpartum depression is often accepted as a common side effect of having a baby. Like the term depression, many lay people and health professionals use the term postpartum depression to describe anything from a mild period of postnatal blues to life-threatening episodes of puerperal psychosis.

Although 'the blues' and puerperal psychosis are usually understood by researchers and clinicians as separate postpartum disorders, and distinct from postpartum depression, research on depression in postpartum women has often confused these states. Moreover, despite attempts to link numerous variables with depression in postpartum women, to date the best predictors remain those linked with psychological problems at other times, such as poor social support, marital problems, life or childcare stressors, and a history of psychological or emotional problems. It is also evident that as anxiety is a major component of 'postpartum depression', the exclusive description of such emotional problems in new mothers as 'depression' is problematic.

It is suggested here that the identification of psychological problems in the postpartum as a depressive disorder could be attributed to the state of clinical diagnosis during the 1970s and 1980s, the time when early research was being conducted in this area. During this period, depression was viewed clinically and by many researchers as a

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more severe disorder than anxiety. In fact, the diagnostic criteria for anxiety specified that when a patient presented with symptoms of both depression and anxiety, he or she should be diagnosed with the more severe condition, invariably depression. Effectively, these criteria resulted in the symptoms of anxiety being subsumed by depression.

In 1987, the publication of a revised third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R; American Psychiatric Association, 1987) changed the hierarchical structure of the previous edition, and allowed comorbid diagnosis for clients presenting with the symptoms of both anxiety and depression. Despite this change in the diagnostic criteria for psychopathology within the general population, postpartum women evincing symptoms of stress and anxiety today will still be diagnosed with, and treated for, a depressive illness. In view of this, it is apparent that postpartum women may be clinically disadvantaged by the diagnosis of depression, as the current diagnosis denies the pre-eminent role of anxiety.

1.1 RESEARCH PROBLEMS AND AIMS

Studies of postpartum depression generally start from the confusing perspective that depression during the postpartum period is qualitatively similar but somehow distinct from depression experienced by women at other times. The distinctive nature of postpartum depression appears to lie primarily in claims of a higher prevalence rate and an aetiology intrinsically linked to parturition. These claims have almost always been made in the absence of longitudinal controlled studies.

The diagnostic criteria for depression and anxiety have undergone many changes in the last twenty years. However, this has not generally affected the structure of depression and anxiety self-report instruments as the development of many of the most commonly employed instruments antedate the recent revisions to the diagnostic criteria. This has meant that many self-report instruments attempting to identify either anxiety or

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depression include questions related to the other construct contributing to poor discriminant validity. In recent times, researchers such as Watson and Clark (1991) and Lovibond and Lovibond (1995) have developed scales, the Mood and Anxiety Symptom Questionnaire (MASQ) and Depression Anxiety Stress Scale (DASS), respectively, to differentiate these disorders. However, whilst these scales have been used on various sample groups, they do not appear to have been employed in studies of postpartum women.

Increasingly, research on depression in postpartum women makes use of the Edinburgh Postnatal Depression Scale (EPDS, Cox, Holden, & Sagovsky, 1987) as a measure of the prevalence and severity of depression. This scale is lauded for its high face validity and ease of use, but its construct validity has rarely been challenged. This is despite the changes to the general diagnostic criteria and despite the fact that questions on the scale were derived from questionnaires designed to identify both anxiety and depression.

This dissertation has four broad aims, firstly, to compare the self-report prevalence rates of depression in postpartum and nonpostpartum women, and thereby to identify whether depression in childbearing women is more common than depression in a matched control. The second aim of the study is to look at the prevalence of anxiety and stress in postpartum and nonpostpartum women and to examine the relationship between anxiety, depression and stress. This leads to the third aim; to determine whether the scales designed to differentiate between anxiety and depression (DASS and MASQ) will effectively discriminate these constructs in postpartum women. Given the increasing use of the EPDS, the fourth and final aim of the study is to examine the content and structure of this scale. Combined, these aims are designed to help determine whether psychopathology in postpartum women differs quantitatively or qualitatively from psychopathology experienced at other times.

1.2 OVERVIEW OF THESIS

This dissertation describes exploratory research testing some of the assumptions and theories of postpartum depression. There is still considerable confusion in research on psychopathology in postpartum women and this dissertation attempts to make a contribution to the clarification of these issues. *Chapter 2* outlines previous research on depression in postpartum women. This includes a discussion on the history of psychopathology in postpartum women and some of the problems and inconsistencies in defining postpartum depression, its symptoms, prevalence rate, diagnosis and treatment. As with many areas of psychological research, the study of postpartum depression has been complicated by the number of extraneous variables that potentially impact on an individual's emotional state. Research on many of the key variables is also discussed here.

As a central theme of this dissertation relates to diagnostic issues, *Chapter 3* provides a contextual link to research on anxiety and depression in the general population. Theories of anxiety and depression are broadly outlined, prevalence rates discussed and aetiology and risk factors identified. This chapter focuses mainly on the problems inherent in diagnostic tools, most specifically the DSM[1], providing the background for, and detailing some of the methodological problems in, the development of the manual.

Chapter 4 reviews conceptual problems in research on depression in postpartum women. This is achieved by employing two frameworks. The first examines evidence for delimiting the condition to the postpartum period. This discussion considers related research in non-Western cultures and evidence for 'other' kinds of postpartum

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[1] Unless accompanied by the edition number, the acronym DSM will be used when discussing issues relevant to two or more editions of the manual.

depression, such as postpartum depression in fathers and post-operative depression or blues. Research on psychopathology in the antenatal period is also considered, as are controlled studies comparing depression in childbearing and non-childbearing women. Secondly, this chapter challenges the preconception that psychopathology in the postpartum is exclusively a depressive disorder. The development, construction and validation of the Edinburgh Postnatal Depression Scale (EPDS) are discussed, as is research on anxiety in postpartum women.

Chapter 5 details a preliminary study of psychopathology in primiparous women. This study assessed women at six to twelve weeks after the birth of their babies, and included a matched control group of women who were not pregnant and did not have an infant less than one year old. Using self-report questionnaires, this study was designed to identify whether there was a quantitative or qualitative difference in the prevalence or severity of psychopathology in postpartum women.

The second larger study is detailed in *Chapter 6*. Primiparous women were again used as the index group and were similarly matched with a non-childbearing control group. Developing out of the research described in the previous chapter, this study used a longitudinal design, assessing women on three occasions: in the third trimester of their pregnancy, at six to twelve weeks postpartum and at five to six months postpartum. The longitudinal design provided scope for analysis of psychopathological change across the assessment period, and more detailed analysis of the relationship between anxiety, depression and stress.

Chapter 7 combines the results of both studies for a detailed analysis of the EPDS. A series of analyses explores the factor structure of the EPDS, whilst a profile analysis compares similarities and divergences in responses to EPDS items for childbearing women and controls. The final chapter discusses methodological issues and details the findings relating to previous research on postpartum women.

Suggestions are made regarding the personal and societal effect of postpartum

depression, with the implications of this research also considered.

Chapter 2: Depression in Postpartum Women

Today, there is widespread societal acceptance of the view that a proportion of women will experience depression in the months following the birth of a child. This acceptance has developed out of the vast body of research conducted in this area during the last thirty-five years. This chapter will review much of this research, discussing and identifying methodologies and discrepant results. However, as research in this area, and this dissertation, focus on negative emotions and experiences following childbirth, it should be acknowledged that the majority of women experience a predominantly or exclusively positive transition to motherhood. Although estimates vary as to the number of women experiencing the blues, postpartum depression and puerperal psychosis, it is also clear that many women have no, or few, negative feelings about motherhood or their infants (Elliott, 1990; Green & Kafetsios, 1997; Tronick, Beeghly, Weinberg, & Olson, 1997).

2.1 EARLY HISTORY OF POSTPARTUM MENTAL HEALTH DISORDERS

Since Hippocrates time, women have been identified as susceptible to suffering from mental health disorders after the birth of a child (Attia, Downey, & Oberman, 1999; Cox, 1986; Crowe, 1991). During the Middle Ages, women suffering mental illness after parturition were invariably deemed to be either witches, or to be victims of witchcraft (Cox, 1986). In the nineteenth century, around 10% of all psychiatric hospital admissions were attributed to conditions related to pregnancy and childbirth (Taylor, 1995). In 1858, Victor Louis Marce gave the first detailed account of a postpartum psychopathology by describing the clinical characteristics of female patients admitted to

a psychiatric hospital in Paris after the birth of a child (cited by Kendell, Rennie, Clarke, & Dean, 1981). Although this has been referred to as an early account of postpartum depression, in modern terms, the symptoms described by Marce relate better to the symptoms of puerperal psychosis (see section 2.4.2 for a brief description of this condition) than to those of postpartum depression (Attia et al., 1999).

In a seminal paper, Brice Pitt (1968) reported on a condition he called 'atypical' depression. He suggested that it was far less disturbing than puerperal psychosis, but much more problematic than the blues. Following anecdotal and empirical evidence of depression in postpartum women, Pitt devised a questionnaire to assess anxiety and depression at the beginning of the third trimester of pregnancy and then at six to eight weeks postpartum. Using a large sample ($N = 305$) he reported that scores for most women dropped at the postpartum assessment, however, 11.1% ($n = 34$) had scores that substantially increased from pregnancy to postpartum. Following a brief psychiatric interview (conducted primarily on potential cases), 10.8% of the sample was identified with puerperal depression. The women also reported that they had experienced these symptoms for at least two weeks and found the symptoms unusual and disabling. Eighty percent of this sub-group were subsequently clinically diagnosed with depression. A follow-up one year later revealed that approximately 4% of the original sample had not fully recovered.

2.2 DEFINING POSTPARTUM DEPRESSION

Although the label 'postpartum depression' is widely used and accepted by health professionals and the lay population, a clear, unambiguous definition of the disorder does not exist. It is broadly agreed that postpartum depression is a non-psychotic disorder that either continues into, or begins in the postpartum period (Cox, Murray, & Chapman, 1993; O'Hara & Swain, 1996; Watson, Elliott, Rugg, & Brough, 1984), but

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there are discrepancies in defining what constitutes the postpartum period, the longevity of the episode, as well as the number and types of symptoms required for diagnosis. Furthermore, researchers use the term 'depression' in various ways; it may, for example, be used to describe a cluster of symptoms or a mood state (Cox, 1986).

In their efforts to identify postpartum depression, researchers have used retrospective, prospective and longitudinal techniques. The diagnosis of postpartum depression has been based on hospitalisation in a psychiatric ward (Dalton, 1971), clinical diagnosis, personal judgement by health professionals, and most commonly, high scores on a variety of self-report instruments. Instruments used in this way include, but are not limited to, the Edinburgh Postnatal Depression Scale, Beck Depression Inventory, Center for Epidemiologic Studies – Depression Scale, and the Hamilton Depression Scale.

Clinical diagnosis of depression in postpartum women is currently determined with reference to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000). In the DSM, it is listed as one of the 'Mood Disorders Not Otherwise Specified' with 'Postpartum Onset Specifier'. It requires that the Major Depressive or Bipolar disorder (or episode) have its onset within four weeks of childbirth. The postpartum disorder may occur as either the first instance of the disorder, or as a recurrent episode. DSM-IV-TR separates postpartum mood disorders into two groups, those with psychotic features, and those without. Postpartum mood disorders with psychotic features are generally referred to separately in the postpartum literature as puerperal psychosis (see Section 2.4.2 for further discussion). Although diagnosis is based on the same symptoms as nonpostpartum disorders, DSM-IV-TR reports that postpartum Major Depressive episodes may occur in conjunction with "severe anxiety and even Panic Attacks" (p.423). Diagnosis using the current edition of the *International Classification of*

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Disease (ICD-10) suggests that depression in postpartum women should normally be placed under one of the other labels of depression, however there is also room for diagnosing mental disorders (occurring within six weeks of childbirth) that do not fit existing criteria (Najman, Andersen, Bor, O'Callaghan, & Williams, 2000).

Within the clinical diagnosis of postpartum depression, onset is confined to the first postnatal month, however, research in this area has identified onset as extending from parturition (Cox, 1986) to one (Terry, Mayocchi, & Hynes, 1996) or two years after childbirth (Wrate, Rooney, Thomas, & Cox, 1985). Such a large time span for identifying postpartum depression is problematic on a number of levels. Firstly, another postpartum emotional problem, the blues, is widely accepted as delimited to the first two postnatal weeks (see Section 2.4.1 for further description of the blues), therefore emotional irregularity during this time cannot accurately be ascribed to postpartum depression. Further, although responsibilities and environmental links due to childcare may play a role, it is difficult to see how the development of a mental health problem one to two years after the birth of a child could be aetiologically linked to the specific birth event.

As methods of identification of depression in postpartum women employ diagnostic techniques and rigour to differing degrees, the lack of standardisation makes it difficult to compare many of the published studies of postpartum depression (Whiffen, 1988). This results in researchers making substantially different claims in relation to the aetiology, risk factors, symptoms, time frame, diagnosis and treatment for the disorder.

2.3 SYMPTOMS

A variety of symptoms are reported in women with depression after childbirth. Most commonly, women are said to experience a combination of anxiety, irritability,

depressed mood, worry, undue fatigue, mood lability, tearfulness, feelings of inadequacy, difficulty coping and guilt over feelings toward the baby (Inwood, 1985; Jarrahi-Zadeh, Kane, Van de Castle, Lachenbruch, & Ewing, 1969; Nott, 1987; Pitt, 1968; Stuart, 1999). Some symptoms cited less commonly by these and other authors include: despondency, tension, inability to cope, anger, distress over infant's health and welfare, overintrusiveness with infant, decreased concentration, self-imposed social isolation, poor psychosocial functioning, feelings of hopelessness, appetite disturbance, insomnia or sleep problems unrelated to the typical sleep disturbance of new mothers, exhaustion, psychomotor agitation, lack of (or lowered) libido, somatic symptoms, instability, hypochondriasis, phobias, obsessions, depersonalisation and suicidal ideation (although the latter is considered rare).

Clinical diagnosis of postpartum depression requires that women experience the symptoms of a Major Depressive Episode within four weeks of childbirth (American Psychiatric Association, 2000). They must experience either depressed mood and / or loss of interest or pleasure for at least two weeks in combination with at least three to four other symptoms. These additional symptoms may include weight fluctuation (significant weight gain or loss), sleep disturbance (insomnia or hypersomnia), psychomotor agitation or retardation, fatigue, feelings of worthlessness or guilt, lowered concentration, or suicidal ideation. The DSM also reports that anxiety and panic attacks are frequent in women with a postpartum depressive episode.

It is apparent that there is a lack of standardisation between the symptoms described by researchers and those required for actual diagnosis of postpartum depression. It is also surprising and, in research terms, confusing, that anxiety is one of the most commonly reported symptom for women experiencing 'depression' during the postpartum period (e.g., American Psychiatric Association, 2000; Green, 1998; Nott,

1987; Pitt, 1968; Stuart, Couser, Schilder, O'Hara, & Gorman, 1998; Whiffen & Gotlib, 1993).

Researchers have identified the problematic nature of many of the symptoms of postpartum depression as these fail to recognize adequately the physical and psychological changes that women, particularly those having a first child, experience during the transition to motherhood (Elliott, Rugg, Watson, & Brough, 1983; O'Hara, Neunaber, & Zekoski, 1984). Accordingly, the symptoms reported in new mothers may reflect the somatic condition of women who have recently given birth (or who are looking after young infants), rather than revealing emotional problems. However, in contrast to this, Augusto and colleagues (1996) found that somatic symptoms were experienced to a similar degree in depressed and non-depressed postpartum women.

Some authors claim the symptoms of depression in postpartum women are more severe than symptoms of depression in the general population (Nieland & Roger, 1997; O'Hara, Zekoski, Philipps, & Wright, 1990), however, others have suggested that the symptoms are less severe (Najman, Andersen et al., 2000; Whiffen, 1992; Whiffen & Gotlib, 1993). Researchers have also recognised that some symptoms of postpartum depression are different from those for depression in the general population. Depression in postpartum women is said to lack some of the distinctive features of nonpostpartum depression, such as suicidal ideation and insomnia (Whiffen & Gotlib, 1993). In fact, Pitt's (1968) account of the symptoms experienced by participants in his study should be noted. He claimed the symptoms were different from those experienced by depressed patients in general, and that they matched the symptoms described by others as 'atypical' depression (West & Daly, 1959; Sargant, 1961; Pollitt, 1965 all cited by Pitt, 1968):

> *"Atypical" depression is a milder variant of physiological depression most often seen in younger women of immature personalities. It is atypical either because of*

the prominence of neurotic symptoms, such as anxiety, irritability and phobias,

overshadowing the depression, or because some features are opposite to those of

classical depression, e.g., worsening at the end rather than the beginning of the

day, early rather than late insomnia (Pitt, 1968, p.1331).

2.4 OTHER POSTPARTUM DISORDERS

Although not the focus of the current research, the other postpartum psychological disorders will be reviewed briefly in the following sections. This is in order to draw attention to the differences between postpartum depression, the blues and puerperal psychosis, and to provide a context for the interpretive difficulties faced when these disorders are not differentiated. Moreover, differentiating between the three postpartum psychological disorders has been identified as critical in order to develop public health strategies to combat them (Boyce & Stubbs, 1994).

2.4.1 The 'Blues'

If a woman is weepy, irritable, anxious, hostile, confused and/or emotionally labile at some stage in the first ten days following childbirth, she is commonly believed to have the 'blues'. Despite its name, symptoms of the blues are quite different from those of depression, with women rarely experiencing depressed mood (Brockington, 1996; Miller & Rukstalis, 1999; Stein, 1982). Crying has been reported as the most common symptom of the blues, but this is not usually due to sadness (Yalom, Lunde, Moos, & Hamburg, 1968). Reports of extreme happiness (Ballinger, 1982; Kendell et al., 1981; Miller & Rukstalis, 1999) during this period point to the conclusion that it is better to consider this a time of fleeting but heightened emotions.

Generally, the blues are said to peak from three to five days postpartum, and are limited to the first 10 days after childbirth. The blues are considered to be transient,

mild and extremely common, with estimates of prevalence from around 25-75% depending on the form of measurement and criterion used (Miller & Rukstalis, 1999; Stein, 1982). As the blues are short in duration and spontaneously remit, there is no specific treatment recommended or required (Nonacs & Cohen, 1998). There is also substantial evidence for their existence in non-Western cultures (Miller & Rukstalis, 1999; Stein, 1982).

Miller (1999) suggests that studies on the blues are subject to a number of problems. As the blues are considered to be a pathological condition, researchers have used instruments that concentrate on negative symptoms and fail to give proper weight to positive symptoms. She also claims that somatic symptoms of parturition are confounded in the depression scales used. Further, the design of many of the instruments used in identifying the blues is inappropriate to adequately assess daily mood changes, whilst instruments specifically designed to address the blues have not often been systematically tested. Complicating the picture is the fact that some studies use recall as the only assessment of perinatal mood, a method that has been found to be an unreliable indicator of emotional state.

Attempts have been made to link the blues with physiological, obstetric and psychosocial factors. Perhaps the most popular and widely accepted theory is the hormone withdrawal hypothesis. This suggests that the blues are predominantly hormonal, experienced at the time of a rapid drop of oestrogen and progesterone from the extremely high levels experienced at the end of pregnancy to normal levels within five to seven days after childbirth (Campbell & Winokur, 1985; Dalton, 1971; Deakin, 1988; Jarrahi-Zadeh et al., 1969; Stein, 1982; Yalom et al., 1968). Another promising theory, the biological attachment theory, suggests that humans and other mammals are subject to a biological system that promotes attachment between mother and infant. Animal studies have identified oxytocin and oestrogen in this system as activating

maternal behaviour by acting on the limbic system (Miller & Rukstalis, 1999). The biological attachment theory conceptually fits the existing blues data, but it is yet to be tested empirically.

Researchers have proposed a number of other aetiological agents related to the development of the blues, such as delivery method, time in hospital, previous episodes of depression, personality and life stressors (Atkinson & Rickel, 1984; Ballinger, 1982; Kear-Colwell, 1965). Although some of these studies have identified links with the blues, the research has been beset with methodological problems and has often produced ambiguous or contradictory results. Some researchers have suggested that the experience of the blues is not specifically related to the postpartum period, as antenatal depression and anxiety have been identified as the best predictors of the blues (Knight & Thirkettle, 1987). Viewed in these terms, and in an endeavour to show that the blues were related to medical intervention rather than childbirth, post-operative women (having undergone gynaecological surgery) were compared to postnatal women (Iles, Gath, & Kennerley, 1989). Although Iles et al., found that both groups of women experienced blues, the researchers reported different symptom profiles and patterns, and thus concluded that postnatal blues were linked specifically to parturition.

2.4.2 Puerperal psychosis

Puerperal psychosis is the most severe form of postpartum mental illness and is reported to occur approximately once in every thousand women following childbirth, with relapse estimated at between 30-90%. Women usually develop the symptoms of puerperal psychosis in the first two weeks after parturition. Initial symptoms are confusion and irritability leading to delirium, hallucinations and mania. Puerperal psychosis is more likely to occur in women with a history of manic-depressive disorder, and will recur in subsequent pregnancies in around one third of those affected. Afflicted

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women are usually hospitalised and treated with neuroleptic drugs, or occasionally electroconvulsive therapy, returning home within 6 to 12 weeks (Altshuler, Hendrick, & Cohen, 1998; American Psychiatric Association, 2000; Attia et al., 1999; Brockington, 1996; Kendell et al., 1981; Videbech & Gouliaev, 1995).

Kendell et al. (1981) reported that around five times more women were admitted into a psychiatric hospital in the first three postpartum months, than during the two years prior to childbirth. However, this substantial increase may be the result of a higher level of surveillance, particularly for primiparous women, and a higher perceived need, with women seen not to be coping in the early postpartum more readily identified than women not coping at other times. By this rationale, it is not surprising that primiparous women were more likely than multiparous women to be admitted to psychiatric wards in the early postpartum period (Kendell et al., 1981). Similarly, women who were unmarried or who underwent Caesarean sections were also found to be more at risk of admission, however, other pregnancy or delivery related variables (e.g., eclampsia, gestation period, baby's birthweight, ante- or postnatal haemorrhage) had no effect on risk.

A review of Danish medical records of first episode puerperal psychosis found that primiparous women over the age of 25 years were more likely to develop puerperal psychosis (Videbech & Gouliaev, 1995). This was more evident when considering data from the first postpartum month when around half the women identified were admitted to psychiatric hospitals. Most women in the Danish review were treated with neuroleptic agents and almost one third also underwent electroconvulsive therapy. Around half of those admitted to psychiatric hospitals were discharged within a month. Upon discharge, around 50% of women received a diagnosis of manic-depressive psychosis with a further 20% being diagnosed with puerperal psychosis, which suggests a link between the two disorders. All women experienced further psychotic episodes

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over the following 7-14 years, but 40% had only one further episode. Pregnancy complications, early delivery and low infant birthweight were also found to be more common in women with puerperal psychosis than in matched controls. Reflecting the findings of Kendell et al. (1981), birth complications did not differentiate group membership.

2.5 PREVALENCE OF DEPRESSION IN POSTPARTUM WOMEN

Although the prevalence of new cases of depression in postpartum women has been estimated at between 5-45%, most researchers agree that between 8% and 15% is a more reliable approximation (Condon & Corkindale, 1997; Cox et al., 1993; Kumar & Robson, 1984; O'Hara, 1997; Pope, Watts, Evans, McDonald, & Henderson, 2000). Prevalence estimates have been found to vary widely depending on the method and criteria used to identify cases (Horan-Smith & Gullone, 1998; Huffman, Lamour, Bryan, & Pederson, 1990; Whiffen, 1992) the temporal limitations employed, which may be any time from birth to two years postpartum (Beck, 1996a; Kendell, Wainwright, Hailey, & Shannon, 1976; O'Hara & Zekoski, 1988), and the subsequent confounding of blues and postpartum depression. The effect that some of the different research methods and criteria have had on the prevalence of postpartum depression is evident in the examples shown in Table 2.1.

Despite the wide variation in prevalence rates reported in individual studies, a meta-analysis of 59 studies found a postpartum depression prevalence rate of 13% (O'Hara & Swain, 1996). This study also assessed the difference in prevalence found in self-report versus interview studies, and although the difference is quite small, found more women identified with postpartum depression when self-report techniques were employed. However, it is important to note that whilst meta-analyses provide us with a summary of the results of a number of studies, they also conceal many differences

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Table 2.1. Examples of the effect different research methods and criteria have had on postpartum depression's prevalence rate

Prevalence (assessment time)	Author	Diagnostic method
25% (3-12 months postpartum)	Jacobsen, Kaiy & Nilsson, 1965	Developed own questionnaire (including many items referring to anxiety)
10.8% (6-8 weeks postpartum)	Pitt, 1968	Developed questionnaire on "maternal anxiety and depression" (p.1326)
3.5% (3rd trimester of pregnancy); 8.2% total postpartum (4.7% 2 weeks postpartum; 3.5% 8 weeks postpartum –no overlap of cases)	Cutrona, 1983	DSM-III criteria Major Depression using point prevalence. Minor Depression measured by ≥9 BDI[a] found in 24.7% (antenatal), 32.9% (2 weeks postnatal) & 11.8% (8 weeks postnatal)
9% total with 6% Major & 3% Minor (2nd trimester of pregnancy); 12% total with 8% Major & 4% Minor (up to 9 weeks postpartum)	O'Hara, Neunaber & Zekoski, 1984	RDC[b] minor or major depression
9% affective, 2% agoraphobia (antenatally); 12% affective, 2% agoraphobic (6 weeks postnatal); 22% affective (total during 1st postnatal year)	Watson, Elliott, Rugg & Brough, 1984	SPI[c]
16.5% total with 6.1% Major & 10.4% Minor (8 weeks postpartum)	Whiffen, 1988	SADS[d] with RDC[b] criteria
5.3% with EPDS ≥ 13 cutoff; 12.4% at EPDS ≥ 10 (2-3 months postnatal)	Fisch, 1989	EPDS[e]
10.4% (9 weeks postpartum)	O'Hara, Zekoski, Phillipps & Wright, 1990	RDC[b] (DSM-III)
25.7% (6 months postpartum)	Ballard, Davis, Handy & Mohan, 1993	EPDS[e] ≥13
4% (12 weeks postpartum)	Boyce, Stubbs & Todd, 1993	DSM-III-R major depression only (% shows prevalence of original sample, 5 participants recruited later from psychiatric ward not included)
7% (1 month postpartum)	Whiffen & Gotlib, 1993	SADS[d] with RDC[b] criteria
24% (3rd trimester of pregnancy); 20% (5 days postpartum); 6% (6 weeks postpartum);10% (6 months postpartum)	Demyttenaere, Lenaerts, Nijs & Van Assche, 1995	BDI[a]
13.1% & 16.1%, point prevalence in 2 groups (3 months postpartum)	Augusto, Kumar, Calheiros, Matos & Figueiredo, 1996	EPDS[e] ≥13, Portuguese study.
13% (meta-analysis of 59 studies)	O'Hara & Swain, 1996	Meta-analysis. No difference between nations
17% (antenatal); 16% (4 weeks postpartum); 17% (5 months postpartum)	Terry, Mayocchi & Hynes, 1996	EPDS[e] ≥10; BDI[a] scores slightly higher
15.4% (8-9 months postpartum)	Brown, Small & Lumley, 1997	EPDS[e] ≥ 13. Australian study.
31% (antenatal); 16% (4-5 weeks postpartum)	Da Costa, Larouche, Drista & Brender, 2000	EPDS[e] ≥ 13 (and participants who had EPDS ≥10 and Depression Adjective Checklist ≥ 14)
23.9% total with 15.5% Major & 8.4% Minor (during 1st 3 months postpartum)	Maes et al., 2000	Assessed retrospectively (at 6-10 months postpartum) with DSM-IV criteria
12.3% (4-6 weeks postpartum); 10.2% (7-8 weeks postpartum); 13.1% (9-10 weeks postpartum); 8.2% (11-12 weeks postpartum)	Najman, Andersen, Bor, O'Callaghan & Williams, 2000	Delusions Symptoms-States Inventory (Unknown cutoff)
17% total with 8% Major & 9% Minor (during 1st 3 months postpartum)	Yamashita, Yoshida, Nakano & Tashiro, 2000	RDC[b], Japanese study

[a] Beck Depression Inventory. [b] Research Diagnostic Criteriz. [c] Standardized Psychiatric Interview. [d] Schedule for Affective Disorders and Schizophrenia. [e] Edinburgh Postnatal Depression Scale.

inherent in the studies (Romito, Saurel-Cubizolles, & Lelong, 1999). It is also pertinent to note that women with depressive symptoms are less likely to continue involvement in studies assessing postpartum depression (Najman, Andersen et al., 2000). By this rationale, it is suggested that rather than over-estimating the prevalence of women depressed after childbirth, the number of cases may be under-reported.

2.6 AETIOLOGY AND RISK FACTORS

Researchers have tried to isolate physiological, psychological, social, environmental and obstetric factors that lead to depression in postpartum women with few consistent results. To date, the best predictors of postpartum depression are a previous history of psychological problems, marital problems, life or childcare stressors, poor social support and emotional problems during pregnancy (Beck, 1996a; O'Hara & Swain, 1996). However, these predictors are not specific to postpartum women, but are predictors of depression in the general population as well. The following sections will focus on research reporting risk factors for, and aetiological links with, depression in postpartum women. Apart from the general consensus reported above regarding the broadly defined predictors of postpartum depression, many specific factors have been tested in an attempt to predict or identify postpartum depression. As detailed below, such attempts have had limited success as results reported in one study are often inconsistent with the findings of other studies.

2.6.1 History of Mental Illness

There is little in the way of truly prospective literature supporting the statement that women with a previous history of mental illness are more susceptible to relapse during the postpartum period (Altshuler et al., 1998), as most studies on postpartum depression postdate the inception of the pregnancy or childbirth. However, retrospective

reports consistently, although not always (e.g., Pitt, 1968), suggest that previous history of mental illness is a major risk factor for depression in postpartum women (Beck, 1996a; Cooper & Murray, 1995; O'Hara et al., 1984; O'Hara & Swain, 1996; Paykel, Emms, Fletcher, & Rassaby, 1980; Watson et al., 1984). For example, many reports on psychological history focus on details about previous episodes of depression from either a previous pregnancy or childbirth (Wisner, Peindl, & Hanusa, 1994). Other research has suggested postpartum depression is related to the woman's psychological history independent of their childbearing history (Whiffen & Gotlib, 1993). Research has also attempted to identify links between postpartum depression and family history of an emotional disorder (Kumar & Robson, 1984; O'Hara et al., 1984; Watson et al., 1984).

Depression in postpartum women has been reported to be more common in women who experienced the blues (Cox, Connor, & Kendell, 1982). However, with up to 75% of women said to experience the blues, this is hardly surprising. It has also been found that women with a previous history of help-seeking for emotional problems were much more likely to develop depression during the postnatal period (Beck, 1996a; Whiffen & Gotlib, 1993). Whiffen and Gotlib (1993) further suggest that the index episode may be the first appearance of depression in a vulnerable woman. However, whilst it has been suggested that depression occurs postnatally due to the fact that a woman who has experienced a previous episode is more susceptible (Wisner et al., 1994), Altshuler and colleagues (1998) identified the problem of women with a prior history of depression developing a postnatal condition because they ceased psychotropic medicine during pregnancy. They suggest that as relapse is common amongst the general population when their antidepressant medication is discontinued, it follows that a similar pattern should be seen amongst pregnant women who cease their pharmacological treatment, resulting in a high rate of relapse.

2.6.2 Obstetric and Gynaecological factors

Although the DSM diagnostic criteria draws similarities between postpartum and nonpostpartum depressive disorders, many researchers view depression in postpartum women as distinct from depression occurring at other times. Under this assumption, researchers have attempted to link depression in the postnatal period with factors specifically related to the childbearing capacity of women. However, a number of reports have found little or no relationship between depression and any obstetric and gynaecological problems or complications either in pregnancy or during delivery (Da Costa, Larouche, Dritsa, & Brender, 2000; Johnstone, Boyce, Hickey, Morris Yates, & Harris, 2001; O'Hara, Rehm, & Campbell, 1982; Paykel et al., 1980). This section details some of the studies conducted in this area.

2.6.2.1 Gynaecological history

Mental health problems during the postnatal period are thought by some to be related to gynaecological history or menopause (O'Brien & Pitt, 1994). Women who have experienced dysmenorrhoea have been reported with higher levels of depression postnatally (Pitt, 1968). However, further assessment of this variable revealed these women also have higher levels of depression antenatally, and higher anxiety both antenatally and postnatally (Paykel et al., 1980; Sugawara et al., 1997). Such findings suggest that women with dysmenorrhea have higher levels of depression and anxiety, but that their psychological distress is unrelated to childbearing *per se*. Despite many attempts, significant relationships have also not been established between postpartum depression and miscarriage, although a relationship with abortion has been reported during the early postpartum (Ballard, Davis, Cullen, Mohan, & Dean, 1994; Kumar & Robson, 1984) and Pitt (1968) cited complications in a previous pregnancy as a risk factor.

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Studies examining the relationship between postpartum depression and parity have also produced differing results. Tamaki and colleagues reported that primiparous women were more likely to experience anxiety and depression in the early postpartum (Tamaki, Murata, & Okano, 1997). However, others have reported that primiparae were no more likely, and may be less inclined than multiparae, to experience distress at this time (Pitt, 1968; Wilkinson, 1995). Moreover, when assessing the characteristics of the multiparae, Pitt reported that women with three children were significantly less likely to be depressed. Contrasting with this, another study found that women with more children were more inclined to be depressed (Augusto, Kumar, Calheiros, Matos, & Figueiredo, 1996) and, more specifically, Brown and Harris (1978) reported women with more than three children under the age of fourteen (particularly if one of these children was under the age of six) had higher levels of depression. Whilst these findings appear contradictory, they highlight the difficulty of the different levels of specificity used in research of depression in postpartum women. For example, Pitt's sample of women may have had much older children than the sample cited by Augusto et al. (1996). Under this assumption the findings of all the above studies are potentially supportable.

2.6.2.2 Pregnancy

Women who did not plan their pregnancy have been reported to be at greater risk of depression both antenatally and postnatally (Green, 1998; Warner, Appleby, Whitton, & Faragher, 1996), but this has not always been found (Pitt, 1968). Other authors have highlighted the impact of an unwanted, rather than unplanned, baby in the aetiology of depression (Kumar, Hipwell, & Lawson, 1994; Romito et al., 1999). Women who planned a pregnancy for a wanted baby, but had delayed conceptions (due to reasons beyond their control) have also been reported with higher levels of depression (Demyttenaere, Lenaerts, Nijs, & Van Assche, 1995). This study also found women's

coping styles were affected, with delayed conceptions associated with the belief that their partner's involvement was inadequate during the pregnancy, and with women being less able to cope with the changing physical effects of pregnancy.

2.6.2.3 Labour and delivery

The physiological changes of pregnancy and childbirth have led some researchers to believe that a hormonal aetiology might be identified in women who are depressed during the postnatal period. It is known that oestrogen and progesterone levels rise significantly during pregnancy, dropping dramatically to lower than normal levels within 48 hours of childbirth with these levels not returning to normal until either menstruation returns or breastfeeding ceases (Nonacs & Cohen, 1998; O'Brien & Pitt, 1994). It should be noted, however, that although all women experience the extreme endocrinal changes mentioned above, only a small proportion develop postpartum mental disorders. It is therefore likely that although hormonal changes may play some part in postpartum depression, they should not be considered in isolation. Despite extensive research in this area (e.g., Harris, 1993; Harris, 1994; Harris et al., 1996; Mallett et al., 1995), the best identified relationship to date is between thyroid dysfunction and non-psychotic postpartum depression (Harris, 1996).

Some researchers have attempted to implicate labour method, or difficulties, in the onset of postpartum depression, again with contradictory results. Tamaki et al. (1997) found higher incidence of depressive symptomatology at one month postpartum when women had a difficult labour, but reported no difference at subsequent testings. However, a number of researchers have found no relationship or reduced evidence of depression in women who experienced a difficult labour (Cox et al., 1982; Paykel et al., 1980; Pitt, 1968; Romito et al., 1999; Whiffen, 1988), whilst others have reported depression is more common in women who delivered by caesarean section (e.g.,

Hannah, Adams, Lee, Glover, & Sandler, 1992). Alternately, postnatally depressed women have been reported as spending more time in labour than controls (Dalton, 1971; Pitt, 1968) although, again, this has not always been found (Uddenberg, Fagerstrom, & Hakanson Zaunders, 1976).

A meta-analysis in this area reported that postpartum depression was weakly related to delivery complications, but this appeared more likely when the method of assessment was through self-report than interview (O'Hara & Swain, 1996). Interestingly, this was not related to the time of assessment and was found to be the case equally when assessment was late in the postpartum period, as when it was early.

2.6.2.4 Postnatal factors

Some studies suggest that women who experience the blues are more likely to develop postpartum depression, particularly if they have a previous psychiatric history (Beck, 1996a; Cox et al., 1982; Hannah et al., 1992; Kendell et al., 1981; O'Hara, Schlechte, Lewis, & Wright, 1991; Pitt, 1968). Such findings support the temporal overlap between the blues and postpartum depression (Yamashita, Yoshida, Nakano, & Tashiro, 2000), but should be carefully considered due to the fact that the two disorders have often been confounded (Fisch, Tadmor, Dankner, & Diamant, 1997; Manly, McMahon, Bradley, & Davidson, 1982) and that as a relationship between the blues and postpartum depression has not always been found (Kumar & Robson, 1984).

As some authors have suggested a hormonal aetiology for postpartum depression, it follows that the relationship between breastfeeding and postpartum depression would also be considered. There has been little success in linking breastfeeding with postpartum depression, regardless of whether or not the mother breastfed (Cox et al., 1982; Pitt, 1968; Robson & Kumar, 1980; Stamp & Crowther, 1994) or the longevity of breastfeeding (Jacobsen, Kaij, & Nilsson, 1965). Although evidence is lacking, it is

suggested here that the insignificant results in this area may be due to women with depressive symptomatology either choosing not to breastfeed, or discontinuing breastfeeding earlier than other women.

2.6.3 Social and Environmental

2.6.3.1 Social support

No consensus has been reached on a definition for social support, although a number of different factors have been identified as important, such as, the number of supportive relationships or perceived level of support, the closeness of participants in the 'supportive' relationship, and the type and adequacy of support provided (Beck, 1996a; Cutrona, 1984; Hopkins, Campbell, & Marcus, 1987; Logsdon, McBride, & Birkimer, 1994). Furthermore, it is unclear how social support acts on stress levels; whether it protects against negative effects or enhances emotional stability (Cutrona, 1984). In fact, it may be the different conceptualisations of social support amongst researchers that has led to the varied responses in studies of effectiveness. Nonetheless, studies on social support have looked at different aspects of marital support, family support, the support of close friends, the role of parenting groups, social support during pregnancy, social adjustment, the effects of previous death of a parent, and support seeking behaviour.

Slight variations in research method can impact significantly on results as shown in the following examples. A meta-analysis by O'Hara and Swain (1996) identified low levels of *antenatal social support* as a major predictor of postpartum depression. However, using a specially developed instrument to assess social support in postpartum women, Logsdon et al. (1994) found no significant difference between the amount of *anticipated postnatal support* (assessed during pregnancy) and that received at six

weeks postpartum. This was attributed to the difficulty of determining antenatally the amount of social support required postnatally. They did, however, find that a number of factors combined to predict postpartum depression. These included closeness of relationship with spouse, antenatal depression and increased importance placed postnatally on social support. Generally speaking, though, it is accepted that the presence of social support from family, friends or health care professionals, or the existence of a confidante is protective against depression in postpartum women (Cox, 1996; Green, 1998; Oakley, 1992; Romito et al., 1999; Terry et al., 1996).

Marital[2] problems, as well as dissatisfaction with, and lack of support from, one's partner are commonly cited as risk factors for depression in the normal population, and are implicated in both antenatal and postnatal depression (Beck, 1996a; Cox et al., 1982; Green, 1998; Kermode, Fisher, & Jolley, 2000; Kumar & Robson, 1984; O'Hara & Swain, 1996; Paykel et al., 1980; Pitt, 1968; Romito et al., 1999; Whiffen, 1988). There is also evidence that marital problems during pregnancy can result in postpartum depression (O'Hara, 1986; Watson et al., 1984). Consistent with the above results, other studies have shown the positive impact a supportive partner has on the levels of depression experienced by postpartum women (Gotlib, Whiffen, Wallace, & Mount, 1991; Whiffen, 1988).

When assessing marital support it is generally the woman's perception of support that is being measured. This is problematic as their perceptions are potentially affected by the profound life change they are experiencing. Nicolson (1998) reported that women expressed anger at their partners' lack of compromise, and were angry that men experienced few changes in their lives (in contrast to the upheaval experienced by women after childbirth). Although not directly assessed in relation to postpartum

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[2] The term 'marital' is used in this dissertation to refer to both marital and de facto relationships

depression, Taylor (1995) also reported that over half the women in her study were angry or resentful toward their partners for their lack of responsibility for childcare and household tasks. Similarly, women were angry that their partners' lives had remained relatively unaffected by the introduction of their baby, whilst the women themselves felt their lives had been turned upside down. Women were expected to sacrifice their lives for the infant. Such research corresponds with the consistent finding that satisfaction with marital relations declines from the antenatal to postnatal period (Cowan & Cowan, 1988).

2.6.3.2 Stressful life events

Stressful life events have been implicated in the development of depression in the general population and have been studied in postpartum women. A number of general factors are understood to be stressful to most people, including such things as death of a close family member or friend, financial difficulties and decline in health status (e.g., Brown & Harris, 1978). However, consideration should be given as to whether the event is perceived as stressful by the individual of interest, as the perception of stress can be very personal and should be viewed on an individual basis. Generally though, stressful life events have often (Beck, 1996a; O'Hara et al., 1982; O'Hara & Swain, 1996; Paykel et al., 1980; Watson et al., 1984), but not always (Pitt, 1968; Tamaki et al., 1997; Yamashita et al., 2000), been shown to be strongly related to the development of depression in postpartum women.

It has been hypothesised that the relationship between stressful events and depression in postpartum women is a result of stressors occurring concurrent with the early postpartum period. These are proposed to have the effect of magnifying any problems women have with their babies, and can potentially manifest in depression (O'Hara, Rehm, & Campbell, 1983). This is particularly pertinent when women

experience an accumulation of extraneous stressful events, in addition to the birth of their baby (Terry et al., 1996). However, it is possible that this relationship may result from the fact that stressful life events are often recorded retrospectively. It is therefore possible that existing depressive symptomatology biases the recollection of past events.

As with the normal population, bereavement has been identified as related to the onset of depression during the postpartum period, but this finding has been reported more commonly during pregnancy (Kumar & Robson, 1984). Others have reported that the previous death of the woman's mother was related to depression in the immediate postnatal period but not related to depression found beyond this time (Cox et al., 1982). Whilst it is clear that loss of a loved one may result in depression, some authors suggest that consideration should be paid to a broader definition of loss, one that may also be particularly appropriate for women becoming mothers for the first time. Although there is social recognition for a number of positive events or 'gains' that women may experience due to the birth of a child (Green & Kafetsios, 1997; Nicolson & Woollett, 1998), little consideration is given to the accompanying losses that women experience (Nicolson, 1986; Taylor, 1995).

'Change' is a common theme for women after childbirth as their lives are invariably turned around, with new demands and shifting priorities. Often women see this in a positive light, but a proportion of women view these changes negatively. The early postpartum months may be seen as a time of loss for some women, their relationship with their partner may deteriorate, and many lose the socially valued role of employed person, for the undervalued role of mother (Cox, 1986). Further, there is often a change in social relationships outside the marriage or partnership. Women with new babies often find themselves confined to their homes, their lives structured around their infant's sleeping patterns. Accompanying this, women can also lose contact with friends and their usual means of social support (Scott, Brady, & Glynn, 2001).

Attempting to identify a relationship between socio-economic status and postpartum depression has been difficult. Although findings are inconsistent, women with fewer financial resources, lower income levels or those who are socially disadvantaged (Green, 1998; O'Hara & Swain, 1996; Romito et al., 1999; Whiffen & Gotlib, 1993) have been reported to be slightly more at risk of developing depression after the birth of a child. In part, this is reflected by the finding that women with private health insurance (ostensibly those with more financial resources) have better mood scores than public health patients (Kermode et al., 2000).

There is also some suggestion that different aetiological factors are at work in women who have short episodes of postpartum depression, rather than enduring episodes (Ballard et al., 1994). Although identified in only one study, it is possible that women with persistent disorders were more likely to have come from a lower socio-economic background and have been unemployed prior to pregnancy, whereas short-term depressive episodes were related to a higher number of terminations of prior pregnancies and women being over the age of 30 years. If this is the case, then it would appear that enduring 'postpartum' depression has the same aetiology as other depression, whereas short-term postpartum depressive episodes may be more likely to reflect factors related to the current (or a previous) childbearing episode.

2.6.3.3 Transition to motherhood

Although fatigue, insomnia and hypersomnia are all known symptoms of Major Depression, they are rarely given much consideration in studies of depression in postpartum women. This is consistent with the understanding that it is 'normal' for women to feel tired when they have a young infant to care for and is likely to be borne out of the belief that postpartum depression has a physiological aetiology. However, this belief results in the failure of many studies to appropriately consider the role fatigue

may play in emotional disorders in postpartum women. Level of tiredness has been found to be related to high depression and anxiety scores (Cox, 1986; Cramer, 1997; Errante, 1985; Green & Kafetsios, 1997), and is more common in women who describe their infants in negative terms (Green & Kafetsios, 1997).

Not surprisingly, women are more likely to be depressed or distressed when their infant experienced complications in the early postpartum (Hopkins et al., 1987) or was hospitalised in their first year (Romito et al., 1999). Depression in postpartum women has also been found to be related to a variety of childcare stressors (Cutrona, 1983; O'Hara et al., 1984; Tamaki et al., 1997). Depressed women may be overwhelmed by their childcare responsibilities, and use their partner, family and friends as a resource to care for and interact with their infants when possible (Beck, 1996c). It is possible that this helps the women with their feelings of guilt over their perceived inadequacies as mothers, and is an attempt to overcome their feelings that their children may suffer from interactions with a depressed mother.

Women with infants they perceived as being irritable or temperamental were more likely to experience the symptoms of postpartum depression (Cutrona, 1983; Hopkins et al., 1987; Pitt, 1968; Terry et al., 1996; Whiffen, 1988). However, the effect of irritable or temperamental infants is potentially moderated by high social support (Cutrona & Troutman, 1986). These findings have been supported by the results of a meta-analysis of seventeen studies, showing a moderate relationship between postpartum depression and infant temperament (Beck, 1996b). Moreover, depressive symptomatology could also be predicted by the mother's optimism relating to their infant's potential temperament at the antenatal assessment (Whiffen, 1988). The increase in symptoms could, therefore, result from the infant either not meeting the mother's expectations or her expectations being unrealistic.

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Reports of infant irritability may also be clouded by, or reflect, the mother's

mental state more than the child's disposition, as it is possible that women experiencing

problems may be more likely to report their infant as temperamental or fussy.

Alternatively, it may be that the infant is more temperamental with this potentially

resulting from, or impacting on, the mother's psychological state. Regardless of the

aetiology, it is likely that the perception of a temperamental or difficult infant could

have negative implications for the mother-child dyad. Some studies have attempted to

control for the above methodological problems, using concurrent reports of infant

temperament from significant others (Terry et al., 1996) or stringent objective recording

techniques (Cutrona & Troutman, 1986). However these are the exception rather than

the norm.

2.6.4 Personality Variables

Little research has been conducted on the role personality plays in the

development of postpartum depression. Nevertheless, recent studies have shown a

negative relationship (independent of optimism) between self-esteem and depression

during pregnancy and the first couple of weeks after childbirth (Fontaine & Jones, 1997;

Terry et al., 1996). Terry et al., also report that self-esteem can be employed as a coping

resource and thereby moderates depression in postpartum women. A mediating effect

has also been identified in studies of social support, where high support is proposed to

influence a woman's level of self-efficacy and confidence and thereby acts to prevent

depression (Cutrona & Troutman, 1986). Nieland and Roger (1997) found that women

with high levels of depressive symptomatology were more likely to respond to a group

of symptoms identified as representing low self-esteem but the researchers were unable

to identify whether this low self-esteem antedated the depression. Kumar and Robson

(1984) found correlations between the neurotic and psychotic personalities and

postpartum depression, but these relations were not found to be predictive. In contrast to this, O'Hara and Swain (1996) found that neuroticism during pregnancy was weakly predictive of postpartum depression.

Following the learned helplessness model of depression, where depression is thought to follow stressful events, Cutrona (1983) attempted to determine whether attributional style had an impact on the development of depression in postpartum women. This model suggested that depressed individuals experiencing stressful life events make global, stable and internal attributions about those events. She found a difference between women who had been depressed antenatally and those who had not, with attributional style a significant but small predictor of postpartum depression in those who had not been antenatally depressed, but not playing a role in those showing evidence of depression in pregnancy. Recovery was also found to be faster when women displayed a non-depressive attributional style, but it should be noted that these results include women with a range from mild to major depressive symptoms.

2.7 ONSET AND COURSE

DSM-IV-TR criteria stipulates that to be diagnosed with postpartum depression, the onset of the depression must have occurred within four weeks of parturition, and that it should not be confused with the blues (experienced during the first ten postpartum days). According to these criteria, this leaves twenty days in which the development of postpartum depression can occur. However, Stuart et al. (1998) suggest the DSM criteria are arbitrary and are not based on empirical evidence. Stuart et al.'s comments are supported by the fact that ICD-10 proposes a different time period (of six weeks postpartum) to delimit caseness. Most research reports suggest that the onset of depression in postpartum women is most likely to occur during the first three months (Bagedahl Strindlund, 1986; Cooper, Campbell, Day, Kennerley, & Bond, 1988; Kumar

& Robson, 1984; Taylor, 1995; Watson et al., 1984). Stuart and colleagues (1998) report that the symptoms of depression can continue to develop up to six months postpartum, whereas Nott (1987) reported most new cases of depression in postpartum women occurred between three and nine months postpartum and not in the first three months. Other sources have attempted to identify postpartum depression during the first and second year after childbirth (Field, 1997; Kendell et al., 1976; O'Hara, 1997).

Despite research and clinical differentiation of the blues and depression in postpartum women, some studies continue to confound these two disorders by assessing women in their first ten days postpartum and then proceeding to refer to any resultant problems as postpartum depression, whilst others cite studies reporting the blues as part of the evidence for the existence of postpartum depression (Fisch, 1989; Knight & Thirkettle, 1987; Manly et al., 1982). Although any attempt to delimit the time frame for onset of postpartum depression may be deemed arbitrary, the above findings suggest that such a limitation for diagnosis of postpartum depression is appropriate. An imposition of from two weeks to six months postpartum would seem to concur with most studies for the optimal identification of specific postpartum conditions as distinguished from conditions afflicting the general population (Najman, Andersen et al., 2000).

There are no definitive results showing the course of postpartum depression, but it is generally thought to last between two and six months from onset (e.g., Taylor, 1995). Ghubash and Abou Saleh (1997) reported that all cases in their study had resolved by eight months, with very few new cases appearing. However, some authors have studied the continuation of postpartum depressive episodes up to five years after childbirth (Murray & Cooper, 1997). Rather than looking at the longevity of the disorder, Cox (1986) suggests that postpartum mood disorders lie on a continuum from the blues through postpartum depression to puerperal psychosis. He asserts that careful

monitoring of women with the blues is necessary to avoid the blues developing into postpartum depression. Moreover, unless watched carefully he cautions that depression may become a psychosis. Although this fits some evidence about depression in the general population progressing along a continuum (see Section 3.4.2.2), it is unlikely that depression in postpartum women will develop into puerperal psychosis due to the fact that symptoms of the later disorder are also said to begin around two weeks after parturition.

2.8 DIAGNOSIS

With approximately 8-15% of women said to experience depression during the postpartum period, appropriate diagnosis is an important issue. It is particularly salient as depression in many postpartum women fails to be diagnosed and, therefore, treated (Cox, 1986). Many women see health professionals more regularly than usual during pregnancy and the early postpartum, therefore it has been suggested that health professionals should take a more pro-active role in identifying postpartum depression (Holden, 1996).

Obstetricians, paediatricians and GPs are expected to have knowledge about, and be able to identify, depression in postpartum women, but this is not always the case. It is problematic that despite depression and anxiety occurring at twice the rate in women than men (as discussed in Section 3.2), obstetricians and gynaecologists are not usually trained to specifically identify these problems (Diket & Nolan, 1997). Furthermore, it has been reported that the gender of the woman's doctor has implications for the identification of depression in postpartum women, as female doctors are more aware of the disorder than male doctors (Crowe, 1991).

As many health professionals have an infant-focused approach during the early postpartum, identifying psychological problems in the mother is less likely. This is

further complicated by the fact that women are unlikely to seek help specifically for mental health problems and are thought by some researchers to under-report problems during the postpartum period (Rowe, Temple, & Hawthorne, 1996). Women may not report symptoms of depression due to the negative attitudes of family and friends toward problems in the postpartum period, or due to societal attitudes to mental illness. They may be concerned that if they acknowledge problems during this time, not only will they fail to conform to the socially sanctioned images of women as mothers and potentially risk ridicule, but they may also fear having their children taken from them and placed in care. Interestingly, Rowe et al. (1996) found that as concerns about their infant were alleviated, women began to report more problems related to themselves.

Whilst most work on postpartum depression uses standardised tests or clinical diagnosis to identify the depression, it has been suggested that such approaches may be limiting for clinical research (Nieland & Roger, 1997). Following the work of Costello (1992), Nieland and Roger further suggest that work on differentiating postpartum from nonpostpartum depression should employ a symptom-based approach.

2.8.1 Clinical diagnosis

It was noted in Section 2.3 that depression in postpartum women is defined by both DSM-IV and ICD-10 as having the same syndromal characteristics as nonpostpartum depression with an onset at between four to six weeks postpartum. The primary differences between postpartum and nonpostpartum depression lie in the proposed aetiology of the depression, and in the high incidence of comorbid anxiety and panic. Many studies have employed DSM criteria either exclusively or in combination with self-report instruments to identify depression in postpartum women (e.g., Cutrona, 1983; Harris, Huckle, Thomas, Johns, & Fung, 1989; O'Hara et al., 1990; Whiffen & Gotlib, 1993). However, whilst interview techniques are often employed to determine

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DSM defined Major Depressive Disorder subsequent to self-report instruments, there are a number of problems that are not adequately considered.

The time frame from self-report identification of potential caseness to interview is extremely variable and not conventionally reported. Diagnostic interviews are rarely conducted at the same time as the self-report assessment. Accordingly, it is possible that women with depression at the self-report assessment are disregarded if not identified at interview, potentially resulting in lost information. Furthermore, a number of criticisms have been raised in relation to the use of DSM, including issues related to comorbidity and conceptual shifts resultant from employing the criteria of different DSM vintages. The latter problems will be discussed further in Chapter 3.

2.8.2 Self-report instruments

Today, recognised clinical diagnosis of mental health disorders requires the diagnostic criteria of either the DSM-IV or ICD-10. However, many studies employ self-report instruments to determine potential caseness or prevalence of depression in postpartum women. Instruments used to help identify postpartum emotional distress include those that assess antenatal attitude, infant temperament, maternal attitudes and postpartum emotional state (Beck, 1998; Carey & McDevitt, 1978; Cox et al., 1987; Kumar, Robson, & Smith, 1984; Warner, Appleby, Whitton, & Faragher, 1997). By far the most commonly used and cited self-report instrument for assessing emotional disturbance in postpartum women is the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). This scale is described in detail in Section 4.2.1.

Whilst some self-report instruments attempting to identify depression in postpartum women adhere fairly closely to the diagnostic criteria of the DSM, many instruments include items not related to the manual's symptom profiles, and do not consider duration or severity of symptoms. Further, some self-report instruments (e.g.,

Beck Depression Inventory) include items that, in effect, identify the normal physiological changes experienced by pregnant and postpartum women as aberrant (O'Hara et al., 1984). This may account for the higher proportion of women said to experience postpartum depression when self-report instruments are employed (O'Hara & Swain, 1996). O'Hara and Swain also found much variability between different instruments designed to identify depression, with the Center for Epidemiological Studies – Depression Scale (CES-D) producing higher prevalence rates for depression in postpartum women than the EPDS or the Zung Depression Scale. Although questions could be asked regarding instrument content, but as the scales were all designed and used to identify depression it is problematic that there is such variation in prevalence rates. However, it should be noted that variation in prevalence rates was not limited to the self-report instruments as there was equal disparity between prevalence rates for interview methods pointing to definitional and diagnostic problems regardless of identification method.

Another study compared the incidence of potential depression identified in four instruments, the EPDS, Zung Depression Scale, Hospital Anxiety and Depression Scale (HADS) and the Profile of Mood States – depression scale (POMS) over three postpartum assessments (Condon & Corkindale, 1997). They also looked at whether the different instruments identified the same women as potential cases at each time. Agreement between the four instruments was very low (16%) at 4 weeks, but had improved somewhat by 8 months (36%). The low convergent validity is extremely problematic in instruments purporting to measure the same construct, particularly early in the postpartum when instruments like this are most commonly employed.

2.9 TREATMENT

In view of the fact that women are disinclined to acknowledge or seek diagnosis for psychological problems after the birth of a baby, it is also unlikely that they will seek treatment (Holden, 1996). Moreover, it has been suggested that women's cognitions about the cause of postpartum depression affect their help and treatment-seeking behaviour (Whitton, Appleby, & Warner, 1996), resulting in a low treatment rate for women depressed during the postpartum period (Whiffen & Gotlib, 1993).

Most research on depression in postpartum women starts from the theoretical position that this type of depression is distinct from depression in the general population, however this belief is not reflected in the research on, or use of, different treatment protocols. Although a number of studies have reported on the applicability of pharmaceutical treatments for women who are pregnant or breastfeeding, O'Brien and Pitt (1994) report finding no controlled studies assessing the efficacy of conventional psychological or pharmacological treatment regimes for postpartum women. A search of literature in the last eight years revealed only two controlled studies, confirming that little is known about the efficacy of treatment specifically for postpartum women.

The first of these studies assessed the use of transdermal oestrogen in a double-blind placebo-controlled study (Gregoire, Kumar, Everitt, Henderson, & Studd, 1996) and reported greater reductions in the rate of chronic major depression in the intervention group relative to the control group. The second controlled study combining therapeutic (cognitive-behavioural therapy) and pharmacological (fluoxetine) regimes found equally high levels of improvement from both forms of intervention, compared with women receiving placebos (Appleby, Warner, Whitton, & Faragher, 1997). However, it should be noted that although only depressed women were included in the study, over half of the potential participants declined to be involved, most commonly

because they did not wish to take medication or felt they would improve without it. It is impossible to discern what effect this may have had on the results.

Women who breastfed their infants were also excluded from Appleby et al.'s, study, and whilst this obviates any potential problems relating to pharmacological agents in the breastmilk, it limits the generalisability of the study. This is particularly relevant, as women who do not breastfeed constitute a small, but specific subset of the population. Dalton and Herxheimer (1997) further identified that a nonclinical graduate student was used to deliver all of the counselling, and the drug manufacturer of fluoxetine funded the research, thereby raising fundamental questions about the research rigour. Moreover, Appleby et al., did not adequately address the high rate of improvement found for all groups one week after baseline (Scott, 1997).

Although depression in postpartum women is claimed by some researchers (Najman, Andersen et al., 2000; Whiffen & Gotlib, 1993) to be milder than depression in nonpostpartum women, it has been found to occur for the same duration and, like depression in the general population, does not always spontaneously remit (Feggetter & Gath, 1981; Kumar & Robson, 1984; Nott, 1987; Pitt, 1968). It is therefore important that appropriate and reliable treatment options are available for postpartum women. Treatment for women experiencing postpartum depression takes many forms, however, there is reasonable consensus that women will recover from postpartum depression if they receive the appropriate treatment and support (Beck, 1996c)

2.9.1 Psychopharmacology

Despite the fact that women are the largest consumers of antidepressants and anxiolytics, limited study has been conducted looking at possible different outcomes using these pharmacological agents during menstruation, pregnancy, menopause or the postpartum period (Blehar, 1995; Nonacs & Cohen, 1998). However, differential

response has been found between males and females, with females apparently more sensitive to some anxiolytics and antidepressants (Yonkers, Kando, Cole, & Blumenthal, 1992). This is suggestive of a gender-based pathophysiology for the disorders or their treatment (Blehar, 1995).

It is problematic that there has been limited research into gender differences in psychopharmacological responses. It is also problematic that there appears to be an assumption that treatment outcomes are not different between pregnant or postpartum women and sufferers in the general population. Accordingly, pharmaceutical agents are being prescribed and used in women during pregnancy and the postpartum without evidence of their scientific validity for these specific groups. Furthermore, anxiolytics are often prescribed for women with postpartum depression (Crowe, 1991), but as these are known to lower functional activity rather than increase it, use of this medication is likely to exacerbate the symptoms of depression.

Controlled human studies have yet to be conducted on pregnant women using anxiolytics or antidepressant medication (Diket & Nolan, 1997). Based on animal studies, this complies with the current recommendations that suggest it is preferable to remove women from most psychopharmacological agents during pregnancy and breastfeeding, but it also means that the effect of this medication on these women is unknown. Given these recommendations, it is apparent that careful measured consideration should also be paid to the implications of maintaining a pharmacological treatment regime for pregnant women, as side-effects have been noted, particularly in relation to the benzodiazepines, selective serotonin reuptake inhibitors (SSRIs), monoamine oxidase inhibitors (MAOIs) and lithium (Diket & Nolan, 1997). Due to the absence of appropriate research, women with postpartum depression are often assumed to have less severe cases of depression and, as a consequence, may be prescribed lower doses of medication for shorter periods of time (Nonacs & Cohen, 1998). However,

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though the lower doses may obviate the iatrogenic consequences of medication use for breastfeeding women and their infants (as all psychotropic drugs are secreted in various concentrations in breast milk), in the absence of rigorous testing it is unclear whether the medication is efficacious when prescribed in lower doses.

As women with a previous history of major depression, bipolar disorder, postpartum depression or puerperal psychosis are at high risk of relapse, there is some suggestion that prophylactic treatment is warranted (Nonacs & Cohen, 1998). Although there have been limited studies of prophylactic antidepressant treatment for postpartum depression, a small study of women with a previous history of postpartum depression found lower incidence in women prescribed antidepressants prophylactically within 24 hours of childbirth (Wisner & Wheeler, 1994).

2.9.2 Psychological Therapy

Nonacs and Cohen (1998) report that a number of nonpharmacological treatment methods, including interpersonal and cognitive-behavioural therapy, have been employed in studies of postpartum depression. Despite some reports suggesting these treatment techniques are as efficacious as antidepressant medication (Appleby et al., 1997), studies of therapeutic techniques are also limited. Counselling intervention and the provision of skilled health workers for social support has been attempted in a few studies with a reduction in depression reported in many women in the treatment group (Holden, 1996; Oakley, 1992). Group therapy or informal group sessions have been employed by researchers attempting to identify the best form of treatment for women experiencing depression in the postpartum period. This method is proposed to address some known risk factors for postpartum depression providing an alternate avenue for social support. It can also provide medical advice and counselling for the women and is popular with health professionals (Rowe et al., 1996). However, despite a reduction in

problems related to the infant's general health, crying, feeding, and sleeping, Rowe et al., reported no significant differences in levels of depression, anxiety, self esteem, relationships or mother's health.

2.9.3 Hospitalisation

Hospitalisation of postpartum women with depression tends to be reserved for those experiencing extremely severe symptoms, at risk of suicide, or at risk of harming their infant. Today, rather than separating mothers from their infants, there are attempts to keep the mother and child together through the use of integrated mother and baby units (Nonacs & Cohen, 1998). These units are particularly employed in the United Kingdom and Australia, but are less common in the United States. Women who are hospitalised usually undergo a combination of pharmacological and psychological treatments, with electroconvulsive therapy reserved for women who do not respond to other treatment regimes and are experiencing the most severe episodes.

2.9.4 Self-help techniques

Although little direct research has been conducted on the role of self-help groups and postpartum depression, there is an assumption that such groups provide both personal and instrumental support (Cox, 1986). Moreover, these groups have been assumed to perform the same role in Western societies as rituals and cultural care performs in traditional societies (Honikman, 1999). Self-help groups and related materials have been identified by one study as providing both confirmation of a woman's suffering from postpartum depression and as a method of disseminating information to the public about the disorder (Taylor, 1995). Rather than serving inactively, they can be seen as an active resource, providing a source of reference and reinforcement in the absence of an accepted diagnosis from the medical profession.

However, whilst self-help groups attempt to normalise the woman's lived experience of motherhood, and to emphasise the fact that women do not always instantly bond with their new infants, the underlying message appears to reinforce the status quo, that is, that bonding will occur naturally once the women begin to recover from depression. In other words, the healthy state for a new mother is to love and bond with her child; deviations from this are accepted as an illness whose cure results in the establishment of a loving mother-child relationship.

2.9.5 Parent education

Today, attendance in antenatal classes is strongly encouraged for all primiparous women in most Western countries, including Australia (Hillier & Slade, 1989; National Goals Targets and Strategies for Improving Mental Health, 1994). This is, in part, based on the belief that attendance at these classes will help women with the physiological strains of childbirth (Beck et al., 1980), a belief not always reflected in research findings (Lumley & Brown, 1993).

Not only are antenatal classes seen as preparation for the physiological demands of childbirth, but they are also viewed as a prophylactic means of reducing psychological pathology in postpartum women. However, whilst confidence and levels of knowledge have been shown to increase during the course of antenatal classes (Hillier & Slade, 1989), this has not always been reported (Lumley & Brown, 1993). Interestingly, women in the Lumley and Brown study, who did not attend antenatal classes were more likely to report sisters, friends and mothers as being very helpful in providing information about their pregnancy and labour, and were less inclined to view written material as a valuable resource. This highlights the role social support and social sharing of information plays, a role the antenatal classes may have played for the former study, and one potentially played by family and friends in the latter study.

Studies addressing specific psychological factors have reported little, if any, effect of attendance at antenatal class. For example, state anxiety has been reported to be unaffected by antenatal class attendance (Hillier & Slade, 1989). This result is reflected in another finding showing anxiety was reduced in less than 4% of women as a result of attending antenatal classes (Searle, 1996) and could be contrasted with the belief that antenatal screening alleviates fears. When considering the results of the above studies, it must be remembered that women were not randomly allocated to control or intervention, but rather were self-selected by their choice to attend antenatal classes, a potential confounding variable. The lack of generalisability is particularly evident considering that Lumley and Brown (1993) found that women who were younger, unmarried, from a lower socio-economic status and with a lower level of education were less likely to attend antenatal classes.

Another study looking at the prophylactic psychological effect of attendance at special classes designed to prepare women for motherhood, reported that primiparous women invited to the classes generally scored lower on the EPDS postnatally than women who were not invited to the classes (Elliott et al., 2000). Furthermore, of the three women who developed depression in the 'invited' group, two identified a predisposing circumstance unrelated to the infant, (one perceived her depression as a reaction to the anniversary of her mother's death, the other experienced a recurrence of manic-depressive disorder). In contrast, nine of the ten women who developed depression in the 'uninvited' group attributed the depression to stressors related to the baby. From these results it was concluded that psychosocial intervention during pregnancy and the postpartum was efficacious in reducing psychological pathology in postpartum women.

It is difficult to discern from Elliott et al.'s (2000) study whether the lower rate was a result of better problem solving by women involved in groups of this sort, or

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whether the social support provided alleviated the symptomatology. This study was also simultaneously conducted on second-time mothers with no effect, suggesting the needs and expectations of first and second-time parents are quite different. Elliott et al., suggested from these findings that classes of this sort should begin early in the pregnancy and include more information about parenting, rather than beginning late in pregnancy and focusing on the birth. In addition, they suggest that the classes should evolve into discussion groups that are encouraged to continue into the postpartum period.

Postnatal education classes are often encouraged, as they are seen as a way of providing social support for new mothers. One such study, reported that nurses recruiting women to attend postnatal groups differentially emphasised the child- or mother-focussed nature of the group in an effort to appeal to different women (Scott et al., 2001). However, the report suggests that the groups were invariably focussed on the baby, with most sessions conducted on baby massage, settling, infant diet and development, although delivery and issues relating to women's health were also discussed. Additionally, some nurses addressed expectations of motherhood and transition to parenthood. It is interesting to note that the women attending the groups retrospectively reported that they had primarily hoped to learn about child development and health, but that social support factors were also highly important to them. Given the importance of social support to these women, it was valuable that most nurses attempted to encourage a cohesive group, one that would maintain contact beyond the formal sessions as a way to develop social support networks. This attempt was often successful with over two thirds of the groups continuing beyond one year, and with many friendships developed through the groups.

2.10 IMPLICATIONS

As mentioned, treatment for women suffering postpartum mental problems is vitally important as some women continue to experience psychological problems more than one year after childbirth (Barnett, Schaafsma, Gusman, & Parker, 1991; Murray & Cooper, 1997; Pitt, 1968). Furthermore, women who have experienced a depressive episode during the postpartum are at a higher risk of subsequent postpartum and nonpostpartum episodes (Brockington, Winokur, & Dean, 1982; Cooper & Murray, 1995). Combining this with the fact that postpartum women with depression have been found to have poor mothering skills (Milgrom, Burrows, Snellen, Stamboulakis, & Burrows, 1998), the implications for women and their families are wide-ranging.

In a recent study, family members (predominantly partners) of women with postpartum depression completed a questionnaire on how the problem was impacting on their lives (Boath, Pryce, & Cox, 1998). Respondents identified problems with the marital relationship, family member's feelings of helplessness, lack of social life and additional responsibility and burden. Moreover, there was evidence that the family members were also exhibiting signs of depression, worry and stress.

Research has also focused on the impact of a mother's depression on their infants, with much of this research suggesting that the children of women who are depressed will also show signs of negative affect or depression (Field et al., 1985). It should be noted, however, that in many self-report studies, the level of psychopathology in the children is usually assessed by their mother, a method that is potentially biased when the mother is depressed. Viewed in these terms, it is not surprising that infants of depressed women have also been rated as more demanding and less reinforcing (Milgrom & McCloud, 1996). A recent Australian longitudinal study found that, compared with other mothers, mothers who were depressed or anxious recorded higher

disturbance in their child. There were also low levels of agreement between these mothers and their 14-year-old children, with mothers rating the children as having higher levels of behavioural disturbance (Najman, Williams et al., 2000).

Other research suggests that depression has a particularly devastating effect on the development of bonds between a mother and a new infant. Research in this area has found a deleterious effect on the child's attention and arousal when depressed women do not engage their infants in 'normal' interaction. This is further hypothesised to impact on the infant's cognitive, emotional, behavioural, social and intellectual development (Coghill, Caplan, Alexandra, Robson, & Kumar, 1986; Hay, 1997; Sharp et al., 1995; Stein et al., 1991). It is difficult to discern the aetiological factor in this relationship; whether the mother's depression affects the child or, for example, the child's temperament causes problems for the mother. Accordingly, some researchers suggest this is best viewed as a symbiotic relationship, with both members of the dyad affecting the other (Murray, 1992; Tronick & Weinberg, 1997).

Tronick and colleagues have identified the effects of different interactive styles of depressed mothers (cited by Tronick & Weinberg, 1997). They reported that women employing the 'intrusive' mothering style, where they handled their infants roughly and commonly interfered with the behaviour of the infants, produced babies that were less likely to draw attention to themselves by crying, or by attending to the mother or other objects. This was contrasted with 'withdrawn' mothers, who were unresponsive and unsupportive of their child's activities. These babies were more likely to show evidence of distress. Perhaps the most damning aspect of these relationships was the suggestion that infants and children who are only exposed to dysfunctional interaction styles, learn and use them in their relationships with others.

2.11 SUMMARY

Although researchers have been studying depression in postpartum women for the last thirty-five years, it is apparent that few unambiguous findings have been reported. Postpartum depression is not well defined, with variation between the clinical and research definition and identification of the disorder. The symptom profile used for research purposes is far broader and includes a more diverse spectrum of symptoms than that used to clinically diagnose the condition. Moreover, evidence of the blues and/or puerperal psychosis has been inappropriately cited as evidence for postpartum depression. These, and other factors, have impacted on the reported prevalence rates for postpartum depression. Whilst many of the details remain unclear, it is evident that there is a proportion of women who experience psychological distress after the birth of a child. The temporal relationship of this distress to parturition has been used as evidence to suggest that this disorder is specific to the postpartum period, and a number of features would seem to confirm it as a depressive disorder—although these assumptions have rarely been challenged.

Chapter 3: Context: Anxiety and Depression

Anxiety and depression in the general population will be briefly discussed in this chapter as a means of providing a context for the development of the concept of postpartum psychopathology as a depressive illness. The previous discussion has made it clear that there has been some confusion over the identification of anxiety and depression. This chapter will consider the development of these constructs and attempt to clarify the phenomenological aspects of the disorders. Accordingly, different methods of diagnosis of, and identification for, depression and anxiety will be discussed. It is only through the lens of these disorders in the general population that we can adequately view the construct of postpartum depression as it has evolved today.

Anxiety and depression are theoretical concepts and, as such, have been defined in a number of ways depending on the psychological perspective of the clinician or researcher attempting to identify or discuss them (Weissman, 1985). Although recent efforts by the authors of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) and the *International Classification of Disease* (ICD) have attempted to produce less ambiguous definitions, these efforts have not been satisfactory to many, and accordingly are not adopted by all. Further, due to the relatively recent introduction of these manuals (see 3.4.1 for a brief review) it is problematic to limit discussion to the specific list of anxiety or depressive disorders contained therein. However, it is pertinent to note that the DSM, broadly speaking, views unipolar depressive disorders as one disorder with different levels of severity, whereas anxiety disorders (e.g. Generalised Anxiety Disorder, Obsessive-Compulsive Disorder and Post-Traumatic Stress Disorder) are clearly distinct disorders.

3.1 THEORIES

3.1.1 Theories of Anxiety

Spielberger claims that modern theories of anxiety are based on Darwin's work citing fear as a "fundamental emotion" (1985, p.172). By Darwin's rationale, it is believed that all animals, including humans, evolved to instinctively react to perceived dangerous situations. This fear reaction serves to arouse the animal, making them physiologically prepared to fight or to flee the situation. Given this proposed innate fear reaction, it is apparent that the ability of humans to recreate mental images of past events and to imagine a number of options for future events is a highly functional adaptation. This ability is extremely useful from the evolutionary perspective outlined above, potentially expediting 'fight or flight' behaviour (Barlow, 1988; Selye, 1976) and facilitating problem solving, but it becomes problematic when aversive past or perceived future events are evoked in the absence of external danger (Borkovec, 1985).

Freud worked for years on anxiety, considering it central to the development of many psychological disorders (Berrios, 1999a; Spielberger, 1985). He initially thought that anxiety developed out of a blocked libido, however this theory developed into the belief that anxiety was a reaction evoked by real or perceived dangerous situations. When the danger was not really tangible, Freud believed that anxiety was produced from repressed sexual or aggressive impulses (Spielberger, 1985). He further distinguished between objective (when there is something representing an external danger) and neurotic anxiety (when the object of fear is repressed, and the repression breaks down allowing fearful thoughts to present).

Distinctions between state and trait anxiety have been considered for many years, perhaps most famously in the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). State anxiety is viewed as short-lived or

temporary, often the result of a particular, possibly threatening, event. It is defined as consisting of "subjective, consciously perceived, feelings of tension, apprehension, nervousness, and worry, accompanied by or associated with activation and arousal of the autonomic nervous system" (Spielberger, 1985, p.176). As such, state anxiety represents the present, and potentially variable, state of anxiety. Trait anxiety is thought to be a durable part of an individual's disposition, it is seen as stable and does not fluctuate. It is thought to influence a person's susceptibility to anxious arousal. Therefore, if a person scores high on trait anxiety they are more likely to evince anxiety symptoms in situations that present few hazards, and are more likely to experience state anxiety.

Fear is the common theme in theories of anxiety regardless of whether anxiety is deemed to be an evolved innate reaction to a life and death situation, or if it is a fear reaction to a situation only *perceived* as dangerous. Berrios proposes that anxiety has, in essence, remained the same for thousands of years, he claims the difference over the years lies in its "social meaning and conceptual wrapper" (1999a, p.84). Originally, he suggests, anxiety was conceptualised as an element of a person's relationship with God. It was subsequently viewed as a behavioural curiosity, and in the last two centuries has been subsumed into the world of medicine and disease.

3.1.2 Theories of Depression

Although the English term 'depression' was not introduced until the 17th Century (Batchelder, 2001), written reports relating to depression date back to the papyri and inscriptions of Pharaonic Egypt (Okasha & Okasha, 2000). In the 5th Century BC, Hippocrates wrote about melancholia, a concept that was used to describe a range of mental health problems including depression and guilt. Up until the time of the Renaissance, 'Black Bile' was thought to be produced by the spleen and was seen as

related to religious or moral guilt and melancholia. Due to their 'superior' minds, melancholia was thought to only affect the elite classes in the class structure of the 17th and 18th Centuries. Freud conceptualised guilt as developing out of personal trauma, removing the religious connotations that had previously existed and focusing on internal conflict (Batchelder, 2001). Viewed in these terms, it is clear that the social and political environments have intrinsically affected the concept of depression.

For the last century, nosologists, researchers and clinicians have debated whether people experiencing one of the disorders that come under the rubric of unipolar depression[3] are experiencing substantially different disorders or the same disorder with different levels of severity. Recent changes to the diagnostic criteria and manuals (DSM-IV and ICD-10) have moved in the direction of differentiating by severity, but have not always adequately addressed the question (Judd, 1997). Beck's cognitive theory of depression suggests that depression lies on a continuum from mild sadness to extreme depression. When an environmental stressor triggers a distorted or negative view of the self, world and/or the future, then this can lead to depression in vulnerable individuals (Beck, 1974). Based on the results of a number of large-scale studies, the International College of Neuropsychopharmacology similarly concluded that unipolar disorders consist of a continuum from subsyndromal depressive symptomatology through to major depression and double depression, but that depressive disorders with psychotic features were distinct (Judd, 1997).

One of the better known theories on the aetiology of depression is the learned helplessness theory. It posits that when one learns that an outcome is not contingent on a response, then one will learn to stop making responses, with helplessness ensuing

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[3] In recent years, depressive disorders have been divided into unipolar and bipolar disorders. This dissertation primarily will focus on unipolar disorders.

(Seligman, 1967). This theory was later reformulated to account for personal differences in the perception of events (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978). People have been found to perceive and describe events in a number of ways; events could be seen as stable or unstable, global or specific, and internal or external. In turn, this perception influenced the way people responded to the events and whether they attributed the events to personal or universal factors. Abramson and colleagues theorised that negative events seen as stable, global and internal led to symptoms of depression, such as dysphoria, guilt and hopelessness.

Despite interest in state and trait anxiety, there has been little research differentiating depression on the same ground (Dobson & Cheung, 1990). Some research has focused on depressive personality but, generally, research on depression is at the state level. Cross-cultural studies have attempted to show the universality of depression. However, these studies often start from a theoretical basis and search for symptoms and disorders that 'match' those identified in Western cultures. Therefore claims of universality based on such studies should be viewed with caution (Thakker & Ward, 1998).

3.2 PREVALENCE

It is difficult to compare anxiety and depression prevalence rates across studies for many of the same reasons mentioned in postpartum women (see Section 2.5). Research in this area has used different definitions of (or criteria for) mental disorders and various research designs (methodologies, instruments, samples etc.). Despite these problems, anxiety and depression are generally reported to be almost twice as common in women than in men (Angst, Vollrath, Merikangas, & Ernst, 1990; Blehar, 1995; Dohrenwend, 1990; Hagnell & Grasbeck, 1990; Murphy, 1990; Regier, Burke, & Burke, 1990). In this respect, Australian studies are consistent with the findings reported in other

Western countries. According to a recent report, 9.7% (7.1% males, 12.1% females) of the Australian population experienced an anxiety disorders in the previous twelve months (Australian Bureau of Statistics, 1998). Depressive disorders (including both unipolar and bipolar) occurred in 5.8% (4.2% males, 7.4% females) of the population. However, when substance abuse disorders were also taken into account, the overall prevalence rates of common mental disorders were very similar for males (17.4%) and females (18.0%).

Epidemiological studies attempt to identify all people with a particular disorder within a particular region. This is necessary to identify the 'true' incidence of the disorder, given that most people do not seek treatment. Epidemiological studies can help to identify whether, or not, help-seekers are representative of the entire group of people with the particular disorder (Weissman, 1985). Although the rates were higher than those reported above, an epidemiological study in 1991, of the Riverland region of South Australia found males and females had similar overall prevalence rates (about 26%) for mental disorders (Jorm, 1995). Jorm reported the difference between the genders was apparent when considering the prevalence of specific mental disorders. Males were found to exhibit the most alcohol (males 13.0%, females 1.5%) and drug abuse (2.3%, 0.4%), and more antisocial behaviour (1.5%, 0.0%); whilst depression (6.7%; 14.1%), anxiety (8.2%, 10.9%) and eating disorders (anorexia nervosa 0.2%, 0.2%; bulimia 0.4%, 2.8%) were more common in females (Jorm, 1995).

The Epidemiologic Catchment Area (ECA) Program, conducted in the U.S.A., interviewed over 20,000 adults in five states using the Diagnostic Interview Schedule and DSM-III[4]. They found a similar pattern to that reported above, as phobic disorders,

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[4] In this case, although DSM-III was employed, the hierarchical rules were not used. For discussion of the hierarchical rules see Section 3.4.1.3

major depression, dysthymia and obsessive-compulsive disorder were the most common disorders in women, and men most frequently experienced alcohol and drug abuse, phobias and dysthymia (Myers et al., 1984).

Arguments have been proposed to explain the difference in the male/female prevalence rates for anxiety and depressive disorders. This difference has been said to be due to, biological, psychosocial or artifactual reasons. Some have suggested a hormonal/biological role in the gender difference due to the predominance of women experiencing emotional disorders during their childbearing years. This is particularly relevant for depressive disorders with the initial episode typically occurring at the beginning of the reproductive cycle at around 15 to 18 years of age (Blehar, 1995; Parry, 1999). From a different perspective, using scales devised to differentiate between depression and anxiety, other researchers have reported similar levels of *pure* depression and anxiety in males and females, but higher levels of *mixed* anxiety and depression in women (Joiner & Blalock, 1995). Furthermore, it has been reported that although women are more likely than men to experience severe depression, they are not more prone to experience moderate or mild depression (Chen, Eaton, Gallo, & Nestadt, 2000).

The differing social roles occupied by men and women have also been identified as causing higher psychopathology in women who may have struggled with their domestic and often subordinate position (Weissman & Klerman, 1985). It could also be argued that the differences can be explained as a result of women being judged 'abnormal' on the basis of a diagnostic system devised with men as the ideological norm (Kaplan, 1983). The similarities in the overall prevalence rates for mental disorders, as cited above, lend credence to such theories suggesting the higher rates in women are potentially an artifact of the diagnostic systems.

3.3 AETIOLOGY AND RISK FACTORS

The medicalisation of mental disorders in recent years has increasingly led to a focus on physiological dysfunctions as explanations for the aetiology of anxiety and depression. Such a focus has, at its core, the goal of being able to administer psychopharmacologic agents more effectively. Accordingly, biological theorists have attempted to find a genetic link or biochemical markers, such as neurotransmitters or hormones, with mixed results (Akiskal & McKinney, 1975; Blehar, 1995; Boyer, 2000; Poland, 1990). Currently, unambiguous aetiological or risk factors have not been identified for depression or anxiety. However, onset is known to develop due to endogenous (physiological problems, e.g., stroke) or exogenous (a reaction to an adverse circumstance, e.g., death of a loved one) causes. Some theories on the aetiology of anxiety and depression are outlined below.

Eysenck's biological theory of personality contains two axes, one labelled introversion/extraversion and the other labelled neuroticism. Anxious individuals are said to be high on both introversion and neuroticism and therefore to have higher levels of autonomic nervous system reactivity and resting cortical arousal (Eysenck, 1981). This theory is supported by other research that has reported chronic physiological hyperarousal and slower habituation in anxious patients (see review by Barlow, 1988). However, there does not appear to be any consistent difference between anxious patients and controls on physiological or neuroendocrinal measures when responding to mildly stressful events.

Over the years, debate on the aetiology of depression has focused on whether clinical depression has a psychosocial or a genetic, biological origin. Although not always uniform between all patients suffering from clinical depression, it is accepted by both sides of this debate that biochemical abnormalities do occur in patients

experiencing depression (Nemeroff, 1998). Geneticists have also searched for genes or gene combinations that heighten the risk of depression, but with limited success. Perhaps the biggest problem in this research is the lack of ability to identify whether the neurobiological agent was causative or a result of the depression.

Evidence strongly suggests that the aforementioned physiological risk factors rarely lead to anxiety and depression in the absence of psychological factors or meaning. Psychological factors identified as presenting a risk for the development of depression are high levels of anxiety, as well as negative thought patterns and temperament. Supporting this, people found to be optimistic, easy-going and with good coping skills are thought to be somewhat protected from developing depression (Commonwealth Department of Health and Aged Care & Australian Institute of Health and Welfare, 1999).

Anxiety is often differentiated from depression by the existence of fear or the perception of danger (Alloy, Kelly, Mineka, & Clements, 1990; Barlow, Bach & Tracey, 1998; Tellegen, 1985; Tyrer, 1985; Watson & Kendall, 1989). Izard (1977, cited by Barlow, 1988) viewed anxiety as a combination of a number of basic emotions with predominant fear. He suggested that anxiety might occur when fear combines with different sets of emotions. For example, on one occasion fear may develop into anxiety when combined with distress and anger, on another when combined with shame and guilt. Worry also provokes anxiety by maintaining internal cues without external stimuli, engaging continual and unnecessary problem-solving mechanisms, and is generally ineffective in dealing with the anxiety-producing object. Worry is also seen as a central factor in anxiety and has been conceptualised as involving:

> *a chain of negatively affect-laden, relatively uncontrollable thoughts and images,*
>
> *elicited by fear-associated stimuli and reflecting attempts to engage in mental*

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problem solving on an issue whose outcome is uncertain but contains one or more

negative outcome possibilities (Borkovec, 1985, pp. 466-7).

The perception of control has been found to impact on whether or not a panic disorder patient experiences panic in a given situation (Sanderson, Rapee, & Barlow, 1989). Finlay-Jones and Brown (1981) reported that anxiety was often found to occur within three months of an event that was perceived as dangerous, whereas depression occurred in association with loss. From a phenomenological perspective, loss is often cited as a key antecedent for depression, and a major differentiator from anxiety (Akiskal & McKinney, 1975; Alloy et al., 1990; Brown & Harris, 1978; Finlay-Jones & Brown, 1981; Klerman & Weissman, 1986; Tellegen, 1985; Tyrer, 1985; Watson & Kendall, 1989). Loss can take many forms, for example, loss of a loved one (through death or lost contact), loss of a job, or loss of personal health.

Socio-economic disadvantage, poor social relationships and adverse life stressors are seen as primary socio-environmental risk factors for mental health disorders, particularly depression, other risks in this area include history of abuse and parental mental illness. On the other hand, the social support 'buffer' hypothesis, suggests good interpersonal skills and relationships provide a protective function against the risk of depression (Dalgard, Bjork, & Tambs, 1995).

Stressful life events are commonly cited as aetiologically linked to depression, but less commonly referred to in the literature on anxiety. However, Barlow (1988) reports that limited research on anxiety and previous exposure to stressful or negative life events suggests these events are related to the 'alarm' reaction in panic patients. A recent study looking at the relationship between life events and depression in a hospitalised group, found the depressed patients reported significantly more undesirable stressful events and situations than a matched control group, and that these had occurred

more recently (Mundt, Reck, Backenstrass, Kronmuller, & Fiedler, 2000). Patients who relapsed also reported more undesirable and major events and stressful situations prior to, and for two years subsequent to, their relapse as compared with patients who did not relapse. Interestingly stressful life events do not appear to be related to the onset of the first episode of severe depression, however, they have been linked to the onset of mild and moderate depression (Chen et al., 2000).

For over a century, a link between anxiety and family history of anxiety has been postulated (Weissman, 1985). Family history has also been implicated in the development of mild through to severe depression (Chen et al., 2000; Commonwealth Department of Health and Aged Care & Australian Institute of Health and Welfare, 1999). This link is particularly evident when onset is in a woman before the age of 40 years and when a first-degree relative has a history of alcoholism (Winokur, 1997). Clear evidence is difficult to discern due to the varying diagnostic criteria employed by the different studies and the use of hierarchical exclusionary criteria as found in DSM (see review in Section 3.4). Furthermore, there is a lack of controlled studies assessing family history (Merikangas, 1990). Therefore, although some evidence points to increased risk of anxiety and depressive disorders amongst family members, it is not possible to say whether this is evidence of heritability or environmental conditioning.

3.4 DIAGNOSTIC ISSUES

Classification systems are an attempt to reduce the complexity of presented information and to allow for accurate, replicable descriptions. They are a construction, developed to order our world, but they are not necessarily reflections of the way the world is. As with many systems, the philosophical starting point determines the categories, the included and excluded elements, and the resulting structure. Psychological nosology systems primarily provide descriptive information. These

systems invariably present as containing substantially more precision and 'truth' than they actually possess (Berrios, 1999b; Millon, 1991). Psychological diagnostic systems are an attempt to reduce the number of terms used to describe a combination of often diverse symptoms. Once patients are classified as belonging to a particular category, attempts are made to highlight similarities and de-emphasise differences providing confirmation for the taxonomy, often with circular logic. However, a focus on symptoms is not necessarily the answer, as these may result in a lack of emphasis on environmental factors and subjective experience (Strauss, 1986).

A number of authors have written about modern psychological classification systems. However, problems in the ability of such systems to unambiguously identify disorders are not usually attributed to the lack of aetiological information about the disorders, or to contamination by social factors (Berrios, 1999b). Further, many authors fail to address the problem of the same disorder having different aetiologies, or different disorders having the same aetiology (Klein & Riso, 1993).

The following sections will focus on the limitations of psychological classification systems. However, many clinicians and researchers would concur that such systems are necessary to enable ready communication and transfer of information between professionals (Thakker & Ward, 1998). As such, they are crucial to research and clinical practice. There are also a number of reports that applaud the construction and development of systems such as the DSM and provide critiques of the challenges to the system (e.g., Frances, First, & Pincus, 1995; Williams & Spitzer, 1983). This dissertation takes the perspective that it is important to understand the philosophical underpinning of these systems and their position in the fluid and continually expanding list of mental disorders.

3.4.1 Diagnostic Tools

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM) is currently the best known and most widely used psychological taxonomy in Australia and the Western world (Commonwealth Department of Health and Aged Care & Australian Institute of Health and Welfare, 1999). As such, the DSM is used as a focus for much of the discussion around diagnostic issues in this dissertation. Now in its fourth revision, the DSM has been updated a number of times over the last 50 years, precipitating and reflecting philosophical changes in beliefs about psychological disorders. These editions and their changing emphases will be discussed in greater detail below.

The *International Classification of Disease* (ICD; World Health Organisation, 1992) was primarily developed to provide a classification system for all medical disease. The belief that psychological disorders had a biological aetiology and were medically based meant they were encompassed within the ICD. Due to the medical emphasis of the ICD and the pre-eminence of DSM in Australia, the ICD will not be discussed in detail here. The designers of the current editions of ICD-10 and DSM-IV worked closely together, implementing many similar features (Jablensky, 1999). The major differences between the two manuals lie in the lack of social dysfunction criteria and comorbid diagnoses in ICD-10 and more stringent criteria for schizoaffective disorders in DSM-IV (Bertelsen, 1999).

This collaborative approach and outcome has benefited both researchers and clinicians. It has allowed for better agreement about, and testing of the diagnostic criteria. It has also led to a demystifying of psychological classifications facilitating understanding within the lay population. However, Jablensky cautions that the development of the diagnostic system took place at a time when the discipline lacked "sufficient conceptual coherence and hence remain[ed] easily influenced by ideological,

political and market forces" (1999, p.138). Further, it has been argued that the emphasis on syndromal diagnosis to the exclusion of nosological considerations limits the utility of the manuals (Bertelsen, 1999).

3.4.1.1 Diagnosis Pre-DSM-III

Developing out of the experiences and mental health problems of veterans returning from the war, the post World War II period saw less rigidity in the definition of mental disorders than that used previously, and led to the acceptance that 'normal' people could be afflicted with mental illness through stressful events and extraordinary circumstances (Houts, 2000). In many ways, these changes initiated the expansion of mental health services as the new problems and definitions did not fit the existing nomenclature. Concurrently, psychodynamic theory was gaining widespread acceptance and mental health services began to be promoted for the general public.

The War Department Technical Bulletin, Medical 203, developed by psychiatrists, psychologists and clinical social workers, was published in 1946. Medical 203 predates DSM-I by 6 years and heavily influenced the development and content of both DSM-I and II (Houts, 2000). The first edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-I, American Psychiatric Association, 1952) attempted to overcome the problems that many psychiatrists believed existed in the indexing and organisation of mental disorders. DSM-I introduced a division between disorders with a known, and unknown, physiological cause (Houts, 2000). Generally, mental disorders, as defined by both Medical 203 and DSM-I, were viewed as resulting from problems in personality development, which may, or may not, have been exacerbated by stressful events. Political and vested interests appeared to play a role in the development of DSM-I, as they did for DSM-III and subsequent editions, as a process of polling and revision was used to determine content.

DSM-II (American Psychiatric Association, 1968) generally followed the structure and format introduced by Medical 203 and DSM-I (Houts, 2000). DSM-II expanded on the number of conditions described in DSM-I, changed various existing definitions and began to remove some of the Freudian terminology. It allowed the diagnosis of comorbid disorders, but recommended that the disorder requiring the most urgent treatment or, in the absence of treatment priority, the most serious condition, be listed first. However, urgency and seriousness were not further defined and appeared to be decided at the diagnostician's discretion.

3.4.1.2 DSM-III and Beyond

Prior to the publication of DSM-III (American Psychiatric Association, 1980) psychiatry was experiencing a crisis with psychiatrists unable to agree on defining or diagnosing mental health disorders (Parker, 1998). DSM-II was no longer considered appropriate for research purposes as it was felt that it did not adequately and unambiguously differentiate disorders. The American response to this was the development of DSM-III, based on the medical model and growing out of the neo-Kraepelinian paradigm shift of the 1970s (Klerman, 1990).

In many ways, DSM-III grew out of the development of the Research Diagnostic Criteria (RDC, Spitzer, Endicott, & Robins, 1978), an effort to improve the existing nomenclature for mental disorders. RDC categories were included due to the authors' belief in their importance for research and as clinical entities (Spitzer et al., 1978). Diagnosing predominantly from descriptive symptoms, little consideration was given to the aetiology of a problem (Bertelsen, 1999; Myers et al., 1984). The RDC introduced a number of selection rules, with inclusion and exclusion criteria for each identified disorder. It recognised organic disorders as primary and mental disorders as secondary,

and attempted to decrease the risk of false positives, even though this increased the chance of false negatives (false negatives were seen as less of a threat to research).

The new diagnostic criteria employed hierarchical principles, multiaxial systems, primary-secondary distinctions and introduced the concept of spectrum disorders in some instances. Further, following the medical model, biological aetiologies were given precedence over psychological aetiologies (Klerman, 1990). The authors legitimised their diagnostic system by claiming scientific validity and reliability of its listed disorders. However, the criteria for the disorders were not scientifically tested, relying instead on clinical judgement with the inclusion (or exclusion) of some disorders decided by debate, political lobbying and vote (Kirk & Kutchins, 1992; Parker, 1998). Once the items in the classification system had been resolved and authorised by the American Psychiatric Association, debate and conflicting opinion were rarely allowed to surface, rather confirmatory reports and consensus became the order of the day (Millon, 1991).

Following psychological tradition (Murphy, 1990), DSM-III employed hierarchical and exclusion rules primarily, it is claimed, to facilitate research by providing researchers with the tools to delimit participants within diagnostic groups and prevent symptom overlap (First, Spitzer, & Williams, 1990; Kirk & Kutchins, 1992). The hierarchical system deemed conditions with known organic aetiology were higher order than those with unknown aetiology. Further, disorders that were arbitrarily judged to be more serious were placed above those thought less serious in the hierarchical system (Barlow, Di Nardo, Vermilyea, Vermilyea, & Blanchard, 1986; Blashfield, 1990). This hierarchical system meant that any disorders placed lower on the hierarchy were subsumed by higher-order disorders (Millon, 1991). The addition of exclusionary rules meant that if a given condition was deemed to be 'due to' a coexisting higher order disorder, then a diagnosis was given of the higher order disorder, but what 'due

to' meant diagnostically was never explained (Barlow et al., 1986). Within this system, for example, anxiety was believed to be a subset of, and less serious than, depression. Therefore if someone presented with both disorders, depression would be diagnosed (Murphy, 1990).

This hierarchical system was altered in subsequent editions of the DSM to allow case-by-case consideration and comorbid diagnosis once again (DiNardo & Barlow, 1990), but the legacy of the hierarchical system and the assumptions of DSM-III mean that depression is still considered by many as a more serious condition than anxiety, and any disorder with a known organic aetiology still retains its precedence over all other disorders (Lipschitz, 1988). Further, although the hierarchical system may have changed, the diagnostic criteria have remained fundamentally unaltered (DiNardo & Barlow, 1990).

Although the DSM is commonly used to make clinical diagnoses, its authors state that it should be used as a 'tool' for clinical diagnosis rather than as a Bible.

> 'It *is important that DSM-IV not be applied mechanically by untrained individuals. The specific criteria included in DSM-IV are meant to serve as guidelines to be informed by clinical judgement and are not meant to be used in a cookbook fashion.' (American Psychiatric Association, 1994, p.xxiii)*

However, some authors suggest that this brief statement or 'disclaimer' does little to alter the impact of the manual and its implicit objective. They claim that rather than using the DSM as a research tool to be debated and tested, the nosology is reified and established largely as unquestioned truth (Detre, 1985). Criticisms have also been raised regarding the conflicting statements of the manual's authors who emphasise its reliability, validity and scientific credibility (Kirk & Kutchins, 1992). The authors of the DSM assert the development and validation of the categories employed rigorous, empirical methods, and that the findings had high statistical relevance. However,

Jablensky (1999) suggests these assertions have widespread implications, for not only do health professionals uncritically accept the manual's description of psychological disorders as unproblematic, but they also limit the ability of the field to look outside the existing dogma.

DSM-III heralded a new age in psychological diagnosis and the ascendance of the American Psychiatric Association (Thakker & Ward, 1998). Prior to the introduction of DSM-III diagnosis, as we know it today, was not the primary consideration for mental health professionals (Klerman, 1986). The introduction of DSM-III saw an expansion of the number of mental disorders, and broke away from the focus on psychoanalytic theory seen in its predecessors Medical 203 and DSM-I and II (Houts, 2000). Today, diagnosis is central. Not only is treatment informed by diagnosis, but without the diagnosis of an accepted disorder, patients are unable to receive rebates or refunds from government or private medical benefit schemes.

Alan Frances led the development of DSM-IV (American Psychiatric Association, 1994). Guidebooks and training manuals have followed this publication (e.g., Frances et al., 1995) culminating recently in the publication of DSM-IV-TR (American Psychiatric Association, 2000), which revised the text but introduced no new diagnostic categories and few changes to the criteria sets. As with DSM-III and III-R, field trials reporting reliability and validity, were employed to legitimise the development of the new edition (Nathan & Lagenbucher, 1999). DSM-IV follows the biological assumption of the previous editions. However, recently it has been claimed that the manual's limitations are due, in the most part, to our inability to identify the physiological underpinning or aetiology of the disorders (Frances & Egger, 1999). A limitation that Frances and Egger believe will soon be remedied. Attempts were made in the development of DSM-IV to move beyond the expert consensus approach employed by its predecessors, and to use

an empirical framework. Despite these attempts it is clear that DSM-IV was intrinsically shaped by previous editions.

Psychiatric nomenclature has changed considerably from the introduction of Medical 203, published in 1946 to the recently published, DSM-IV-TR. Today, there is a well-established manual of mental disorders. Use of the DSM often results in higher levels of reliability between clinicians and amongst researchers. However, DSM is not accepted by all, as a growing number of problems have been identified and criticisms about its construction and use have been raised, some of which are outlined below.

3.4.1.3 Methodological Problems and Conceptual Concerns of DSM

Many criticisms have been raised about the construction of DSM-III and its successors; the following brief review will focus on the criticisms that are relevant to depression and anxiety. It should be noted that many of the problems of diagnosis accentuated by the introduction of DSM-III are also inherent in the ICD (Parker, 1998). The authors of DSM-III asserted that their desire to remain atheoretical influenced a number of decisions about the structure of the manual and the inclusion of disorders. However, as evinced by the manual's implicit assumption of the medical or physiological aetiology of mental disorders, it is apparent that the authors were not atheoretical. It is interesting to note that despite the biological assumptions of DSM and the number of neurobiological advances in the last twenty years, mental disorders are rarely identified through physiological testing but still rely on patients disclosing information about their personal experience (Jablensky, 1999). It is also apparent that a system employing a complex hierarchical multiaxial structure emphasising a unidirectional cause cannot be said to be theory free (DiNardo & Barlow, 1990; Frances, Widiger, & Fryer, 1990; Thakker & Ward, 1998).

3.4.1.3.1 Hierarchical rules of the DSM

The hierarchical structure of DSM-III was arbitrarily assigned, and does not reflect the nature of a true hierarchy, where the symptoms of the higher order categories would be present in the lower order categories, without the reverse being true (Millon, 1986, 1991). Within a true hierarchy it would follow that lower order categories should be of the same nature, but more specific than higher order categories, but this is not the case within DSM. Millon also identified the fact that "the categorical syndromes of the DSM-III are conceptual prototypes and not tangible entities" (1986, p.53). One can hardly talk about a hierarchical system that involves strict concrete rules while employing flexible prototypes.

A further criticism of the hierarchical system identified the fact that valuable diagnostic information was lost through the exclusion of some disorders in the presence of others (Barlow, 1985; DiNardo & Barlow, 1990; Murphy, 1990; Regier et al., 1990). Assumptions about the seriousness and impact of the disorders were implicitly incorporated without scientific explication. From this perspective it is clear that when a diagnosis such as Major Depressive Disorder in DSM-III does not allow for comorbid diagnosis of anxiety disorders, then valuable information is lost and comorbidity cannot be diagnosed (Merikangas, 1990; Tyrer, 1986). In contrast, the removal of the hierarchical rules in DSM-III-R created new problems by increasing the chance of comorbidity (Frances et al., 1990).

3.4.1.3.2 Increase in number of mental disorders

Many authors have criticised the substantial increase in the number of mental disorders in DSM-III, III-R and IV (Clark, Watson, & Reynolds, 1995; Frances et al., 1990; Houts, 2000; Kirk & Kutchins, 1992; Rothblum, Solomon, & Albee, 1986; Schacht & Nathan, 1977). DSM-III increased the number of problems that are

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recognised as psychological disorders and began splitting the major areas of clinical diagnosis into separate conditions (Blashfield & Fuller, 1996; First et al., 1990; Frances et al., 1990). Despite criticisms about the lack of scientific rigour in the creation of new diagnostic categories (Eysenck, 1986; Garfield, 1986; Kirk & Kutchins, 1992; Rothblum et al., 1986) the expansion continued in subsequent editions, currently culminating in DSM-IV containing 365 diagnostic categories, almost eight times the number of disorders in Medical 203 (Houts, 2000). Such an increase compromises the ability of clinicians and researchers to adequately differentiate disorders, thus complicating appropriate identification and treatment, and in turn, artifactually increasing the occurrence of comorbid diagnosis (Nathan & Lagenbucher, 1999).

Additionally, some new diagnoses have been born out of political manoeuvring and economic motivation. It is said that the increase in numbers of diagnostic categories has been cultivated by the system of managed care, where health care funding is not provided unless a disorder is recognised and diagnosable within the current classification system (Garfield, 1986; Houts, 2000; Jablensky, 1999; Kirk & Kutchins, 1992). The increase is also, in part, sponsored by pharmaceutical companies who have a vested interest in promoting the widespread acceptance of the prevalence, biological aetiology and pharmacological cure of mental disorders (Houts, 2000; Kirk & Kutchins, 1992). Considering the point of economic motivation, it is important to note that the numbers of professionals active in the fields of psychiatry, psychology and social work in America, have substantially increased since 1952 when DSM-I was published, from around 10,000 in each field to 40,500, 72,587 and 155,000 respectively in 1998 (Houts, 2000). Although population growth would account for some of this change, the number of professionals working in this area has increased nine-fold in less than fifty years.

The emphasis on an atheoretical approach espoused since DSM-III, has further increased the potential for new categories within DSM (Houts, 2000). Further, by

claiming an atheoretical background, the authors of DSM can avoid challenges to their epistemology (Thakker & Ward, 1998). Psychodynamic theory limited the potential for categorisation as a mental disorder in the days of Medical 203, however, in recent years cognitive, biological, psychosocial, psychodynamic and learning theories can all inform new diagnoses. In addition, DSM-IV decried the distinction between mental and physical disorders and, in doing so, further expanded the potential domain of mental disorders (Houts, 2000).

3.4.1.3.3 Reliability and validity

The authors of DSM claim high reliability and validity, however a number of factors influence the reliability of instruments. Clinicians and interviewers are most likely to agree upon diagnosis when they are highly and similarly trained, when they study the patient within a short space of time, use the same techniques and information to draw a conclusion and when the population studied is heterogeneous (Clark, 1989). These factors compromised the reliability analyses of modern editions of DSM. Further, Kirk and Kutchins (1992) argue that the introduction of the new kappa statistic to test reliability in DSM-III was used to assert scientific rigour without the benefit of empirical evidence. The use of statistics in this way, to quantify inter-clinician agreement and to provide a value for reliability that could be compared in different studies, served to distance the clinical from the lay understanding of the reliability of diagnoses.

The concurrent and construct validity of DSM and other like diagnostic systems has also been called into doubt (Costello, 1992; Kirk & Kutchins, 1992; Sarbin, 1997; Zimmerman, Jampala, Sierles, & Taylor, 1991). Rather than attempting to solve the problem of validity, Kirk and Kutchins claim that the authors of DSM-III merely ignored validity, in favour of emphasising their efforts testing reliability. The lack of

validity in DSM-III was compounded by the publication of the revision (DSM-III-R) and new edition (DSM-IV) of DSM in a very short space of time. This has resulted in one of the biggest problems of modern psychological research; difficulties in comparing the results of studies conducted within a few years of each other.

3.4.1.3.4 Item overlap

DSM does not appear to account for the overlapping symptoms appearing in and across diagnostic categories. For example, Major Depression and Dysthymia were the predominant mood disorders identified in DSM-III with each diagnosis containing symptoms that overlap the other disorder to a large degree leading to a relatively high incidence of comorbidity, sometimes referred to as Double Depression (Kocsis, Markowitz, & Prien, 1990). The major difference between DSM diagnoses of the two disorders is due to a slight quantitative difference in numbers of symptoms required, an ill-defined conception of severity and the duration of the disorder, rather than any qualitative difference between the set of symptoms for the two disorders (van Praag, 1998). Symptoms of anxiety disorders also overlap those of depressive disorders (Rodney, 1998) potentially influencing the argument that the two disorders are closely associated. This has implications for diagnosis of comorbidity (Merikangas, 1990) and contradicts the requirement of syndromal independence.

3.4.1.3.5 Gender bias and cultural specificity

Researchers have also criticised the post DSM-III editions for their gender bias. One such argument asserts that assumptions of normality as defined in and by men, and as reified in the DSM, has resulted in the pathologising of women due to their inability to fit the 'healthy' male model (Kaplan, 1983). This in turn has implications for the proportional representation of women to men in various disorders, for example, the

higher number of women said to experience anxiety and depression, as shown in Section 3.2. Kaplan relates how others have accounted for the differential diagnosis rate as resulting from women's willingness to report symptoms, the inferior position of women in the social structure, and women's dependency on others, usually men. As previously mentioned (see Section 3.2), other research has also reported that given the same clinical symptoms (or a similar lack of clinical symptoms), women are more likely to be diagnosed as depressed than men (Potts, Burnam, & Wells, 1991), whilst men are more likely to be diagnosed with antisocial behaviour, alcohol and drug abuse (Jorm, 1995; Myers et al., 1984).

Despite claims to the contrary, DSM-III and the subsequent editions are grounded in Western (predominantly white American) conceptions of mental disorders and operate with the implicit assumption that the described disorders are universal (Jablensky, 1999; Thakker & Ward, 1998). However, whilst the assumption of universality is grounded in the biomedical model employed by DSM, the manual employs limited physiological and neurochemical symptomatology, using behavioural symptoms as descriptors and identifiers of the various disorders. In effect, DSM uses a model that contrasts markedly with the implicit theoretical foundation. Research on the universality of mental disorders invariably seeks to show that these disorders are the same cross-culturally, which in turn, reinforces belief in the physiological basis of the disorders.

3.4.1.3.6 Other problems

Since 1980, most symptoms used in DSM diagnosis have been seen as having equal importance in the disorder. It is suggested that this horizontal strategy fails to recognise the distinction between primary and secondary symptoms and creates difficulties in diagnosis and treatment (Rodney, 1998; van Praag, 1998). By changing

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the focus and viewing diagnosis vertically, pharmacological treatments could be developed to address the primary dysfunction of a particular disorder, rather than developing numerous strategies for each disorder. Further, the number of symptoms required to qualify for a particular diagnosis in DSM was arrived at arbitrarily, rather than through rigorous research process.

It is also apparent that the current diagnostic system allows the same diagnosis for people with quite different symptom profiles. For example, clients diagnosed with depression are required to present with depressed mood and loss of interest (or pleasure), but may have any three of the remaining seven symptoms. With the current system lacking syndromal differentiation, appropriate diagnosis and treatment is problematic and often ineffectual (Rodney, 1998; van Praag, 1998). This also creates problems for clinical research, with little possibility of clearly isolating the disorders. Van Praag also claims that modern attempts to differentiate and categorise each disorder and sub-disorder "is without end and futile" (1998, p.770), suggesting that a conceptual shift is required to study disturbance in various functions, such as information procession and anxiety regulation, rather than study the disorder *per se*.

3.4.1.4 Self-report Instruments

Self-report scales are constructed in three ways (Tellegen, 1985). The intuitive method follows a 'common-sense' approach whereby the psychopathology or trait to be identified is defined, and then items are selected to describe it. The inductive method usually employs factor analysis, with constructs identified by the analysis and named in a *post hoc* manner. The external approach selects an archetypical symptom and searches for items that correlate highly with that item.

Psychological self-report instruments often include a majority of items that assess dysphoric mood. Tellegen (1985) suggests this may be due to the fact that psychological

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inquiry often attempts to identify problems. However, whilst facilitating the ability to isolate people with problems, such an approach limits the ability of instruments to differentiate between conditions. As there is limited agreement about what constitutes a psychological construct, it is little wonder that self-report instruments purporting to measure the same disorder may include quite different items in their scales. Following this, it is not surprising that correlations between scales can vary widely.

There are a large number of self-report instruments attempting to identify depression and/or anxiety. These scales vary considerably in their content, structure, scoring method and relationship to other instruments. Self-report instruments have been used to assess depression and anxiety separately (e.g., Beck Depression Inventory; Center for Epidemiologic Studies – Depression Scale; State-Trait Anxiety Inventory; Taylor Manifest Anxiety Scale) or items have been combined to assess depression and anxiety together in one instrument (e.g., Mood and Anxiety Symptom Questionnaire; Depression, Anxiety and Stress Scales). Generally, such instruments do not attempt to identify disorders as described in DSM categories, but rather, they assess levels of a nonspecific general construct of 'depression' or 'anxiety'. Accordingly, self-report instruments are generally not appropriate to be used to diagnose clinical psychological problems. However, they are valuable tools when their construction incorporates clear questions and response options (Tellegen, 1985).

The shifting state of diagnosis, as identified in the previous sections, is generally not reflected in the development of new self-report instruments. Today, many of the instruments used to identify depression and anxiety predate DSM-III. Moreover, most clinical scales do not attempt to discriminate depression and anxiety (Clark, 1989). It is therefore of little wonder that self-report instruments of depression and anxiety have been found to discriminate poorly between mood and anxiety disorders and invariably correlate highly (Watson & Kendall, 1989).

With existing self-report instruments confounding the symptoms of depression and anxiety, it is tempting to develop new scales to differentiate better between the constructs, however, such attempts potentially create new problems. An introduction of a 'new' measure of depression or anxiety runs the risk of defining a different aspect of the construct and may be accompanied by 'new' validity problems (Creamer, Foran, & Bell, 1995). Further, removing high correlating items from the scales may mean the scales are missing key aspects of the disorders. Rather than clarifying the issues, this technique may further cloud any identification of the disorders. Not only are there validity problems in existing self-report instruments, but research has also questioned the applicability of employing self-report in depressed patients, suggesting that the need for these patients to identify 'normal' and 'abnormal' behaviour and responses is problematic (Costello, 1992).

3.4.2 Categorical or Dimensional

For a number of years controversy has reigned over attempts to identify whether psychological disorders are categorical or dimensional (Klein & Riso, 1993). This debate has spilled over into the effort to discriminate depression from anxiety (e.g., Akiskal, 1985; Foa & Foa, 1982). To date, neither categorical nor dimensional approaches have proved conclusive. The following sections contain a brief overview of this debate with particular reference to anxiety and depression.

3.4.2.1 Categorical Model

There are a number of benefits to the categorical approach. This approach allows researchers and clinicians to summarise a number of symptoms with one term. The use of categories fits the model of clinical decision-making and potentially enables the identification of conditions not apparent from a dimensional perspective. Furthermore,

it is useful from a lay perspective as people generally use categories as descriptors and tend to avoid talking about dimensions when explaining information (Klein & Riso, 1993).

Theories that employ diagnostic systems such as DSM or Research Diagnostic Criteria tend to focus on the presence or absence of a specific cluster of symptoms, rather than on the severity of individual symptoms (Dobson & Cheung, 1990). Accordingly, such systems develop from the theoretical understanding that the diagnostic categories are discrete (Jablensky, 1999). However, it must be remembered that diagnostic categories are not 'entities' but rather are 'concepts' that are useful to facilitate understanding. From this perspective it is claimed that study of the symptoms, reported to contribute to the artifactual syndromes, is likely to be more appropriate and beneficial to clinical understanding, than studying the syndromes themselves (Costello, 1992).

Proponents of the categorical theories of depression and anxiety focus on the phenomenological and physiological differences between the two. They consider depression and anxiety to be qualitatively and conceptually distinct. Although it is accepted that symptoms and diagnostic criteria overlap, this is generally attributed to the poor discrimination available for diagnoses and in existing self-report scales. Findings from multivariate analyses have supported the distinct theories and attempts to discriminate between anxiety and depression in this way (Brown, Chorpita, Korotitsch, & Barlow, 1997; Clark & Watson, 1991; Kendler, Heath, Martin, & Eaves, 1987; Lipman, 1982; P. F. Lovibond & S. H. Lovibond, 1995; Tellegen, 1985).

3.4.2.2 Dimensional Model

Dimensional, or continuum theories are quantitative in structure; they assert that depression and anxiety exist on a continuum, with any divergence resulting from a

quantitative not qualitative difference. Supporters of dimensional theories suggest that categorical theories tend to impose arbitrary thresholds for diagnostic syndromes that limit available information (Eysenck, 1986; Klein & Riso, 1993). Dimensional theories enable researchers to examine relationships between symptoms and disorders (Brown, Chorpita, & Barlow, 1998). They also retain more information and are statistically more compatible, with greater reliability and power (Klein & Riso, 1993).

Most self-report questionnaires work within a dimensional framework, focusing on the severity of symptoms rather than attempting to differentiate between syndromes. (Dobson & Cheung, 1990). The most widely used and best known self-report instruments use dimensional criteria (e.g., State-Trait Anxiety Inventory, Beck Depression Inventory and Hamilton Anxiety and Depression Scales). However, it follows that if cutoffs are employed based on severity levels then participants separated by only a point on a scale may be placed into different categories (Dobson & Cheung, 1990).

3.4.2.3 Differentiating Anxiety and Depression

Regardless of whether researchers or clinicians follow the categorical or dimensional model, most would agree that differentiating between anxiety and depression is often very important, and that failing to do so may impact negatively on the treatment of the patient. However, attempts to differentiate between the two constructs enter another debate regarding whether the two disorders are distinct (or independent) or whether they can occur comorbidly. This debate is confounded by a number of issues that are briefly outlined below.

The symptoms of anxiety and depression are often reported to overlap as insomnia, fatigue, difficulty concentrating and psychomotor agitation are found in the diagnostic criteria for both depressive and anxiety disorders. Such an overlap, for some,

results in the assertion that anxiety and depression can occur comorbidly. However, the symptom profiles could equally be said to result from an artifactual problem due to the diagnostic criteria's lack of discriminative ability.

Clark (1989) suggests that a predominant reason for much of the controversy surrounding anxiety and depression can be traced to the different interpretations of the disorders. She claims that authors approach the problem from different "levels of meaning" (p.84), either attempting to identify clinical symptoms, diagnostic entities, syndromes or mood states, whereas she asserts an understanding of all these are important. Problems also result from the varying method of identification: clinical interview, self-report, observation or clinical rating scales. Comparisons between patients and studies are complicated with studies employing different inclusion and exclusion criteria. Some studies make efforts to exclude individuals identified with 'comorbid' disorders whilst others make no such attempt. Further complicating this picture is the fact that some clinicians are happy to diagnose comorbidity whilst others attempt to identify the predominant condition and diagnose the patient with only one disorder (Clark, 1989). On some occasions, patients are even diagnosed with the less severe disorder, with this occurring most commonly when the less severe disorder is depression.

Convergent validity of rating scales assessing *either* depression *or* anxiety can often be relatively poor, with correlations in the .6 to .7 range, whilst divergent correlations, with scales for the other construct, can be equally high (Dobson 1985 cited by Clark, 1989; Dobson & Cheung, 1990). This means that such self-report instruments cannot be used to differentiate anxiety and depression (Endler, Dnisoff, & Rutherford, 1998). It has been suggested that the high correlations found between anxiety and depression in self-report scales may be due to the fact that they are not discriminating between the disorders but rather are measuring a form of nonspecific psychological

distress (Dohrenwend, 1990). This does not necessarily mean that the constructs of depression and anxiety are dimensional, but rather may show the problematic nature of the scales that are employed to identify depression and anxiety, particularly when efforts are not employed in the creation of the scale to differentiate between the constructs. Furthermore, it should be acknowledged that the problem of high correlations between anxiety and depression are not merely due to psychometrics, as clinical diagnosis often results in diagnosis of comorbidity as well (Watson, Weber et al., 1995).

Some authors have attempted to deal with this problem, and there have been successful efforts at discrimination reported by Watson, Lovibond, Endler and colleagues (Endler, Parker, Bagby, & Cox, 1992; S. H. Lovibond & P. F. Lovibond, 1995; Watson, Clark et al., 1995; Watson, Weber et al., 1995). However, it has been claimed that attempts at differentiating anxiety and depression in self-report instruments should be treated with caution as they are likely to employ non-overlapping symptoms of the disorders potentially leading to problems with construct validity (Gotlib & Cane, 1989).

3.4.2.3.1 Distinct theories

Cognitive theories of depression, such as those espoused by Beck and others (e.g., Beck, Brown, Steer, Eidelson, & Riskind, 1987; Beck, Ward, Mendelson, Moack, & Erbaugh, 1961; Tellegen, 1985) report that both cognitive and affective factors differentiate between depression and anxiety. Depressive cognitions focus on loss, negative thoughts and personal inadequacies, whereas anxious cognitions usually relate to thoughts of danger, threat and fear. Others have suggested that at the core of these disorders is a nonspecific negative affect making differentiation problematic (Barlow & Campbell, 2000; Chorpita & Barlow, 1998; Clark & Watson, 1991). However, although

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the aetiological link between depression, sadness and loss, and that between anxiety and fear are undisputed, and as it is generally accepted by researchers and clinicians that fear and sadness have different precipitants (Watson & Kendall, 1989), it is difficult to understand why their tools (e.g. DSM and self-report instruments) are often inadequate to allow for this differentiation.

In a retrospective study of the role of loss in women experiencing depression, it was found that the onset of depression invariably followed a recent severe loss (Finlay-Jones & Brown, 1981). Anxiety, on the other hand, rarely followed severe loss. Severe danger in the previous three months was reported significantly more in women diagnosed with anxiety than those diagnosed with depression. Severe danger was also reported in women diagnosed with depression, but this danger was subsequently found to dissipate (with the unrelated appearance of loss that resulted in depression) or it had translated into a loss. The authors further asserted that mixed anxiety and depression resulted from unrelated events of severe loss and precipitant danger. From these findings, it was concluded that depression and anxiety are distinct disorders, but that they can occur comorbidly. However, in a study assessing the relationship between the basic emotions (fear, sadness, guilt, anger, contempt and disgust), Watson and Kendall (1989) found the highest correlations were between the emotions sadness and fear. As sadness is phenomenologically linked to depression and fear to anxiety, they concluded that even at the basic level these emotions are highly confounded.

The Tripartite Model (Watson, Clark et al., 1995; Watson, Weber et al., 1995) was developed in order to account for the pragmatic differences between depression and anxiety, as cited above, and to address the problems of high correlations between the two disorders. It is, its authors and others claim, a successful attempt to distinguish between depression and anxiety using the concepts of positive and negative affect

(Brown et al., 1998; Joiner, 1996; Nathan & Lagenbucher, 1999; Watson, Clark et al., 1995; Watson, Weber et al., 1995).

> *Negative affect represents the extent to which a person is feeling upset or*
>
> *unpleasantly aroused; it is a general factor of subjective distress and encompasses*
>
> *a broad range of negative mood states, including fear, sadness, anger, guilt, scorn,*
>
> *and disgust. In contrast, the general Positive Affect factor subsumes a broad range*
>
> *of positive mood states, including feelings of joy, energy, enthusiasm, interest,*
>
> *alertness, and self-confidence. (Watson, Weber et al., 1995, p.4)*

Watson and his colleagues found that the presence of high levels of negative affect identified subjects experiencing depression and/or anxiety, but did not discriminate between the two conditions. However, the absence of positive affect was found only in those subjects experiencing depression. The tripartite theory can be seen diagrammatically in Figure 3.1. This theory supports other findings reporting that depressed patients experience high levels of depression and anxiety, whereas anxious patients report high levels of anxiety and low levels of depression (Downing & Rickels, 1974). Watson et al., concluded, therefore, that it is the presence of anhedonia that specifically distinguishes depressed from anxious individuals. Further, they suggested that the presence of "physiological hyperarousal" (Watson, Weber et al., 1995, p.5) identified individuals suffering from anxiety. This focus on the somatic symptoms of anxiety is supported by factor analytic studies and content analyses.

The Tripartite Model was developed using content and factor analyses, and by study of previous research on the symptoms of anxiety and depression (Watson, Clark et al., 1995; Watson & Kendall, 1989). Tests on the construct and discriminant validity of the model (Watson, Weber et al., 1995) showed that it successfully differentiates people suffering anxiety, those experiencing depression, and a group that is experiencing nonspecific general distress (who experience symptoms common to both

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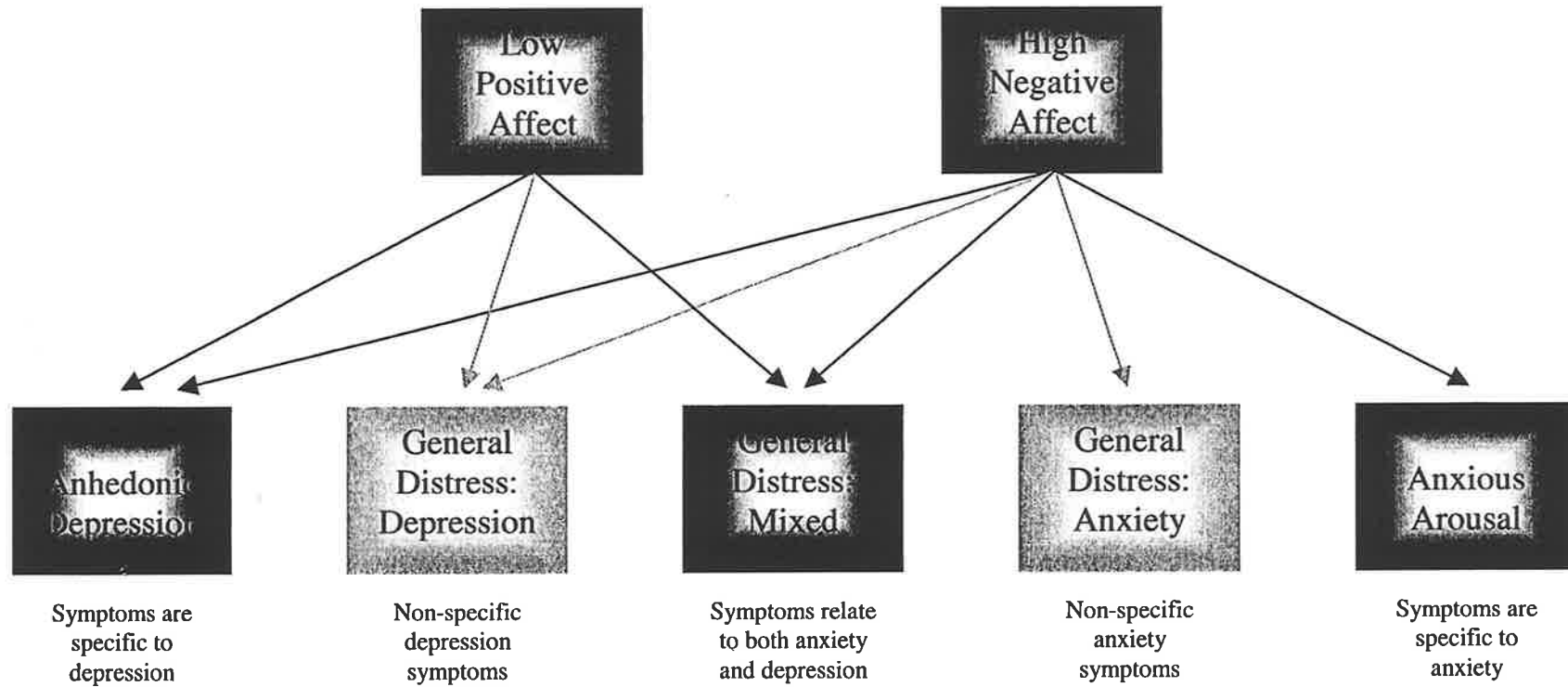
Figure 3.1. Tripartite theory of depression and anxiety

anxiety and depression). A further test of the Tripartite Model was conducted by Brown et al. (1998), who assessed the applicability of the model to DSM diagnostic categories of anxiety (geneneralised anxiety disorder, obsessive compulsive disorder, panic and phobia) and depression. They reported that the Tripartite Model provided the most parsimonious solution, and was consistent with theoretical notions about magnitude of negative affect within the tested categories. They also suggested further consideration should be paid to the role of autonomic arousal, as it appears to be related most to panic disorder and agoraphobia.

Watson and colleagues devised the Mood and Anxiety Symptom Questionnaire (MASQ, Watson & Clark, 1991) as a means of testing the Tripartite Model (further information about the MASQ can be found in Section 6.1.2.2). Factor analytic studies on the content of the MASQ revealed sound evidence supporting the Tripartite Model, but also showed that more work had to be done on the content of the subscales (Keogh & Reidy, 2000; Watson, Clark et al., 1995). Using a different instrument whose composition was derived from alternate questionnaires but based on theoretical input from the MASQ, other research has found a similar factor structure to that proposed above (Burns & Eidelson, 1998). In contrast, however, Burns and Eidelson reported that non-specific or generalised symptoms of depression and anxiety best differentiated between patients with depression and those with anxiety, and that negative affect was still present in all the subscales.

3.4.2.3.2 Comorbid theories

Since DSM-III-R changed the existing hierarchical rules, comorbid diagnoses have proliferated. This is largely due to the number of diagnoses with the same or similar symptom profiles and has resulted from the splitting of one disorder into more specific disorders, or from low symptom thresholds (Klein & Riso, 1993). In the past,

hierarchical ordering of the disorders meant that only one diagnosis would be given. Today, attempts are often not made to identify any aetiological or temporal relationships between disorders, invariably resulting in a diagnosis of comorbid disorders. This method of diagnosis fails to account for the problem of symptom overlap inherent in many DSM diagnoses, and also fails to differentiate the potential of 'true' comorbidity, the "coexistence of clinically independent conditions" (Jablensky, 1999, p.141).

Klein and Riso (1993) suggested a number of models of comorbidity for mental disorders. They suggest that comorbidity may occur due to chance, sampling bias or population stratification. It may be due to problems inherent in the diagnostic system, such as when the diagnostic criteria for one disorder overlaps with another disorder, or when one disorder should justifiably fall under the rubric of another. Diagnosis of comorbidity may result from incorrect definitions or boundaries, including the possibility that the comorbidity is in fact an independent, distinct disorder, or that it is the same disorder expressed in different ways. Finally, they suggest that comorbidity may be identified when there is a shared aetiology for some aspects of the comorbid disorders or when "one disorder is a risk factor for the other" (p.44). Although legitimate questions can be raised about the existence of comorbidity, it is apparent that two explanations can be given for 'true' comorbidity. A common aetiology may result in each disorder, or alternatively one disorder may cause or precipitate the other (Merikangas, 1990).

Prevalence of comorbid anxiety and depression.

The prevalence of comorbid disorders is affected by a number of factors external to the presentation of independent disorders. Clark (1989) suggests that anxiety and depression interact on both quantitative and qualitative measures with each impacting on a person's vulnerability to the other disorder, and affecting the presentation of both

disorders. Moreover, factor analytic studies focusing on affective or cognitive symptoms often produce results incorporating symptoms of both anxiety and depression on the same factor, leading some authors to conclude that anxiety and depression are dimensional aspects of the same underlying disorder (Stavrakaki & Vargo, 1986).

Numerous studies have reported on the comorbidity of anxiety and depression. In Australia, a recent government study reported that one third of people with an anxiety disorder had a comorbid affective disorder. The rates were higher for those with an affective disorder as over three-quarters were identified with a comorbid anxiety disorder (Commonwealth Department of Health and Aged Care & Australian Institute of Health and Welfare, 1999). Reflecting these results, the Canadian Stirling County Study, conducted in 1952 and 1970, reported that 72-75% of people diagnosed with depression, also evinced symptoms of anxiety (Murphy, 1990). Interestingly, they also reported the occurrence of anxiety without depression as quite common. Similar findings have also been reported by others (e.g., Downing & Rickels, 1974) pointing to the fact that anxious patients experience high levels of anxiety and low levels of depression, and that depressed patients experience high levels of depression and anxiety.

Considering comorbidity in specific DSM diagnoses, a Pennsylvanian study found comorbid Major Depression in 31%, and anxiety disorders in 14% of patients diagnosed with Dysthymia (Mezzich, Ahn, Fabrega, & Pilkonis, 1990). Twelve percent of patients with an anxiety disorder were found to also have Major Depression. In fact, over one quarter of patients with either anxiety or Major Depression were reported to have multiple DSM-III disorders, with the comorbidity figure for Dysthymia at 65.5%. These findings support those of Boyd and colleagues who reported that when a patient was found to have one DSM-III diagnosis this substantially increased their risk of receiving

another DSM-III diagnosis, regardless of whether these disorders were thought to have a hierarchical relationship (Boyd et al., 1984).

From a different perspective, the Epidemiologic Catchment Area (ECA) program, in the U.S.A., found 1.9% six month prevalence of comorbid anxiety and depression, and lifetime prevalence of 3.6% (Regier et al., 1990). Prevalence of either anxiety or depression was found in 12.8% and 19.2% respectively. Reflecting the higher numbers of women experiencing either anxiety or depression, women (4.8%) were reported to experience lifetime comorbity at twice the rate of men (2.2%). It is interesting to note, that whilst Regier and colleagues claim that their findings are similar to other epidemiological studies, the reported figures do not bear this out. Regier et al., report one-month prevalence of anxiety disorders varying from 2.8% in Edinburgh to 8.2% in Athens; with depressive disorders ranging from 4.8% in Australia to 7.4% in Athens, and 18.9% in Uganda. Only in the U.S.A. and Athens does the prevalence of anxiety disorders exceed that of depressive disorders, a result that may reflect the problematic nature of the diagnostic systems in use, and cultural differences such as the prevalence of schizophrenic disorders in the U.S.A.

Although prevalence rates are reported, the course of comorbid disorders is rarely studied. However, it has been reported that when depression and anxiety occur comorbidly, the patient experiences the depression for longer and is more prone to relapse if they had previously experienced a traumatic episode (Zlotnick, Warshaw, Shea, & Keller, 1997). Similarly, another study reported outcome for patients with comorbid anxiety and depression as poorer than for those diagnosed with either anxiety or depression (Murphy, 1990).

Diagnostic problems of comorbidity.

The inclusion of comorbidity in DSM-III-R has been identified as a method of dealing with the structure of the DSM (Rodney, 1998). As previously mentioned, evidence of comorbidity in patients with a DSM classified disorder is extremely common (Boyd et al., 1984; Merikangas, 1990). Although disorders were found to co-occur prior to the introduction of DSM-III-R and official comorbidity rules, recent high comorbidity prevalence rates are said to have resulted from the introduction of new DSM diagnoses (Nathan & Lagenbucher, 1999). As a consequence of these changes, questions about the validity of 'comorbidity' have been raised. It is a problem of the existing diagnostic system and their symptom profiles that individuals experiencing more severe illnesses will more likely show evidence of other disorders with similar symptoms and thereby artifactually increase the chance of comorbidity (Frances et al., 1990). Accordingly, researchers have sought to identify whether comorbidity was a case of misdiagnosing one disorder as two. From another perspective, it has been posited that the possibility of comorbidity allowed for, and revealed, similarities between two or more disorders.

Hagnell and Grasbeck (1990) suggest that the pure forms of either anxiety or depression are unlikely to develop into the other disorder. However, a number of studies have suggested that most incidences of Major Depressive Disorder are secondary to another psychological disorder, usually anxiety (Alloy et al., 1990; Angst et al., 1990; Kessler et al., 1996; Parker, Wilhelm, & Asghari, 1997). Panic disorder has been found to be the largest contributor to the comorbidity of anxiety and depression (Angst et al., 1990; Watson & Kendall, 1989). However, once Angst and colleagues had controlled for the effects of panic and gender, Generalised Anxiety Disorder was not significantly related to depression. Participants with anxiety were more likely to evidence comorbidity with depression at follow-up (36%), whereas subjects initially diagnosed with depression were less likely to receive a subsequent comorbid diagnosis (19%).

Findings from the Lundby study (Hagnell & Grasbeck, 1990) show that 25% of people who relapsed after originally being diagnosed with anxiety, subsequently developed depression. Generally, this was reported in people diagnosed with anxiety with other psychiatric symptoms. It can be contrasted with the finding that when a participant was originally diagnosed with depression with other psychiatric symptoms only 8% were subsequently diagnosed with anxiety, with no one reported with depression proper later diagnosed with anxiety. Interestingly, the results of a study employing the tripartite theory found that depressed women were almost seven times more likely to experience comorbid anxiety than depressed men (Joiner & Blalock, 1995). Similarly, in the absence of specific depression and anxiety, women were more likely to experience mixed depression and anxiety than men.

It has been suggested that disparity between studies on comorbidity may result from differing methodologies and semantic interpretations (Angst et al., 1990). However, these are not the only complicating factors as the results of many studies are affected by the fact that their work coincides, or overlaps, with the introduction of different editions of DSM. Although many studies suggest genetic factors are responsible for comorbid anxiety and depression, Kendler et al. (1987), emphasise the importance of environmental factors for comorbidity. Others (Kupfer & Carpenter, 1990) have suggested that using patients from anxiety or depression specific clinics (e.g., DiNardo & Barlow, 1990) limits the generalizability of any findings to the general community.

With reports suggesting that many patients with depression experience comorbid anxiety, it is difficult to reconcile how depressed or anxious patients can be included in the specific study of either depression or anxiety without attempts to identify whether they are experiencing a comorbid disorder. Such research can hardly conclusively state

that any effect found was due to treatment of the specific disorder studied, or due to treatment effects on the comorbid disorder (van Praag, 1998).

The role of self-report.

To discriminate anxiety and depression successfully, self-report instruments must show high levels of convergent validity and high levels of discriminant validity. For example, a test designed to measure anxiety should correlate highly with other tests of anxiety, and correlate poorly with tests designed to measure depression. Some argue that the distinct theories of depression and anxiety are problematic due to the fact that there are usually high correlations between the two disorders when measured by self-report and therefore the constructs cannot be adequately differentiated (Endler et al., 1998; Feldman, 1993). However, others contend that the high correlations are due to psychometric problems, rather than an inherent similarity between the two conditions (Vredenberg, Flett, & Krames, 1993). Endler et al. (1998) suggest that multidimensional scales are superior when differentiating anxiety from depression to the unidimensional self-report scales usually employed. Still others suggest that self-report can be usefully employed to differentiate depression and anxiety by assessing positive and negative affect (Tellegen, 1985; Watson, Clark et al., 1995; Watson, Weber et al., 1995). However, Feldman (1993) reports that although self-report instruments do seem to measure negative affect, their ability to identify high positive affect is questionable.

It is important to emphasise an additional point relating to self-report instruments. The use of self-report to discriminate depression and anxiety presupposes that the research participants can reliably differentiate psychological symptoms or constructs (Dobson & Cheung, 1990). They further suggest that anxiety symptoms are easier to detect using both self-report instruments and interview techniques. This is due to the

fact that symptoms of anxiety are more salient and easily observable than depressive symptoms.

3.4.3 Symptomatology

This section addresses symptomatology generally. Accordingly, the symptoms, diagnostic criteria and types of specific anxiety and depressive disorders will not be discussed in detail here (for this information the reader is referred to DSM-IV-TR). Broadly speaking, anxiety disorders are seen as consisting predominantly of four parts: the affective, cognitive, physiological and behavioural components. Attempts to describe or identify anxiety should take all of these components into consideration. Another conceptual distinction that has been identified is the difference between state and trait anxiety. Despite this distinction being commonly employed by theorists and researchers, DSM criteria views anxiety as a state disorder (Tellegen, 1985).

There are six main anxiety disorders identified in DSM-IV-TR, these are: Generalised Anxiety Disorder (GAD), Panic Disorder, Obsessive-Compulsive Disorder, Posttraumatic Stress Disorder, Phobia and Agoraphobia. GAD and Panic Disorder, as the most relevant to this dissertation, will be discussed briefly. Sufferers of GAD are said to be in a relatively continual state of worry and apprehension that disrupts and causes distress to the individual's everyday life for at least six months. They also must evince at least three of the following symptoms: restlessness, irritability, difficulty concentrating, muscle tension, fatigue or insomnia. People who experience intense and sudden fear and terror, accompanied by at least four somatic or fear-based symptoms (e.g., palpitations, sweating, trembling, chest pain, nausea, dizziness, fear of death, chills, numbness etc) are said to suffer from Panic Disorder.

In general, anxiety disorders share in the expression of high arousal and low pleasantness (Gallo & Matthews, 1999). Somatic symptoms are very common in

patients suffering from anxiety disorders, with reports suggesting a large proportion of patients experience tachycardia, hyperventilation, trembling, sweating and paraesthesia (Kellner, 1990). However, anxious individuals have been found to place more importance on the pleasantness (valance) of the emotion, than on their arousal levels when they are asked to describe their mood (Feldman, 1995). This potentially creates problems when attempting to discriminate anxiety and depression, but Clark (1989) asserts that whilst this is difficult at the symptomatic level, it may be possible at a higher level.

Depression today is most commonly diagnosed in Australia through the use of DSM-IV-TR, but it is worth noting that there has been little change in the criteria and symptoms required for a diagnosis of Major Depression since the introduction of DSM-III. Clinically, depression is often divided into two distinct forms, that is, unipolar and bipolar disorders. Bipolar disorders, previously known as manic-depressive disorders are not the focus of this dissertation; suffice to say, they are often marked by periods of elevated mood, psychomotor agitation and flight of ideas, followed by periods of depression.

Patients with a unipolar disorder are invariably categorised by DSM-IV-TR as suffering from Major Depressive Disorder, Minor Depressive Disorder or Dysthymia. Major Depressive Disorder is diagnosed when a patient suffers from depressed mood and/or loss of pleasure or interest in all activities of daily life, and may include other symptoms such as weight loss, fatigue, psychomotor retardation, feeling like a failure and suicidal thoughts. A minimum of five symptoms must be present during the same two-week period. Minor Depressive Disorder can be diagnosed when a patient with depressed mood evinces only two of the symptoms of Major Depressive Disorder, for at least two weeks. When patients experience depressed mood, at least half the time over a period of more than two years, they will be diagnosed with Dysthymia.

People with depression often describe it as a feeling of darkness and burden, or being weighed down, and they tend to view themselves negatively (Jackson, 1986, cited by Darley, Glucksberg, & Kinchla, 1991). In comparison to anxiety disorders, patients with depressive disorders are said to experience low arousal and low pleasantness (Gallo & Matthews, 1999). Patients with depression have also been reported to evince a higher number of somatic symptoms than nondepressed subjects (Kellner, 1990). In contrast, however, these symptoms are expressions of their lowered arousal and include weight loss, lowered libido and anorexia.

Currently, depression is diagnosed when patients are found to exceed a numerical threshold requiring the patient to experience a certain number of symptoms from a predetermined cluster of potential symptoms. This may mean that although patients may be experiencing the correct number of symptoms for diagnosis, there may be considerable variation in the constellation of symptoms between patients. It also means there can be considerable variation in the severity of symptoms. Some clinicians have challenged this approach suggesting that different depressive disorders can best be identified by looking at severity or symptom patterns (Chen et al., 2000). Despite the use of a numerical threshold by DSM, researchers have not reached clear consensus on the best method of diagnosis. However, Chen et al. suggest that criteria requiring diagnosis only when the threshold number has been exceeded, limits our further understanding of the full spectrum of the disorder.

It is important to identify the symptoms that are specific to each disorder, as well as those symptoms that are common to both when attempting to differentiate between anxiety and depression (Clark, 1989). Symptoms that are common to both disorders will not facilitate clinical discrimination. However, as depressed individuals have been reported to show higher levels on the 'shared' symptoms these common symptoms may contribute to the clinical picture and therefore be useful when using self-report measures

(Clark, 1989). However, it is possible that this finding may be the result of depressed patients incorrectly rating their symptoms higher than anxious patients.

3.5 TREATMENT

Despite the overall similarities in mental health disorder prevalence rates women use mental health services around 70% more than men (Jorm & Henderson, 1989 cited by Jorm, 1995). Although this discrepancy may result from differences in the types of disorders experienced by men and women, the low use by men may have a deleterious effect on their health. Furthermore, this discrepancy may account for the significantly higher mortality rate reported in depressed men compared to depressed women (Murphy, 1990).

Treatment of anxiety and depressive disorders focuses on reducing the symptoms and stressors related to the disorders. Most commonly, psychopharmacological agents are used independently or in combination with other forms of treatment for anxiety and depressive disorders. These can be prescribed by medical practitioners and are reported to be effective (Carrasco, Diaz Marsa, & Saiz Ruiz, 2000; Clark, 1989; Diket & Nolan, 1997; Mackenzie & Wintergriffith, 1990; Shelton, Hollon, Purdon, & Loosen, 1991). However, psychological treatments such as cognitive therapy, relaxation, desensitisation and counselling involving reassurance have also been found to be efficacious (e.g., Barlow, 1988; Dusenbury & Albee, 1988). Although it has been said that pharmaceutical agents are used largely to relieve the burden (on GPs) of counselling mental health patients, the use of prescriptions in this way has served to reinforce belief in the physiological aetiology of psychological disorders (Thakker & Ward, 1998).

3.6 SUMMARY

It is clear that research in the area of anxiety and depression in the general population is quite confusing. On the one hand, some suggest that the two disorders are conceptually and experientially distinct, and on the other, symptoms and diagnosis for the disorders may be based on qualitatively similar features. The shifting requirements and criteria for mental disorders over the last twenty-five years have also contributed to the lack of clarity in the area. Moreover, it is apparent that use of tools such as the DSM are self-fulfilling, in that when DSM is used, it reinforces its own structure. When testing a particular conceptual model, researchers employ the language and doctrines of that model. Further, if the nosology of DSM is accepted as a conceptual model, then it will dictate the direction of potential research, and the data and analysis that emanates from it.

Chapter 4: Conceptual problems in postpartum research

Mood and anxiety disorders are often reported to first appear during a woman's childbearing years. It is unclear, however, whether this is because these disorders are first recognised at this time, or because they first occur during this period. The former option suggests that health care professionals first identify a potentially pre-existing and non-childbearing related disorder during the childbearing years. This may be due to higher surveillance of women at this time and to the broadly perceived implications for a young child with a mother suffering from a mental disorder. The latter option would fit the generally accepted model of postpartum depression, where specific conditions related to childbearing are thought to be aetiologically linked to the disorder. By this rationale, the disorder may be viewed as a factor of childbirth, it may be seen as specific to childbirth and to stress at this time, or it could be lateral and precipitated by birth.

The previous chapter reviewed some of the problems inherent in the nosological and diagnostic systems used by clinicians and researchers identifying mood and anxiety disorders in the general population. As these problems are inherent at the general construct level, they also create problems in defining the more specific constructs, such as depression in postpartum women. From *Chapter* 2, it is clear that many of the issues relating to the definition, prevalence, aetiology and diagnosis of postpartum depression are ambiguous. Moreover, due to the descriptive nature of the second chapter, a number of issues central to the aims of this dissertation were not discussed, including questions of clarity regarding whether this condition is indeed specific to the postpartum period and whether it should be described as depression.

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4.1 IS IT POSTPARTUM?

Research reporting that depression in postpartum women is similar to depression at other times is becoming more common, both as a result of longitudinal studies showing little change in symptomatology and levels of depression, and as a result of studies employing nonpostpartum controls. Such findings of no difference are apparently refuted by studies that continue to maintain that there is a form of depression specific to the postpartum period. The general consensus in studies of postpartum depression suggests the aetiology of this depression is best predicted by the same variables that predict depression in the general population. Similarly, the symptoms of depression are much the same (despite sometimes being confounded by the somatic changes found in pregnancy and the early postnatal period) as those reported by women diagnosed with postpartum depression.

4.1.1 Cross-cultural studies

The finding that a mental disorder transcends culture is often seen as evidence that it is a 'real' disorder with a biological aetiology, rather than an artifact of its cultural environment. Viewed as such, standard criteria could then be used to identify and treat the disorder wherever it occurs. Although the level of this influence is yet to be determined, many researchers, and the authors of DSM-IV, believe that mental disorders have the potential to be influenced by cultural settings (Thakker & Ward, 1998). From this perspective, it is important to consider cultural influence on the presentation of any psychopathology, including postpartum disorders. Some authors have attempted this by equating and differentiating the experiences of postpartum women in Western countries with that of women in non-Western cultures. It can be seen, though, that rather than coming from an atheoretical stance, many of these studies

are explicitly attempting to identify postpartum depression in the non-Western countries.

An early study of non-Western postpartum depression reported on details of a traditional postpartum illness, 'Amakiro', found in the Bagandan women of Uganda (Cox, 1979a). The most common symptom of Amakiro identified by the women was "wanting to eat the baby", other symptoms included confusion, "talking nonsense" and lightening of the skin (p. 50). Women further claimed that Amakiro could result in the death of the infant or the mother. It usually was said to begin after parturition, although some women claimed onset could occur during pregnancy. Amakiro was thought to develop as a result of the promiscuity of either the women or her partner, or it occurred if the women did not take antenatal herbal baths. Both traditional and, to some extent Western, medicine were thought by the women to be effective treatment.

Cox (1979a) used psychoanalytic theory and stories of witches from the Middle Ages in an attempt to link the symptoms of the Bagandan women with Western experience of postpartum mental health problems. He proposed that female desire to cannibalise their infants is not uncommon in Western culture and suggested that talking about eating your own baby has been repressed in modern times. With this theory, however, Cox equates Amakiro with puerperal psychosis rather than postpartum depression. Furthermore, his argument is problematic for a number of reasons. There is no mention of the prevalence of Amakiro, although over one third of the thirty-one women interviewed had known someone with the disorder. On the other hand, puerperal psychosis is quite rare, and is said to affect one to two women per thousand. Accordingly, it is unlikely that such a high proportion of women in Western cultures would know someone who had been afflicted with puerperal psychosis. Cox further suggests that another symptom of Amakiro, 'lightening of the skin', is actually a symptom of an unrelated physical disorder. Although this may be true, his decision to

assign the symptoms of Amakiro to puerperal factors, or otherwise, appears to be related to his ability to link them to symptoms experienced in Western cultures. This leads to the conclusion that, as the reported symptoms of Amakiro are quiet distinct from Western women's experience of postpartum mental disorders, the link between them is tenuous at best.

Although accepting the women's list of symptoms for Amakiro, Cox (1979a) suggests that one needs to be within the Bagandan epistemology to understand it. This is sound from an anthropological perspective and fits with other theories of Bagandan culture, such as early work on reading and understanding their oracles (Evans-Pritchard, 1937). However, despite his stated acceptance of the symptoms, Cox then claims that traditional cures for Amakiro are ineffective and must be supplemented by Western medicine. The work cited here was conducted over twenty years ago, relatively early in the modern work on postpartum depression. It would seem that the criticisms raised above would challenge the use of this work as evidence of the cross-cultural nature of the disorder.

Other reports attempt to explain the absence of postpartum mental illness in non-Western women. 'Satogaeri' has been said to alleviate the symptoms of depression in postpartum women in Japan. Satogaeri refers to a traditional period of rest and recuperation, when a pregnant or postpartum woman returns to her family home and is looked after by her mother. However, in contrast to Western assumptions, rates of depression in postpartum women in Japan are similar to rates found in Western countries, and Satogaeri is reported to be used the same amount by depressed and non-depressed women (Tamaki et al., 1997; Yamashita et al., 2000). In addition, Tamaki et al. report that there was no difference in levels of anxiety between those women who partook of Satogaeri and those who did not.

When lower rates of depression are found in non-Western countries, rather than accepting this as evidence of the cultural specificity of postpartum depression, attempts are made to account for the difference. Cox (1986; 1996) proposes a number of status-raising features related to childbirth in non-Western countries. One example is that childbirth is seen in many cultures as a rite of passage into the valued role of woman and mother (Turner, 1969). Accordingly, it is suggested that women from developed countries are disadvantaged by their status, and that the customs of traditional societies can serve to protect women from postpartum depression (Cox, 1996; Seel, 1986; Stern & Kruckman, 1983). However, it is also recognised that women in Western countries also experience a liminal period that in some way matches that found in traditional cultures. Many Western women are checked by their obstetrician or doctor at six weeks postnatal and, at this stage, are cleared to resume their "domestic and marital responsibilities" (Cox, 1986, p.8). It is also usually at this point that Baptism occurs in the Christian church for the new infant.

In Nigeria, the postpartum condition, 'Abisiwin', is thought to be caused by excessive body heat (however, this explanation is not unusual for disorders in Nigeria, Cox, 1986). From a different perspective, a longitudinal study of Nigerian women found psychological morbidity was higher during the antenatal assessment than at six to eight weeks postpartum and was often motivated by anxiety and fear (Aderibigbe, Gureje, & Omigbodun, 1993). In accordance with similar reports on depression in the general population, high morbidity was associated with stressful life events at both assessments. In contrast to Western assumptions about the protective nature of traditional care for new mothers, Aderibigbe et al. also identified traditional cultural practices as a potential source of distress for Nigerian women. It is common for elderly in-laws to move in with a family after the birth of a baby to assist with care of the

infant, potentially resulting in a loss of privacy and interference in the decision-making process and care of the baby.

In summary, as with much of the research on postpartum depression, ambiguous results have been found as to the cross-cultural existence of postpartum depression. Some researchers report limited, if any, evidence of depression in postpartum women from other cultures, suggesting traditional non-Western methods can be employed to help 'protect' women from postpartum depression (Stern & Kruckman, 1983; Wile & Arechiga, 1999). Others report cross-cultural evidence showing that postpartum depression is not a result of a Western cultural setting (Cox, 1979a). Therefore, despite cross-cultural studies being cited as evidence of a physiological aetiology for postpartum depression, this section has shown that much of the evidence has alternate explanations.

4.1.2 'Other' postpartum depression

In recent years, an increased focus on the psychological, rather than the physiological, aetiology of postpartum depression has led some researchers to explore the notion of postpartum depression in fathers. One study looking at the marital relations, distress and wellbeing of primiparous and multiparous women and their spouses reported a similar increase in distress levels and decrease in well-being for all groups postnatally (Wilkinson, 1995). In another study, mothers were found to have higher levels of psychological pathology than fathers early in the postpartum period (six weeks), and at six months postpartum, but did not have significantly higher scores than a group of control parents (Ballard et al., 1994).

The most common reported symptoms for depressed mothers and fathers were depressed mood and worry. Not surprisingly, fathers were significantly more likely to show evidence of depression when their partner was found to be depressed (Ballard et

al., 1994). This is in accordance with the general literature on male depression. A review of the limited research in this area reported that men were more likely to be depressed when they had a depressed partner, were in unsupportive relationships, and when they were unemployed (Ballard & Davies, 1996). Although it was suggested that encouraging the father's involvement in childcare might help alleviate some of this depression, it was acknowledged that the research was very preliminary, with no conclusive evidence to suggest that this depression was related to childbirth *per se*.

Alternatively, researchers have questioned whether depression in postpartum women was a result of the medical or surgical intervention during the birth of their infant. This research focuses on comparisons between the blues and surgical procedures. Researchers tend to acknowledge that many people undergoing surgical procedures experience periods of the blues or depression afterward (Iles et al., 1989; Price, 1988). However, the experience of the post-operative blues and postnatal blues are generally seen as quite distinct, as the pattern of symptoms is said to be different in each group. The symptoms for post-operative blues are reported to peak immediately after surgery and then decline, whereas postnatal blues peak from day three to five (Iles et al., 1989; O'Hara et al., 1990). Additionally, postpartum women with the blues experience more positive emotions than post-operative women (Mandy, Gard, Ross, & Valentine, 1998). Other difficulties also arise when drawing comparisons between the groups, as assessing postpartum women whilst they are still hospitalised is likely to complicate identification of the cause of their distress (Stern & Kruckman, 1983).

Studies in both the above areas of 'other' postpartum depressive disorders report little to suggest that this period is a time of specific distress for postpartum women. Indeed, findings that women are more prone to depression than men, regardless of their postpartum status, or that men are more susceptible to depression when their partners are depressed, are hardly surprising given the general depression literature. Moreover,

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from this perspective it could also be said that women were more susceptible to depression when their partners were depressed. Furthermore, as studies of post-operative depression have, to date, focussed on the early post-operative period, they can only be used to draw comparisons with the postnatal blues and not with depression in women during the months after childbirth.

4.1.3 Antenatal period

Mental disorder during pregnancy has been identified as one of the best predictors of depression in postpartum women (Beck, 1996a; Da Costa et al., 2000; Demyttenaere et al., 1995; Logsdon et al., 1994; O'Hara et al., 1984; O'Hara et al., 1982; O'Hara & Swain, 1996; Whiffen, 1988). In fact, the level of antenatal depression has been found to account for one quarter of the variance in depression level at around three months postpartum (O'Hara et al., 1982), and increases to around 50% when obstetric risk factors are included (O'Hara et al., 1984). However, whilst antenatal anxiety, depression and negative emotions are thought to be related to postpartum depression, they are not said to be linked to the blues (Maes et al., 2000). This suggests a relationship between pre-existing conditions and postpartum depression, with the blues potentially resulting from pathophysiology of the early parturition period.

Despite the number of reports supporting a strong link between antenatal and postnatal depression, the relationship is complex. As reported in postpartum women (see Section 2.3), some of the somatic changes women experience during pregnancy are similar to symptoms of depression and anxiety, making identification of specific pregnancy or postpartum onset disorders difficult. Some authors suggest that the antenatal period is a time of heightened risk for some disorders (Altshuler et al., 1998; Logsdon et al., 1994). Others suggest woman are 'protected' from the symptoms of mental illness during pregnancy, and that this is a time when woman are least likely to

become depressed (Paffenbarger, 1982; Villeponteaux, Lydiard, Laraia, Stuart, & Ballenger, 1992). Indeed, Paffenbarger reported pregnant women were around five times less likely to experience depression than postpartum women and non-childbearing controls.

The few research designs using a longitudinal methodology invariably assess women during the antenatal period and compare these results with levels reported during the first postpartum year. Such a methodology enables the researchers to identify problems with postnatal onset, but does not answer questions regarding whether the symptoms of any psychological disorder predate, are masked by, or hidden during, the index pregnancy. Bearing this in mind, Terry and colleagues (1996) found that around 50% of their participants who were identified with depression in the postnatal period, experienced onset after parturition. Following the same logic, antenatal depressed mood has been reported to result in depression in postpartum women about half the time (Da Costa et al., 2000).

Starting from a viewpoint that women are susceptible to depression postnatally, the actual levels of depression in antenatal women can often be overlooked (Green, 1998; Green & Murray, 1994). Some research has reported little or no difference between levels of depression antenatally and postnatally. In one such study, no difference was found in levels of depression during the third trimester of pregnancy and at eight weeks postpartum (Atkinson & Rickel, 1984). Another study also found no increase in rates of depression from the second trimester assessment to three, six and nine weeks postpartum, or at six months postpartum (O'Hara et al., 1984). Further, they found that the severity of the symptoms decreased over the period of the study to the nine-week assessment, with similar levels found at nine weeks and six months postpartum. O'Hara et al., suggested that repeated exposure to the test may have affected the results and produced the decrease. However, a retest effect such as this has

implications for all longitudinal studies. Despite this potential problem, they concluded that women were not more at risk of depression during the postpartum period.

Other researchers have reported an overall decline in depressive symptoms, and increased physiological and psychological wellbeing from pregnancy to the postpartum period (Cox et al., 1982; Elliott et al., 1983). Green (1998) found 55% of women had higher depressive symptomatology during the antenatal assessment than at the postnatal assessment. She concluded that ignoring the evidence and implications of antenatal depression may not only impact on the woman and her child, but also hinders the ability of clinicians and researchers to discover the aetiology of the problem.

A more complicated picture is described by Najman et al. (2000). They found that women experienced fewer symptoms at 3-5 days and 6 months postpartum than at the end of the first trimester of pregnancy or when the child was five years old. When assessing individual change, over one quarter of women were found to experience a decrease in symptomatology from pregnancy to the early parturition (although symptomatology for one fifth of women increased). A similar pattern was identified from birth to the six-month time frame, but this pattern was reversed from six months to five years postpartum, with higher numbers experiencing an increase in symptoms. Moreover, this pattern was found to be consistent regardless of the criteria used for identifying depression. Accordingly, Najman and colleagues asserted that many of the cases of postpartum depression were pre-existing.

Given a research focus on depression during the postpartum period, the contradictory findings of higher antenatal and lower postnatal morbidity is often accompanied by justifications. For example, despite reporting a decline in symptoms over this period, some also identify the fact that there is wide variation in individual scores, with the proportion of women experiencing an increase in the symptoms of depression and anxiety being subsumed by those who experience improved

psychological functioning (Elliott et al., 1983; Najman, Andersen et al., 2000). Cox et al. (1982) suggest that a number of women in their study had experienced depression that remitted before the second postnatal assessment, resulting in an apparent decline in numbers of afflicted women. Aderibigbe et al. (1993) concluded that their results could be interpreted as reflecting the different types of disorders occurring antenatally and postnatally with antenatal disorders said to be the more transient, with recovery spontaneous after parturition.

It is interesting to note that one study assessing postpartum affective disorders separated the women into groups based on the aetiology of the episodes (Watson et al., 1984). Almost all women in this study with affective disorders had experienced either acute life events either related (e.g., premature birth or complications) or unrelated (e.g., bereavement or marital crisis) to the pregnancy or childbirth, continuing life problems (e.g., relationship difficulties), or the association of a previous depressive trigger (e.g., parental death during a previous pregnancy). No previous link was found in only three of the 29 women in this study. These findings strongly suggest that postnatal mental disorders are continuations of previous problems (life events, relationships or psychiatric history), rather than due to the pregnancy, childbirth or postpartum period.

4.1.4 Childbearing vs non-childbearing

In another attempt to discover whether depression in postpartum women is specifically linked to the postpartum period, a few researchers have employed controlled studies. In such studies, new mothers are invariably matched with women who either have no children, or have children over the age of one year and who are not pregnant. Generally speaking, these studies have found few differences between the groups on levels of psychiatric disorder (Ballard et al., 1994; Cox, 1979b; O'Hara et al., 1990). Moreover, a longitudinal uncontrolled study comparing levels of depression and

anxiety in postpartum women with levels in the general population, reported no significant differences at three, six and twelve months (Cooper et al., 1988).

Using women matched by age, marital status and number of children, Cox et al. (1993) retrospectively assessed 232 pairs of postpartum women and controls at around six months postpartum. Those determined as being moderate to high scorers on the EPDS, and a selection of low scorers (about half of the original sample), were subsequently interviewed. Despite similar overall prevalence rates, three quarters of the postpartum women identified with depression reported that the onset of their depression occurred within five weeks of delivery, whereas 26% of non-childbearing depressed women reported onset during the same time period (Cox et al., 1993). Although this appears to be evidence of a childbirth related onset of depression, a limitation of this study is that it is based on retrospective data.

With retrospective studies of this kind it is not easy to discern the reliability of the women's account of the time of onset. It is quite possible that the birth of the postpartum women's babies served as a marker for them, and facilitated an accurate recall of the onset of their distress. With no such marker for the controls, we cannot be sure that the non-childbearing women's recall would be similarly accurate. It is also possible that the temporal framing of the depression to the postpartum period by the new mothers could be a conscious or subconscious attempt on their part to attribute meaning to their distress (Cox et al., 1993). Moreover, Cox et al. suggest that a number of depressed women in their control group had experienced long periods of depression related to an earlier birth or to having young children. It is unclear whether long-term depression in the postpartum women was related to similar circumstances.

O'Hara et al. (1990) conducted a prospective controlled study avoiding some of the methodological issues faced by Cox et al. (1993). In this study, women were recruited in the second trimester of their pregnancy and assessed up to nine weeks

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postpartum. Control subjects were matched acquaintances supplied by the pregnant women, and were assessed at the same time and with the same methods as the pregnant women. No significant differences in rates of depression (determined by diagnostic interview) were found between the childbearing subjects and the controls during the antenatal or postnatal assessments, and no increase across assessment periods was reported for either group (O'Hara et al., 1990). Social adjustment was also assessed in this study, finding childbearing women had "poorer social adjustment" during the early postpartum weeks and had "poorer marital adjustment" during the third trimester and up to 9 weeks postpartum (O'Hara et al., 1990, p.9).

Interestingly, depressive symptoms (as measured by the Beck Depression Inventory) were found to be higher in the childbearing group during the antenatal assessment and up to three weeks postpartum. As somatic items are included on this scale, and they have been reported to be more common in pregnant and postpartum women (see Sections 2.3, 2.8.2 and 4.1.3), the Beck Depression Inventory was divided into somatic items and cognitive/affective items, with the groups assessed on the separate subscales. O'Hara et al. (1990) reported that at all assessments (except for nine weeks postpartum), the childbearing group had significantly higher scores on the somatic items, but not on the cognitive/affective items. However, only at the third postpartum week did the *depressed* childbearing women score higher on the Beck Depression Inventory and the somatic items subscale, than *depressed* non-childbearing women. It is also pertinent to note that, during the early postpartum, childbearing subjects reported levels of poorer social and marital adjustment than non-childbearing women (O'Hara et al., 1990). In contrast to Cox et al.'s (1993) report that postpartum women experienced onset temporally related to childbirth, O'Hara et al. reported no different pattern for development of postpartum depression between childbearing and non-childbearing women. Augusto and colleagues (1996) recruited controls using a

similar methodology to that used by O'Hara et al. (1990). However, they reported that postpartum women were twice as likely as matched controls to be at risk of depression, this was despite the fact that there was no significant difference between the mean levels of the groups on the EPDS of the groups.

Using depressed participants in both the control group and postpartum group, Whiffen and Gotlib (1993) reported that there was some evidence for a differential diagnosis. They suggested that childbearing depressed women usually presented with a milder form of depression than non-childbearing depressed women. This finding may be due to the fact that although both postpartum and nonpostpartum depressed women were unhappy with their marital relationships, nonpostpartum women were significantly more dissatisfied. Although a few symptoms were frequently reported by both childbearing and non-childbearing women (e.g., depressed mood, irritability, fatigue and feelings of inadequacy), Whiffen and Gotlib also reported that significantly more women in the nonpostpartum group complained of anxiety, somatic problems and insomnia. This finding is in contrast to O'Hara et al.'s (1990) report that somatic symptoms were more common in childbearing women. Furthermore, despite the relative mildness of the depression reported by postpartum women, the same proportion of postpartum and nonpostpartum women were still depressed at the six-month follow-up (Whiffen & Gotlib, 1993). Their findings led to the conclusion that as the differences found between depression in postpartum and nonpostpartum women were predominantly based on symptom severity it was probably not useful to consider postpartum depression as a differential diagnosis.

Nieland and Roger (1997) conducted a cross-sectional study of postpartum (8 weeks) and nonpostpartum women. Using the EPDS and a factor analysis of seventy symptoms, they identified two factors and named them 'low self-esteem' and 'tension'. 'Tension' was tentatively suggested to be related to the hormonal components of

postpartum depression, but this was not the only explanation proffered to account for tension, with care of infant and recent pregnancy also suggested causes. Although irritability was found to be high in postpartum women, it was not confined to women scoring high on the EPDS and, therefore, appeared to be symptomatic of the postpartum period (perhaps sleep deprivation), rather than related to postpartum depression. Although Nieland and Rogers found no significant difference between childbearing and non-childbearing women on EPDS levels, they found that attempts to differentiate the groups by considering symptoms rather than syndromes indicated that childbearing women were higher on a number of symptoms.

4.2 IS IT DEPRESSION?

Pitt and others (1968; Nieland & Roger, 1997) have argued that postpartum depression is an 'atypical' form of depression, with women experiencing a number of symptoms, such as anxiety and irritability not usually found in major or minor depressive disorders. However, others have argued that postpartum depression is not 'atypical' as it is not clearly differentiated from depression experienced by the general population, except possibly by its aetiology (Kumar, 1982; O'Hara & Zekoski, 1988; Watson et al., 1984; Whiffen, 1992). Green (1998) further argues that 'depression' is not the best term or diagnosis for this disorder, and that by using this term we limit our potential to understand and treat the problem.

As previously identified (see Section 2.3), anxiety is the predominant symptom for the disorder known as postpartum depression. Given that anxiety and depression are generally (although not universally) considered to be distinct diagnoses (see Section 3.4.2.3), it is problematic to label this condition as a depressive disorder. Depressive disorders evince symptoms such as depressed mood, diminished interest and feelings of worthlessness with evidence of lowered arousal, whilst anxiety disorders are recognised

to include heightened arousal and symptoms of anxiety, worry and irritability. Indeed, recent revisions of the DSM (American Psychiatric Association, 1987; 1994; 2000) clearly distinguish between the two disorders by refuting the previous exclusionary hierarchical system of their predecessor DSM-III (American Psychiatric Association, 1980). Despite this philosophical change, it appears that the legacy and assumptions of DSM-III continue (although the diagnostic criteria have remained fundamentally unaltered). More specifically, this legacy is also evident in postpartum research as *depression* is the only non-psychotic psychiatric diagnosis available for women experiencing emotional distress specifically related to the postpartum period, with anxiety considered a component of the depression.

4.2.1 Edinburgh Postnatal Depression Scale (EPDS)

Until 1987, many studies of postpartum women used pre-existing depression scales such as the Beck Depression Inventory. Although standardised within the normal population, such scales have been found to be problematic for postpartum women as they confound the somatic problems of new mothers with those of depression (e.g., Huffman et al., 1990). These instruments invariably present questions concerning insomnia, fatigue, weight loss and libido amongst other things, items that clearly have different implications for women who have recently delivered a baby. Such items also can be seen to reduce the face validity of the instruments for this sample of women.

The Edinburgh Postnatal Depression Scale or the EPDS (Cox et al., 1987) was developed to avoid the above difficulties with validity and to address Cox's findings from cross-cultural studies of depression in women in the U.K. and Uganda (Cox, 1994b). As such, the EPDS was designed specifically to screen for depression in postpartum women. It was presented as an instrument with high face validity and as the solution to the problem of confounding the side effects and somatic symptoms of

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childbirth and new motherhood with the symptoms of depression. Despite widespread acceptance, a number of problematic issues surrounding the development and use of the scale are apparent.

The EPDS was created using items derived predominantly from Bedford & Fould's Anxiety and Depression Scale (DSSI/sAD), the Irritability, Depression and Anxiety Scale (ID&A) and the Hospital Anxiety and Depression Scale (HADS) (Bedford & Foulds, 1978; Snaith, Constantopoulos, Jardine, & McGuffin, 1978; Zigmond & Snaith, 1983), with the content of its ten items specifically addressing symptoms in postpartum women (see Appendix A for questionnaire). Accordingly, depression items that were deemed to have low face validity or directed at somatic symptoms were discarded (Cox, 1994b). Validation of the contents of the EPDS used Research Diagnostic Criteria.

The EPDS source instruments (ID&A, HADS and DSSI/sAD) were all designed with the intent to differentiate between anxiety and depression. This is apparent in both in the name of the instruments and in the subscales they contained. Moreover, it is evident that a number of EPDS questions were derived from *anxiety* questions in the source instruments. It is difficult to reconcile the use of items clearly applied in the identification of anxiety on one scale with their use for the identification of depression on another, but this appears to be the case. Table 4.1 demonstrates this by listing the EPDS questions and the qualitatively equivalent items from the source instruments. Equally puzzling is the fact that the authors of the EPDS made no attempt to discuss this inconsistency.

Subsequent authors have failed to mention the above design incongruity, but have widely praised the instrument. Researchers approve of the quickness and ease with which the scale can be completed, and its high level of face validity amongst postpartum women (e.g., Holden, 1996; Murray & Carothers, 1990). Further, Holden

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Table 4.1. EPDS items and qualitatively equivalent items from the source questionnaires

EPDS	Bedford & Fould's Anxiety and Depression Scale (DSSI/sAD)	Hospital Anxiety and Depression Scale (HADS)	Irritability, Depression and Anxiety Scale (ID&A)
Q1. I have been able to laugh and see the funny side of things		Q4: I can laugh and see the funny side of things (Depr.)	Q11: I can laugh and feel amused (Depr.)
Q2. I have looked forward with enjoyment to things		Q2: I still enjoy the things I used to enjoy (Depr.); & Q12: I look forward with enjoyment to things (Depr.)	
Q3. I have blamed myself unnecessarily when things went wrong			
Q4. I have been anxious or worried for no good reason	Q1: Recently I have worried about every little thing (Anx.); & Q13: Recently, I have been so anxious that I couldn't make up my mind about the simplest thing (Anx.)	Q5: Worrying thoughts go through my mind (Anx.)	
Q5. I have felt scared or panicky for no good reason	Q7: Recently, for no good reason, I have had feelings of panic (Anx.); & Q11: Recently worrying has kept me awake at night (Anx.)	Q13: I get sudden feelings of panic (Anx.)	Q9: I get scared or panicky for no very good reason (Anx.)
Q6. Things have been getting on top of me			
7. I have been so unhappy that I have had difficulty sleeping	Q2: Recently I have been so miserable that I have had difficulty with my sleep (Depr.); & Q11: Recently worrying has kept me awake at night (Anx.)		
8. I have felt sad or miserable			
9. I have been so unhappy that I have been crying			
10. The thought of harming myself has occurred to me	Q14: Recently I have been so depressed that I have thought of doing away with myself (Depr.)		Q6: I feel like harming myself (Depr.); & Q14: The thought of hurting myself occurs to me (inwardly directed irritability)

Note. Brackets indicate the item's allocated subscale.

suggests another unintentional but useful benefit of the EPDS. She claims that use of the EPDS has increased awareness of postpartum depression, both amongst postpartum women and health professionals.

4.2.1.1 Validation of EPDS

The validity of a test is measured in a number of ways. By identifying the proportion of false-negatives, the sensitivity is a measure of the test's ability to correctly detect cases of, in this case, depression. In contrast, specificity of the test refers to the test's ability to detect false-positives, thereby correctly identifying women who are not depressed. The positive predictive value shows the probability that a person, scoring above the chosen cutoff for determining caseness, is actually a clinically diagnosed case.

As well as describing the design of the EPDS, Cox et al. (1987) reported on its validity. They found that all women with Research Diagnostic Criteria (RDC) Major Depression were identified using a cutoff of ≥ 13 on the EPDS, however 45% of women with either Probable Major Depression or Minor Depression were missed. Further, 22% of non-depressed women were identified as depressed by the EPDS. Cox et al., suggest that adjusting the EPDS cutoff to ≥ 10 will reduce the number of missed cases to less than 10%, but will correspondingly be accompanied by an increase in the number of non-cases that are identified as depressed. Therefore, whilst the lower cutoff will enable 90% of cases to be identified, it will result in around one third of non-depressed women being classified as potential cases. Cox et al., suggests that the scale should be used to help identify *possible* or *potential* cases of postpartum depression, rather than to *diagnose* postpartum depression.

A number of other EPDS validation studies have been conducted, with some of these results shown in Table 4.2. It is apparent that the sensitivity, specificity and

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positive predictive value are highly variable between studies. It is therefore important to consider the specific details of the research. For example, the authors of an Australian study reported an EPDS cutoff of 12.5 with perfect (100%) sensitivity for identifying cases of DSM-III-R major depression (Boyce, Stubbs, & Todd, 1993). High specificity was also found as only 4.3% of the total sample were incorrectly identified, and 69.2% of EPDS high scorers were found to have clinically detected Major Depression (positive predictive value). However, the reports of high sensitivity and specificity conceal some of the methodological problems in the study by Boyce et al. Firstly, as the number of EPDS high scorers was unusually low in this study (n=4), five additional depressed participants were recruited from a hospital psychiatric unit, resulting in a total of nine EPDS depressed women in a sample of 103 women. Their method also casts doubts on the accuracy of the positive predictive value shown in the study. This should be more appropriately reported as 50%, given that four women from the original sample were incorrectly classified by the EPDS (along with the four correctly classified women).

Most researchers agree that the optimum cutoff for the EPDS is ≥ 13, with its high specificity and reasonable sensitivity, but they also invariably report data relating to a cutoff of ≥ 10. This provides the opportunity for more women with Minor Depressive Disorder to be identified, whilst also increasing the overall numbers of possible cases. Despite the widespread acceptance of these defined cutoff values, some authors have used the lower cutoff of ≥ 12 (Ghubash & Abou Saleh, 1997; Yamashita et al., 2000). Table 4.2 also shows the results of a validation study including a sample of nonpostpartum women showing 79% sensitivity and 85% specificity using the 12/13 cutoff (Cox, Chapman, Murray, & Jones, 1996). However, in this study, the sensitivity (62%) and specificity (89%) of postpartum women was lower than expected.

Table 4.2. Sensitivity and specificity of EPDS for postpartum women

Author	EPDS cutoff	Sensitivity	Specificity	Positive predictive value
Cox et al., 1987	≥13	86%	78%	73%
	≥10	94%	51%	58%
Harris et al., 1989	≥13	95%	93%	Not
	≥10	100%	82%	available
Murray & Carothers, 1990	≥13	68%	96%	67%
	≥10	89%	82%	39%
Boyce et al., 1993	≥13	100%	96%	69%
	≥10	100%	89%	47%
Cox, Chapman, Murray & Jones, 1996	≥13	62%	89%	52%
	≥10	81%	77%	41%
	≥13[a]	79%	85%	46%
	≥10[a]	95%	72%	35%
Guedeney & Fermanian, 1998	≥13	60%	97%	78%[b]
	≥10	84%	78%	19%[b]
Leverton & Elliott, 2000	≥13	70%	93%	33%
	≥10	90%	84%	23%
Yamashita et al., 2000	≥12	55%	98%	Not
	≥9	82%	95%	available

[a] Data presented for control responses. [b] Positive predictive value shown for when population prevalence is 10%

4.2.1.2 Problems with the EPDS

Researchers have begun to question whether the EPDS is a valid measure of depression at all, and have suggested that it perhaps measures dysphoric mood and anxiety (e.g., Boyce et al., 1993). Others suggest that it measures anhedonia and anxious symptoms but fails to identify psychomotor retardation (Guedeney, Fermanian, Guelfi, & Kumar, 2000). Most reports still acknowledge Pitt's (1968) original labelling of depression in postpartum women as *atypical*, although some claim the EPDS addresses a *typical* form of depression. Although thirteen items were originally included in the design of the EPDS, three of these items were later discarded. As two of the discarded items address irritability, it has been argued that the removal of these questions shifted the scale's emphasis from atypical to typical depression (Personal communication with

Dalton 1994, cited by Nieland & Roger, 1997). The discarded questions and their response options are as follows:

1) People upset me so that I felt like slamming doors and banging about (yes, often; yes, sometimes; only occasionally; not at all)
2) I have enjoyed being a mother (yes, very much so; yes, on the whole; rather less than usual; no, not very much)
3) I have felt I might lose control and hit someone (yes, frequently; yes, sometimes; only occasionally; never)

Green (1998) also argues against using the clinical term *depression* for women who are identified as potential cases by a self-report instrument. Instead, she prefers to describe the women as experiencing "low emotional well-being" (p.146). Green further disputes the use of cutoff scores claiming they lack scientific verification and result in the loss of useful information by dichotomising results and ignoring differences within the dichotomies. Such an approach also obscures potential differences between sub-groups of high or low scorers. From a different psychometric perspective, the use of both positively and negatively worded items has been identified as problematic as positive and negative mood are said to be independent (Watson, Clark, & Tellegen, 1988).

Given the interest in differentiating depression and anxiety in the general population (see Section 3.4.2.3), a major flaw in the EPDS and the published literature in the area, is its failure to account for the trouble-free convergence of the two disorders. This is particularly apparent in the unproblematic manner in which anxiety items from the source questionnaires were integrated into a questionnaire on postpartum depression. Logical reasons can be put forward to account for both these issues. Although published in the same year as DSM-III-R, the EPDS was constructed, like many other self-report instruments currently in use, when the diagnostic criteria for depression and anxiety was defined by the hierarchical DSM-III (see Section 3.4.1).

Even though the symptom profiles for diagnostic caseness has changed little since this time, a substantial change has occurred in the hierarchical structure of DSM. There is no doubt that this has impacted on the meaning of including anxiety items in the EPDS.

Researchers have raised a number of other issues regarding the EPDS. Some authors claim that the EPDS is a valuable screening tool for both depression *and* anxiety (Brouwers, van Baar, & Pop, 2001; Najman, Andersen et al., 2000; Stuart et al., 1998). Such claims are supported by the finding that equal numbers of women with clinical diagnoses other than depression are scoring high on the EPDS (Leverton & Elliott, 2000). These findings are also often cited along with information reporting high correlations between the EPDS and anxiety measures such as the State-Trait Anxiety Inventory (Green, 1998; Stuart et al., 1998). However, these high correlations could be interpreted as showing that either, or both, of the instruments are failing to measure depression, or anxiety, exclusively or effectively.

As mentioned, the authors of the EPDS do not claim that it diagnoses postpartum depression, but suggest that it should be used primarily as a screening tool for preliminary identification of *potential* cases of postpartum depression (Cox et al., 1987). Despite this, the reporting of high validity and reliability has led some researchers to claim that women are depressed (or not depressed) on the basis of their EPDS scores. Whilst such claims contradict the author's express intentions, it is clear that reports of high specificity and sensitivity obscure the fact that false positives and negatives do occur outside their anticipated ranges (Murray & Carothers, 1990).

In summary, despite these problems the EPDS is widely lauded for its face validity, its quickness and ease of use for both the mothers and the administrators, and its usefulness in identifying psychological problems during the postpartum period (Boyce et al., 1993; Cox, 1994a; Cox et al., 1996; Guedeney & Fermanian, 1998; O'Hara, 1994). Although it is not superior to other means for identifying depression,

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such as assessment by trained health visitors or professionals (Elliott & Leverton, 2000;

Leverton & Elliott, 2000), the EPDS is said to be a useful tool for identifying dysphoria

in antenatal and postpartum women, and allows for symptom profiles to be tracked over

time (Green & Murray, 1994).

4.2.2 Research on anxiety

4.2.2.1 Antenatal anxiety

To date, research on mental illness in childbearing women has focused almost

exclusively on depressive disorders. However, some research during the antenatal

period has also considered anxiety. This research has varied from simple studies with

few hypothesised implications directed at whether or not women were anxious during

pregnancy, to studies that attempt to link antenatal anxiety with childbirth or postnatal

problems. Surprisingly, these findings have rarely resulted in further study of anxiety

during the postpartum period.

Studies on anxiety in pregnant women, like most self-report instruments of

anxiety, tend to focus on a general amorphous type of anxiety, rather than the more

specific anxiety disorders defined by the DSM. Results from the few studies on DSM

anxiety disorders are inconclusive. Retrospective studies suggest symptoms of panic

decrease during pregnancy (Cowley & Roy-Byrne, 1989; Shear & Mammen, 1995;

Villeponteaux et al., 1992), but this has not always been found (Cohen et al., 1996). In

their brief review, Altshuler et al. (1998) suggested that pregnancy is implicated in the

onset of new cases of obsessive-compulsive disorder, with this increase potentially

related to the ethological benefits of increased vigilance during child rearing (Shear &

Mammen, 1995).

An early study of anxiety in pregnancy comparing women who had complications in childbirth with women who did not, found the 'complications' group had not rated themselves as significantly more anxious during pregnancy, but did believe they appeared more anxious to friends and family (Davids & DeVault, 1962). It is interesting to note that clinician ratings recorded these women as more anxious, confirming the women's beliefs that they appeared that way. Davids and Devault go on to conclude that anxiety during pregnancy can have a negative effect on childbirth. Another study produced similar findings with high levels of antenatal anxiety reported in the small numbers of women who experienced pre-eclampsia, forceps deliveries, prolonged labours or precipitate labours (Crandon, 1979b). Inductions have also been reported more commonly in highly anxious women (Maes et al., 2000). Antenatal anxiety has been reported to be related to future physiological outcomes, as there are suggestions that postpartum haemorrhage and retained placenta are more likely to occur in women who were highly anxious antenatally (Crandon, 1979a). As with many other areas of research, though, a relationship between antenatal anxiety and delivery complications has not always been found (Beck et al., 1980; Burstein, Kinch, & Stern, 1974).

There is also limited evidence to suggest that the woman's antenatal anxiety has implications for the infant during childbirth and the early parturition. Foetal distress was also considered by Crandon (1976b) and was found to occur only in women who were recorded as highly anxious in the third trimester. Furthermore, scores given to infants immediately following birth to test activity, pulse, grimace, appearance and respiration (infant APGAR scores) were lower in antenatally anxious women's infants (Crandon, 1979a). Despite these findings, it is important to note that the above reports do not imply a causal relationship.

A study focusing specifically on fear during pregnancy, found that 81% of their sample retrospectively reported antenatal anxiety (Heymans & Winter, 1975). This

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anxiety was most commonly related to fear about physical or mental abnormalities in their unborn infants, was more common in primiparous women, and was more likely to occur in the third trimester. From an environmental perspective, others have reported that antenatal anxiety is more common in women who are financially insecure, have lower levels of education, and is more likely when family members live in close proximity (Lightfoot, Keeling, & Wilton, 1982).

It is notable, that all but one of the above studies were published prior to 1983, before postpartum depression became widely accepted. In more recent times, research on antenatal anxiety has often occurred in conjunction with research attempting to identify depression in postpartum women. This research has identified anxiety in antenatal women, and then invariably either ignored it with the implicit assumption that it just goes away, or suggested that this anxiety unproblematically predicts or translates into depression after childbirth.

Using the State-Trait Anxiety Inventory, Tamaki et al. (1997) found that almost 18% of women had high levels of trait anxiety during the late antenatal period. State anxiety remained high at one month postpartum (20.7%) and then decreased over the next three months to 10.7%. Although the EPDS was not used to assess women antenatally, the postnatal results reflected the same pattern as the STAI, from a high of 18.2%, at one month, to 6.7% at four months postpartum. In light of these findings, Tamaki et al., acknowledged that the EPDS assesses both depression and anxiety, but concluded that trait anxiety predicts depression in postpartum women. Whilst this is based on high correlations between antenatal trait anxiety and the postnatal EPDS scores, it ignores the implication that equally high correlations were found with state anxiety.

Other researchers have also reported the concurrence of antenatal anxiety and depression. Jarrahi-Zadeh et al. (1969) reported subjective worry in 40% of antenatal

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women, subjective anxiety in 41%, and subjective depression in 38%. Cox et al. (1982) reported both anxiety and depression during the antenatal period, suggesting that anxiety was pre-eminent antenatally and based on fears about the delivery and concern over the health of the child. They further claimed that anxiety reduced postnatally as these fears abated. Aderibigbe et al. (1993) also suggested that whilst incidence of depression was low, and did not change from the antenatal to postnatal period, incidence of anxiety was almost twice that of depression and decreased postnatally. Contrary to other reports (e.g., Dalton, 1971; Tamaki et al., 1997), Aderibigbe et al. also found that anxiety during pregnancy was not predictive of depression during the postpartum period. In a much earlier study, Pitt (1968) found no difference between controls and depressed women in the self-reported levels of anxiety during the antenatal period, regardless of whether they were measured concurrently or retrospectively. A relatively recent study found that women who were depressed either antenatally or postnatally experienced higher levels of state anxiety than women who had not been identified as depressed (Da Costa et al., 2000). However, these findings were used to suggest that anxiety had a role in the subsequent development of depression, rather than raising questions about the applicability of the term postpartum 'depression'.

Early research suggesting a link between antenatal anxiety and postpartum depression (e.g.,Tod, 1964) have been criticised due to the lack of standardised tools to establish levels of anxiety. Methodological problems are also inherent in a subsequent study that reported finding an aetiological relationship between depression and antenatal anxiety whilst asserting that they were clinically and physiologically distinct (Meares, Grimwade, & Wood, 1976). This latter study failed to assess depression during pregnancy and employed retrospective self-reports of depression six to eighteen months after parturition. Further, as the study reported a low (38%) response rate to the depression questionnaire a response bias is highly likely.

4.2.2.2 Postpartum anxiety

Research has found that women not only suffer more anxiety than men, but they also experience higher rates of anxiety than depression (see Section 3.2). It is, therefore, surprising that anxiety is rarely considered independently from depression in postpartum women. It is particularly surprising given that many early reports on psychopathology in postpartum women discussed both anxiety and depression (Jarrahi-Zadeh et al., 1969), or reported that anxiety was a predominant or very common *symptom* of the problem (Jacobsen et al., 1965; Nott, 1987; Pitt, 1968).

It would appear that an independent diagnosis of anxiety during the postpartum period was made near impossible by the nature of psychological taxonomy during the mid-1970s through to 1987 (as anxiety was thought to be a less severe disorder than, and therefore was subsumed by, depression). In view of this, findings of postpartum *depression* cannot be unexpected during this period. However, despite changes to the relationship between depression and anxiety at the publication of DSM-III-R, limited research since this time has challenged the pre-existing diagnostic beliefs and assumptions. Accordingly, in most postpartum research there is limited reference made to anxiety beyond its acceptance as a symptom of postpartum depression. The assumed relationship between anxiety and depression in postpartum women is evident in the following passage from a manual for health professionals.

> *Anxiety, as a mood state, is often accompanied by depression and it is wise to assume, until proved otherwise, that any mother who is anxious is also depressed. The somatic symptoms of anxiety, such as headache or palpitations, are also commonly present. (Cox, 1986, p.47)*

Although the study of depression dominates research on postpartum psychopathology, a limited number of researchers have studied evidence for anxiety

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within this group. One study looked predominantly at the treatment implications for women with high levels of postpartum anxiety (Barnett & Parker, 1985). These women were originally assessed and assigned group membership (high, moderate or low anxiety) at three to four days postpartum. Not surprisingly, women differentiated in this way were found to vary similarly on measures of depression. Women identified with high levels of anxiety were then randomly allocated to subgroups receiving professional intervention, non-professional social support (from an experienced mother) or no intervention. The women assigned to the professional intervention group were most likely to evince a slow but significant linear decrease over the following year in both state and trait anxiety levels, and also showed significantly different anxiety levels to the high scoring control group. Although a linear trend did not exist for the non-professional intervention group, this group did show a significant decrease in state and trait anxiety from the baseline to the twelve-month assessment, most of which appeared to occur during the first three months.

The women in the Barnett and Parker (1985) study were assigned to group membership three to four days after childbirth. As with studies of depression, this is problematic because of the potential to confound the symptoms of the blues with anxiety. Furthermore, it is important to note a number of features that related to childbirth and have possible implications for anxiety levels. As compared to women with moderate or low anxiety, women with higher anxiety levels were more likely to have experienced pregnancy or delivery complications (e.g., hypertension, signs of pre-eclampsia, episiotomy etc.), they were also more likely to use analgesia during childbirth, have premature infants and experience early breastfeeding problems (Barnett & Parker, 1986). The high anxiety group retrospectively admitted to more concerns about pregnancy complications and were more inclined to criticise hospital staff. Subsequently, these women reported experiencing the blues more often and admitted

more commonly to concern about their level of coping, their infant, marital relations and finances. With such concomitant variables it is problematic to assign levels of anxiety to these women with confidence, and to assume that this anxiety is unrelated to the complications they have recently experienced. However, antenatal assessment may go some way towards reducing the effects of a problematic delivery on anxiety levels.

Despite the aforementioned problems regarding potentially confounding the blues or complications during childbirth with anxiety, a five-year follow-up to the above study showed that women who were originally identified as highly anxious continued to have high anxiety levels (Barnett et al., 1991). This goes some way to suggest that anxiety level was not overly affected by issues related to perinatal factors. It also tends to refute the report that professional intervention was efficacious and beneficial for suffering women, as cited by the earlier study. This finding is particularly pertinent in relation to belief(s) about the long-term effectiveness of treatment for the woman or child. However, with the highest dropout rate in the high scoring controls, interpretation here is also problematic.

As with antenatal anxiety, most reports on postpartum anxiety focus on a non-specific form of anxiety, although a few have mentioned DSM classified anxiety. In particular, primiparous women are thought to be susceptible to anxiety during the postpartum period, with anxiety amongst this group fairly widespread and related to issues of infant care. Panic attacks and obsessive thoughts are said to develop out of these issues for some women (Taylor, 1995). One study identified Generalised Anxiety Disorder in 6.1% of women at six months postpartum (Ballard, Davis, Handy, & Mohan, 1993). This study found correlations between the symptom profiles of women with clinical depression and anxiety were low and insignificant, but the numbers of participants in the study were quite limited resulting in very few identified with generalised anxiety. It is noteworthy, that the authors concluded that anxiety in

postpartum women should be thought of as a distinct disorder and not considered as a *symptom* of depression.

Altshuler et al. (1998) suggested that whilst existing Obsessive-Compulsive Disorder is inclined to get worse during pregnancy, women who have previously suffered from the disorder are susceptible to a recurrence during the postpartum period. On the other hand, a study of Panic Disorder suggests that its symptoms decrease antenatally and then re-emerge postnatally along with a sudden drop in progesterone levels at parturition (Villeponteaux et al., 1992). There has been limited research conducted on Panic Disorder (without evidence of depressive symptoms) presenting for the first time during the postpartum period. Drawing on a number of case studies, it has been suggested that childbirth, as a possibly aversive life event, may play a role in the development of Panic Disorders (Metz, Sichel, & Goff, 1988). Metz et al. further expound that as the Panic Disorder they identified presented differently from postpartum depression, clinicians, health workers and researchers should be alert to the possibility of Panic Disorder at this time.

A longitudinal study of Panic Disorder, from early pregnancy to nine months postpartum, found that regardless of medication use most of their sample ($n = 10$) continued to meet diagnostic criteria for Panic Disorder (Cohen et al., 1996). Contrary to other reports, they suggested that the presentation of Panic Disorder was variable and continued to be so across the antenatal period. They further suggested that as nine of the women met criteria for Panic Disorder during the first three postpartum months, despite the increase in anxiolytic medication during this period, Panic Disorder may indeed become worse postnatally. However, this finding based on pharmaceutical level may, in fact, be related to the reluctance of women to take psychopharmacological medication during their pregnancies.

Some authors have suggested that the pain and stresses of childbirth are remembered and, for some women, continue to be felt into the postpartum period (Arizmendi & Affonso, 1987; Czarnocka & Slade, 2000). Using very strict criteria, Czarnocka and Slade reported eight (3%) of their participants experienced Post-Traumatic Stress Disorder (PTSD), but that a total of 27.2% showed at least one clinically significant PTSD symptom. Women who had experienced symptoms of PTSD rated the birth experience, as well as their partner's and medical staff's involvement in the birth, more negatively than other women. They were also more likely to blame both themselves and staff members for birth difficulties, felt that they had less control during delivery and had higher trait anxiety levels. This is despite the fact that there was only one difference between the groups on medical intervention. That is, symptomatic women were more likely to receive an episiotomy.

While some research has identified a significant anxiety component in postpartum 'depression' (Ballard et al., 1993; Barnett et al., 1991; Fisch, 1989; Kraus, 1989; Stuart et al., 1998; Tamaki et al., 1997), other studies have identified anxiety as a specific element of the EPDS (Condon & Corkindale, 1997; Hannah et al., 1992; Harris & Jamil, 1994; Pop, Komproe, & Van Son, 1992; Tamaki et al., 1997). Despite this, researchers have generally disregarded the problematic nature of the EPDS and its exclusive description of depression, and overlooked its failure to meet the requirements for clear identification of current emotional status.

Although some studies have looked at the relationship between anxiety and depression in postpartum women, most have failed to adequately account for their findings. Stuart et al. (1998) using the EPDS and the State-Trait Anxiety Inventory found the incidence of depression and anxiety was 7.5% and 10.3% respectively. They also reported that depression and anxiety self-report instruments are invariably highly correlated, particularly when instruments were employed during the same time period.

From this, they concluded that anxiety and depression often occurred comorbidly during the postpartum period. The alternate conclusion, that the self-report instruments used for this study did not adequately differentiate between the conditions, was not considered.

Other researchers have also identified high correlations between the EPDS and instruments testing anxiety, with most of these correlations in the same range as those between the EPDS and depression instruments (e.g., Elliott & Leverton, 2000; Green, 1998). These findings have sometimes been used to suggest that anxiety self-report instruments (e.g., State-Trait Anxiety Inventory) could be useful tools to assess postpartum depression. Alternately, they have sometimes resulted in the hypothesis that the EPDS identifies a general psychological pathology rather than merely identifying depression. Both of these suggestions fail to adequately address the confounding of anxiety and depression by these scales and subsequent interpretation (e.g., Tamaki et al., 1997).

Although much more limited in number than studies of postpartum depression, research on anxiety in postpartum women is beset with contrasting methodologies and results, and some confusing interpretations. For example, in some studies nonpostpartum women have been reported to experience higher levels of emotional and somatic anxiety than postpartum women (Augusto et al., 1996; Whiffen & Gotlib, 1993). These findings are problematic. Given the physiological changes experienced by pregnant and postpartum women, not only are they counterintuitive but they also contradict the seminal findings reported by Pitt (1968).

Although some studies of depression in postpartum women also measure anxiety using self-report instruments such as the State-Trait Anxiety Inventory, they invariably fail to mention the number of women who are high scorers on the scale (e.g., Green & Kafetsios, 1997; Stuart et al., 1998). Such studies will often report an instrument mean within the normal range expected for the general population. However, this equates to

reporting the mean of the EPDS falling in the normal range (without determining the percentage of women who score above the chosen cutoff value), and concluding from this that there is no problem within the sample.

4.2.3 Confounding of anxiety and depression in postpartum women

The confounding of anxiety and depression in postpartum women has implications beyond those posed by misdiagnosis. Treatment follows diagnosis; therefore, women with predominant symptoms of anxiety in the postpartum should receive different treatment protocols and medication than clients with depression. Generally, researchers who find evidence of anxiety in pregnant or postpartum women have taken two approaches. They either assume that anxiety found antenatally translates into depression in postnatal women (see Section 4.2.2.1), or alternately they make no attempt to account for, or differentiate between, the depression and anxiety claiming either that the found anxiety was a symptom of the depression, or that they were comorbid disorders.

Kumar and Robson (1984) reported that a number of the women in their study had the symptoms of anxiety, but only one of these was assessed as experiencing anxiety as the primary disorder. However, it must be remembered that Kumar and Robson's study was conducted under the hierarchical system of DSM-III. Interestingly, they found that depression during the antenatal period did not invariably lead to depression postnatally, and that depression developed in both time periods independently. They further reported that the symptom profiles of the women were similar antenatally and postnatally.

As mentioned (see Section 2.1), postpartum depression was originally claimed to be atypical with evidence of a different symptom profile from that of depression in the general population, and with the indication that anxiety was predominant (Pitt, 1968). This belief has been challenged in recent times with the inference that depression in

postpartum women matches depression in the general population (O'Hara & Zekoski, 1988) and that it is depression during pregnancy that is atypical (O'Hara, 1985). Despite these challenges, there appears to be little emphasis on the symptoms of depression in postpartum women and no explanation as to how the anxiety component of this depression should be accounted for.

Taking the perspective that anxiety and depression are distinct disorders, we can consider how DSM-IV-TR criteria relate to depression in postpartum women. To do this, the symptom lists of Generalised Anxiety Disorder, Panic Disorder and Major Depressive Disorder were compared with Pitt's (1968) criteria for 'atypical' depression and with items included in the EPDS. This comparison can be seen in Table 4.3. It is clear that there is substantial overlap between the diagnostic criteria for anxiety and depression, along with the symptoms considered to constitute postpartum depression.

4.3 SUMMARY

This chapter considered some conceptual problems related to depression in postpartum women. Attempts to conclusively link psychopathology to the postpartum period have had limited success. Although a number of cross-cultural studies found psychological distress in new mothers, it would appear that this distress manifested itself in a variety of symptoms many of which had no valid cross-cultural equivalent. Evidence of postpartum depression in fathers provides confirmation that similar psychopathology in new mothers is highly unlikely to be a physiological or biological condition. Further, findings of comparable proportions of postpartum, pregnant and non-childbearing women experiencing high levels of psychological distress would also suggest that postpartum women are not specifically susceptible. Although women experiencing distress in the postpartum period are invariably understood to be

Table 4.3. Symptoms of depression and anxiety as found in DSM-IV-TR, 'Atypical' depression and the EPDS

ANXIETY DSM-IV Generalized Anxiety Disorder & Panic Disorder[a]	DEPRESSION DSM-IV Major Depressive Episode	"ATYPICAL" DEPRESSION Pitt (1968)	EPDS items Cox et al. (1987)
excessive anxiety and worry		anxiety often primary; worry	anxious or worried for no good reason (item4)
intense fear with e.g.,, palpitations, sweating		fears of ill-health	scared or panicky for no good reason (item 5)
fear of losing control or going crazy		inability to cope	things have been getting on top of me (item 6)
irritability		irritability common	
derealisation or depersonalisation		not feeling like self	
sleep disturbance	insomnia or hypersomnia	sleep disturbance	so unhappy that I have had difficulty sleeping (item 7)
easily fatigued	fatigue, loss of energy	undue fatigue and exhaustion	
difficulty concentrating, mind going blank	difficulty concentrating, indecisiveness	some impaired concentration & memory	
restlessness, keyed up; muscle tension	psychomotor agitation or retardation		
fear of dying	suicidal ideation or attempt	suicidal ideation & hopelessness rare	thought of harming myself (item 10)
	depressed mood	labile mood; teary, despondent	sad or miserable (item 8)
			crying because so unhappy (item 9)
	diminished interest or pleasure in activities	some loss of normal interests	unable to laugh and see the funny side of things (item 1)
			unable to look forward with enjoyment to things (item 2)
	feelings of worthlessness or guilt	feeling inadequate; guilt over feelings toward baby	blamed myself unnecessarily when things went wrong (item 3)
	significant weight loss or gain	anorexia common	

Note. The above statements are paraphrased from DSM-IV-TR, Pitt (1968) and the EPDS.

[a] Generalised Anxiety Disorder symptoms are shown in plain font, Panic Disorder symptoms are shown in italics.

depressed, the preceeding sections revealed that there were also problems with this assumption as the instrument used to identify the depression confounds the symptoms of depression with those of anxiety. Moreover, limited research in the area has identified high correlations between anxiety and depression in antenatal and postpartum women.

It is apparent from the preceeding sections that the questions of clarity identified in the introduction to this chapter have not been adequately answered by previous research. In part, this is due to the to the historical assumptions about depression and anxiety in general, and more specifically about depression in postpartum women. However, it is also due to the fact that questions about the nature of *postpartum depression* have rarely been expressly addressed.

Chapter 5: Adapting to Motherhood

In order to address the questions raised in the previous chapters, two studies were conducted. The findings from the first study, *Adapting to Motherhood*, will be described and analysed in this chapter, with the results from the second study, *Changing Emotions*, described in Chapter 6.

The *Adapting to Motherhood* research consisted of a large-scale pilot study designed to test the key assumptions of postpartum depression: that women experience depression after the birth of a baby and that the act of childbearing is the aetiological agent for that depression. This study can be viewed as a pilot in that it endeavoured to identify appropriate questions and instruments for longitudinal research; however, due to the large sample size and use of a control group, it was powerful enough to produce statistically reliable results. Thus, the aims of this study were fourfold: 1) to identify whether primiparous women evinced higher rates of psychopathology than a control group of non-childbearing women; 2) to identify any background, health or obstetric variables implicated in cases of higher psychopathology; 3) to test the appropriateness of different self-report instruments for use with postpartum women; and 4) to determine whether the instruments used were able to differentiate between cases of depression, anxiety and stress.

5.1 METHODOLOGY

5.1.1 Participants and procedure

Postpartum women were recruited from New Parents' Groups (NPGs). NPGs are established and managed by Child and Youth Health (CYH), a large government

organisation providing health care advice and parental support in South Australia. Similar groups and sessions are held in other Australian states. Attempts are made by CYH to contact all first-time mothers, who are then strongly encouraged to attend the groups. Up to six informal information sessions of the NPGs are offered postnatally, covering topics such as settling the baby, feeding, play activities etc. Ethics approval was sought and received from both the University of Adelaide and CYH prior to commencement of data collection.

Forty-one NPGs, in metropolitan Adelaide, were addressed during the months November 1998 to March 1999. The groups were briefly informed about the intentions of the study with additional details provided on an information sheet (see Appendix B). All women with babies under 12 weeks old were invited to participate (women with younger babies were asked to complete the questionnaire once their baby reached six weeks). Approximately 95% of women with babies of the appropriate age agreed to participate. A consent form was returned on site, with the questionnaire package to be completed within a week and returned in a reply paid envelope. Participants were told they would be contacted in one to two weeks if their questionnaire had not been returned (27% were subsequently contacted once). One hundred and fifty-one of the 179 questionnaire packages taken by women at NPGs were returned (26% after a reminder call), a response rate of 84.5%. No information was available for the 15.5% of women who did not return the questionnaires.

As part of the participation criteria, controls for this study were recruited by stipulating that postpartum women were required to pass on a similar questionnaire to a female friend of childbearing age who was not pregnant and did not have a baby less than one year old (see Appendix C for control's information sheet). These exclusion criteria have been employed in previous studies (e.g., Cox et al., 1993; Whiffen & Gotlib, 1993). Recruiting controls through the childbearing participants is a technique

that has also previously been applied in research on postpartum depression (e.g., O'Hara et al., 1984). Seventy-nine control questionnaires were subsequently returned for analysis, this constituted 52.3% of returned postpartum questionnaires.

The data for one postpartum woman were removed from all analyses as she was identified as the only multiparous woman in the sample. This left a postpartum sample size of one hundred and fifty primiparous women. Similarly, one woman was removed from the control sample, as she did not fit the criteria stipulating that she be of childbearing age, and at 55 years was clearly an outlier. The number of controls included in the analysis was therefore reduced to seventy-eight.

5.1.2 Instruments

As this research challenges the general assumptions about the depressive nature of postpartum psychopathology, a number of instruments purporting to identify depression, anxiety and stress were used. This provided the opportunity to identify relationships in the responses to the instruments, and potentially to differentiate the constructs. Use of a number of scales also ensured the study had the appropriate scope to replicate previous research. Other scales, such as the Hospital Anxiety and Depression Scale and Bedford & Fould's Anxiety and Depression Scale were not included as their items contributed to the construction of the EPDS. The questionnaire package provided to participants of the *Adapting to Motherhood* study consisted of five questionnaires. One questionnaire elicited background information whilst the remaining questionnaires were used to identify potential cases of depression, anxiety or stress.

5.1.2.1 Background questionnaire

Background questionnaires were devised for postpartum and control women to elicit information about socio-demographic, general well-being and obstetric factors.

Questions were designed to enable the samples to be matched and to incorporate elements that had previously been identified as relevant in research on depression in postpartum women. Accordingly, participants provided information about their age, marital status, ethnicity, education, employment, income, physical and mental health, quantity and quality of sleep.

Postpartum women provided additional information about their pregnancy. For example, they responded to questions regarding whether they had planned and were happy about their pregnancies, whether they attended antenatal classes, if they had spent time in hospital before the birth of their babies and if they had any health problems during their pregnancy. They were also asked about their labour, birth and early postnatal experience, including whether they had been induced, their length of labour, delivery method, time in hospital after the birth and whether they were breastfeeding. Other questions asked about their baby's age, birth weight and health. The specific questions and response options for postpartum women and controls can be seen in Appendix D and Appendix E, respectively.

5.1.2.2 Edinburgh Postnatal Depression Scale (EPDS)

The ten-item EPDS (Cox et al., 1987) was administered as the principal instrument for identifying cases of depression (see Appendix A). Items on the EPDS ask about how the individual has been feeling in the past week. Two items were positively worded (e.g., "I have looked forward with enjoyment to things"), whilst the rest were negatively phrased (e.g., "I have been anxious or worried for no good reason"). For each item, participants are given the option of four potential responses scored from 0 to 3. Accordingly, possible scores range from 0 to 30, with high scores representing higher pathology. Cox et al., and others (e.g., Boyce et al., 1993), have suggested a cut-off of 12/13 for the best identification of possible cases of postpartum depression, with this

score also reported as best identifying potential cases of DSM Major Depression. However, Cox et al. have also had support for their suggestion of using the lower cut-off of 9/10 so that cases of clinical depression are not missed (e.g., Harris et al., 1989), as the lower cutoff is reported to identify potential cases of both Major and Minor Depressive Disorder. The EPDS has also been validated for use with pregnant (Murray & Cox, 1990) and nonpostpartum women (Cox et al., 1996), making it suitable for the studies of antenatal, postpartum and nonpostpartum women. Details of the development and use of the EPDS can be found in Section 4.2.1.

5.1.2.3 State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI, Spielberger, 1983; Spielberger et al., 1983) was used to assess anxiety level. It is a forty item self-report scale composed of two twenty-item subscales. Assessed by one of the subscales, state anxiety (STAIs) is thought to be changeable and affected by circumstance and environment. Questions addressing state anxiety address how the respondent is currently feeling. Trait anxiety (STAIt) is assessed in the other subscale. Trait anxiety is deemed to be a personality characteristic, and as such is stable and enduring. Each subscale of the STAI contains a number of positively and negatively worded statements. The women were asked to respond to each item on a four-point scale: (1) almost never, (2) sometimes, (3) often, and (4) almost always. Thus, possible scores for each subscale range from 20 to 80, with high scores indicating higher levels of anxiety.

For the purpose of this study, the trait subscale specified a temporal frame for postpartum women, asking how they felt *before* becoming pregnant. This was important to avoid recently delivered women answering this question based on how they had been feeling during their pregnancy or since having a baby. In contrast, control women were asked to respond to the questions based on how they generally felt. The STAI has

previously been used in studies of postpartum women (e.g., Barnett & Parker, 1985; Tamaki et al., 1997). Although not standardised with postnatal women, Spielberger (1983) reports a STAIs mean of 36.2 ($SD = 11.0$, $\alpha = .93$) with very similar STAIt results (*Mean* = 36.2, $SD = 9.5$, $\alpha = .92$) for women aged 19-39. Spielberger does not suggest a specific cutoff value to indicate potential caseness. However, Barnett and Gordon (1985) used a STAI cutoff of 40 or more to identify women with high levels of anxiety, whilst Tamaki et al. (1997) employed the higher level of ≥ 45 as cutoff on both subscales. Results using both these cutoff levels will be discussed in this study.

5.1.2.4 *Depression Anxiety Stress Scale (DASS)*

The Depression Anxiety Stress Scale (DASS) is a 42 item self-report instrument measuring symptom levels of depression, anxiety and stress during the past week (S. H. Lovibond & P. F. Lovibond, 1995). Each of the three subscales consists of fourteen items rated from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time), resulting in a possible range of 0 to 42 for each subscale. The depression subscale (DASSd) addresses anhedonia, apathy and unhappiness with items such as "I felt sad or depressed", "I felt that life wasn't worthwhile" and "I was unable to become enthusiastic about anything". The anxiety subscale (DASSa) addresses questions related to autonomic arousal and fear, such as "I was aware of dryness of my mouth" and "I felt scared without any good reason". The stress subscale (DASSs) assesses nervous energy, tolerance and irritability, for example, "I was in a state of nervous tension", "I found it difficult to tolerate interruptions to what I was doing" and "I felt that I was rather touchy". This instrument can be found in Appendix F. Lovibond and Lovibond assigned empirically derived cutoff values to each of the subscales. Thus, responses were determined to be normal, mild, moderate, severe or extremely severe. The cutoff values varied between the subscales, for example, to be considered 'normal' in each category,

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participants needed to score ≤ 9 on depression, ≤ 7 on anxiety and ≤ 14 on stress (other cutoff values determining different levels of severity can be seen in Table 5.6).

Questions incorporated in the DASS were derived initially from clinical consensus, and then tested and refined through confirmatory factor analysis on nonclinical participants. In an attempt to avoid the problem of 'recreating the wheel' inherent in the construction of many self-report instruments, Lovibond and Lovibond used no external instruments or criteria in the development of the DASS. Exploratory (using Oblimin rotation methods), and confirmatory factor analyses have subsequently been employed in both nonclinical (P. F. Lovibond & S. H. Lovibond, 1995) and clinical samples (T. A. Brown et al., 1997) with almost identical results. Brown et al. also reported some level of similarity between the DASS and the role of positive and negative affect as posited by the Tripartite Model (Clark & Watson, 1991), as discussed in Section 3.4.2.3.1.

Although there are no published accounts of the DASS being used with pregnant or postpartum women, this scale was deemed to be appropriate because the depression scale does not include items that assess somatic symptoms, insomnia and irritability. Moreover, the DASS has been extensively tested by its authors, and others, with high levels of internal consistency, convergent and discriminant validity reported when tested on nonclinical (P. F. Lovibond & S. H. Lovibond, 1995; S. H. Lovibond & P. F. Lovibond, 1995) and clinical samples (T. A. Brown et al., 1997). Internal consistency for the depression, anxiety and stress subscales have been reported at $\alpha = .91$, .84 and .90 (S. H. Lovibond & P. F. Lovibond, 1995) and $\alpha = .96$, .89 and .93 by Brown et al. (1997).

5.1.2.5 Center for Epidemiologic Studies – Depression Scale (CES-D)

The Center for Epidemiologic Studies – Depression Scale (CES-D, Radloff, 1977) was used as an additional measure of depression. The CES-D was chosen because it is a well standardised and widely used measure of depression and as it has been used in previous research on postpartum women (Guedeney & Fermanian, 1998; Hall, Kotch, Browne, & Rayens, 1996; Logsdon et al., 1994; Tronick et al., 1997). Content development for the CES-D derived items from the clinical symptoms of depression. More specifically, items were drawn from other scales of depression such as the Beck Depression Inventory (Beck et al., 1961) and the Zung Depression Checklist (Zung, 1965). The CES-D was designed to assess levels of depressive symptomatology in the general population, but the instrument was not intended as a means for determining clinical diagnosis. The twenty items of the CES-D address how the respondent has been feeling during the past week (e.g., "I felt depressed", "I could not get 'going'" and "I enjoyed life"). These items are rated on a four-point scale from 0 (rarely or none of the time - less than 1 day) to 3 (most or all of the time - 5-7 days) with inverse scores for the four positively worded items. Possible scores range from 0 to 60, with higher scores indicating higher levels of depressive symptomatology.

Radloff (1977) reported Means of 9.3 (SD = 8.6), 8.2 (8.2) and 7.9 (7.5) in the general population with a 24.4 (13.5) in the psychiatric population, and further claimed the instrument was able to discriminate between the general population and psychiatric patients. Alpha coefficients for the CES-D have reported reliability in the range .84 to .90 when used in both nonclinical and clinical populations. Although Radloff did not suggest a cutoff value for the CES-D, subsequent researchers on depression in postpartum women have used ≥16 to identify possible cases of depression (Logsdon et al., 1994; Tronick et al., 1997).

5.2 RESULTS

5.2.1 Background Variables

Unless otherwise stated, all analyses reported in this dissertation were conducted using SPSS Version 10.1 or 11. Preliminary analyses were conducted on the background variable to determine whether there were any systematic differences between the postpartum women and controls. Categorical variables were consolidated into groups based on median scores and / or meaningful interpretation (with pre-aggregated data shown in Appendix G). The results of these t-test and chi-square analyses are reported in Table 5.1[5]. Four significant differences were found. Postpartum women were more likely to be married or in a de facto relationship, and they were also more likely to have been employed full-time (prior to their pregnancy). Additionally, postpartum women reported less sleep in a 24-hour period and lower sleep quality.

Table 5.1. Background variable (Adapting to Motherhood)

	Postpartum		Control		Significant difference
	Mean (*SD*)	*N*	Mean (*SD*)	*N*	
Age (yrs)	29.7 (3.8)	150	29.0 (4.9)	78	ns
Years in current relationship	6.0 (3.3)	120	5.6 (4.0)	41	ns
No. of miscarriages	0.2 (0.5)	149	0.1 (0.4)	76	ns
Income[a]	4.2 (1.5)	147	4.2 (1.7)	75	ns
Sleep in 24 hours[b]	3.7 (0.7)	147	4.1 (0.6)	78	$t(183.4)=-4.0, p<.001$
Sleep quality (1=v.poor; 10=v.good)	6.6 (1.8)	149	7.4 (1.6)	78	$t(225)=-3.2, p<.01$
Categorical variables	*n/N* (%)		*n/N* (%)		
Married or de facto	145/150 (96.7%)		47/78 (60.3%)		$\chi^2(1, N=228)=51.2, p<.001$
Identified with ethnic group	19/148 (12.7%)		7/78 (9.0%)		ns
Post secondary education	99/150 (66.0%)		51/78 (65.4%)		ns
Employed fulltime (prior to preg.)	120/148 (81.1%)		47/77 (61.0%)		$\chi^2(1, N=225)=10.6, p<.001$
Long term health problems	22/150 (14.7%)		17/78 (21.8%)		ns
Previous psychiatric diagnosis	14/150 (9.3%)		6/77 (7.8%)		ns

[a] Income (AUS$) scored as 1=less than $14,999, 2=$15,000 to $24,999, etc, 6= more than $55,000 per year. [b] Sleep in 24hrs scored as: 1=1-2hrs; 2=3-4hrs; 3=5-6hrs, 4=7-8hrs, 5=more than 8hrs

[5] Unless otherwise stated, Independent t-tests with two-tailed analyses have been used in this dissertation. Statistics for unequal variances were used when Levene's statistic was significant.

Ninety-five percent of postpartum women had been employed either full- or part-time prior to their pregnancy, with almost one quarter now intending to look after their child full-time. For the control group, 79.2% were currently employed (full- or part-time), 10.4% recorded home duties and only one reported being unemployed. Fourteen postpartum women (9.3%) and six controls (7.8%) reported having been previously diagnosed with depression, anxiety or a serious emotional illness. Of the controls, 20.8% had one or more child, with two thirds of these having at least one child less than five years old. Furthermore, nineteen percent of postpartum women had experienced the loss of a close family member or friend in the last year (this variable was not assessed in the control sample). Postpartum women appeared generally satisfied with their quality of sleep with 75.8% rating their quality of sleep at 6 or better (rated from 1 = very poor, to 10 = very good), and with 63.3% getting 7 or more hours sleep in a 24 hour period. This can be contrasted with 88.5% of controls reporting quality of sleep as greater or equal to 6, and 87.2% having seven or more hours sleep in a 24-hour period.

Descriptive statistics showing obstetric and infant-related variables for postpartum women can be seen in Table 5.2. Additionally, almost half (47.0%) of postpartum women reported that their labour was induced, with 28.7% delivering their babies by Caesarean section. Birth complications, unrelated to the Caesarean delivery, were reported by 37%. A small number (8.1%) reported medical problems in their infant. Most women (84.0%) were still breastfeeding, however 10.7% were unsuccessful after attempting to breastfeed.

T-tests, ANOVAs and chi-square analyses were conducted to assess whether differences existed between subsets of the postpartum sample for background variables or instrument means. The results of these tests can be found in Table 5.3. A fairly complicated picture emerges from this. Many of the significant differences in the background characteristics were not unexpected. For example, it was not surprising that

women with younger babies had less sleep at night, that younger women had lower incomes, or that induced women had been pregnant longer than women who were not induced. More interesting is the fact that younger women were less likely to report health problems in their infants, and that women who had previously miscarried and/or women who had longer labours were more likely to have been previously diagnosed with depression.

Table 5.2. Obstetric and infant-related variables for postpartum women (Adapting to Motherhood)

| | Postpartum | |
	Mean (*SD*)	*N*
Months taken to become pregnant	6.8 (11.4)	117
Weeks pregnant at birth	39.5 (1.6)	149
Length of labour (hrs)	11.2 (7.3)	141
Baby's weight (gms)	3410.4 (477.8)	148
Days in hospital before birth	0.8 (2.8)	150
Days in hospital after birth	5.1 (1.8)	150
Baby's current age (wks)	9.3 (2.2)	147

Although a number of significant differences were found between the subsets for the depression, anxiety and stress instruments, it is important to contextualise these findings. T-tests in Table 5.3 show that postpartum women experiencing limited sleep and poor sleep quality were more likely to score high on all depression, anxiety and stress scales. However, it should be noted that amount of sleep at night and sleep quality can be seen as directly attributable to the experience of having a young baby, as shown in the difference between postpartum women and controls in Table 5.1. Apart from the sleep variables, five significant differences were found on the anxiety scales. Postpartum women with a previous psychological diagnosis had more long-term health problems and higher trait anxiety. Those with younger babies had higher DASS anxiety levels, however they were also getting less sleep. Women who had spent more time in

Table 5.3. Significant differences between categorical subsets for postpartum women (Adapting to Motherhood)

Test of difference between subsets:	Significant results	
	Background	Instruments
Control questionnaire: returned or not	Women who had a control questionnaire returned delivered sig. higher birthweight babies, $t(124.3)=2.1$, $p<.05$; and were more likely to report having lost a close family member or friend, $\chi^2(1, N=150)=4.2$, $p<.05$.	Women who had a control questionnaire returned scored sig. lower on the STAIs, $t(134.5)=-2.2$, $p<.05$.
Women: ≤ or >29 years old	Younger women reported a sig. lower family income, $t(145)=-5.2$, $p<.001$; were less likely to be ethnic, $\chi^2(1, N=148)=8.4$, $p<.01$; were less likely to report health problems in their infants $\chi^2(1, N=149)=3.9$, $p<.05$; and were more likely to report the loss of a close family member or friend $\chi^2(1, N=150)=8.2$, $p<.01$.	ns
Income: < or ≥ AUS$45,000	Women with a higher income were more highly educated, $\chi^2(4, N=147)=11.8$, $p<.05$; and more likely to be planning to return to work, $\chi^2(4, N=146)=14.7$, $p<.01$.	ns
Long-term health problems: yes or no	Women with long-term health problems had spent sig. longer in their relationship, $t(118)=2.7$, $p<.01$; had more previous psychological diagnoses, $\chi^2(1, N=150)=5.5$, $p<.05$; and had a higher induction rate, $\chi^2(1, N=149)=3.8$, $p=.05$.	ns
Previous psychological diagnosis: yes or no	Women with a previous psychological diagnosis were sig. more likely to have a long term health problem, $\chi^2(1, N=150)=5.5$, $p=.05$.	Women with a previous psychological diagnosis scored sig. higher on STAIt, $t(13.9)=2.3$, $p<.05$.
Miscarriage: ever or never	Women who had miscarried were sig. more likely to have been previously diagnosed with depression, $\chi^2(1, N=147)=6.4$, $p=.01$.	ns
Pregnancy: planned and happy about it, or other	Women who had planned and were happy about their pregnancies had been in their relationships for significantly longer, $t(118)=-3.5$, $p<.001$; and were more likely to have worked full-time prior to their pregnancy, $\chi^2(1, N=148)=6.0$, $p=.05$.	ns
Spent time in hospital before birth: yes or no	Women who had spent time in hospital before the birth were more likely to report delivery complications, $\chi^2(1, N=146)=10.3$, $p=.001$.	Women who had spent time in hospital before the birth scored significantly higher on the DASSa, $t(69.6)=2.0$, $p=.05$.
Labour: induced or not induced	Induced women had been pregnant sig. longer, $t(146)=3.8$, $p<.001$; had more long term health problems, $\chi^2(1, N=149)=3.8$, $p=.05$; and were less likely to have babies experiencing health problems, $\chi^2(1, N=148)=4.9$, $p<.05$.	ns
Labour time: ≤ or >12 hours	Women with longer labours were sig. more likely to have been previously diagnosed with depression, $\chi^2(1, N=139)=12.3$, $p<.001$.	ns
Delivery method: vaginal or caesarean	Women who delivered by caesarean spent sig. longer in hospital after birth, $t(148)=-6.4$, $p<.001$; and were more likely to be planning to return to full-time (as opposed to part-time) work, $\chi^2(1, N=91)=4.9$, $p<.05$.	ns
Baby's birthweight: ≤ or > 3420gms	Women with lower birthweight babies had been in their current relationship sig. longer than other women, $t(118)=2.6$, $p=.01$; delivered after a shorter pregnancy, $t(103.8)=-5.5$, $p<.001$; and were sig. more likely to experience additional (non-Caesarean related) delivery complications, $\chi^2(1, N=144)=3.9$, $p<.05$.	Women with lower birthweight babies scored sig. higher on the STAIt, $t(143)=2.1$, $p<.05$.
Babies: ≤ or >9 weeks old	Women with younger babies reported sig. less sleep at night, $t(145)=-2.2$, $p<.05$.	Women with younger babies scored sig. higher on the DASSa, $t(106.7)=2.3$, $p=.05$).
Sleep at night:< or ≥7 hours	Women with less sleep at night had shorter pregnancies, $t(145)=-2.9$, $p<.01$; and had lower sleep quality, $t(146)=-5.8$, $p<.001$.	Women with less sleep at night scored sig. higher on the EPDS, $t(147)=2.4$, $p<.05$; STAIs, $t(119.5)=3.0$, $p<.01$; DASSa, $t(141.0)=3.4$, $p<.001$; DASSs, $t(145)=2.8$, $p<.01$; DASSd, $t(105.5)=2.1$, $p<.05$; and CES-D, $t(113.7)=2.5$, $p<.05$.
Sleep quality: < or ≥6.5 (scale of 1 to 10)	Ns	Women with lower quality sleep scored sig. higher on the EPDS, $t(106.0)=3.6$, $p<.001$; STAIs, $t(122.7)=4.2$, $p<.01$; STAIt, $t(144)=3.0$, $p<.01$ DASSa, $t(69.1)=4.3$, $p<.001$; DASSs, $t(100.0)=3.8$, $p<.001$; DASSd, $t(98.2)=3.1$, $p<.01$; and CES-D, $t(105.5)=4.4$, $p<.001$.

hospital before the birth also reported higher DASS anxiety, and more delivery complications. Those who delivered lower birthweight babies had higher STAI trait anxiety, tended to deliver after a shorter pregnancy and experienced more delivery complications. Finally, women who had a control questionnaire returned scored significantly lower on anxiety (STAIs), and delivered higher birthweight babies.

5.2.2   Correlations

The results of Pearson's correlations between the instruments can be seen in Table 5.4. These analyses were conducted separately for postpartum women and controls. All correlations were highly significant, but tended to be slightly lower in postpartum women than controls. It is apparent that the most discrepant results relate to the trait scale of the STAI, where correlations with other instruments are far lower for postpartum women than for controls. It is also evident that instruments designed to test depression showed high convergent validity for both postpartum women and controls, whilst their discriminant ability was low, as these depression scales were also likely to be highly correlated with the anxiety scales. Interestingly, instruments designed to test anxiety tended to correlate lower with the other anxiety-specific instruments than with depression instruments. Combined, these results show relatively high convergent validity for both depression and anxiety state scales, but poor divergent validity.

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Table 5.4. Instrument correlations for postpartum women and controls (Adapting to Motherhood)

	EPDS	CES-D	DASSd	DASSs	DASSa	STAIs	STAIt
EPDS		**.807**	**.797**	.715	.739	.724	.743
CES-D	**.772**		**.880**	.774	.730	.717	.763
DASS depression	**.729**	**.864**		.798	.836	.698	.707
DASS stress	.704	.728	.739		.701	.656	.633
DASS anxiety	.565	.666	.663	.757		**.620**	**.594**
STAI state	.735	.781	.741	.707	**.603**		**.887**
STAI trait	.291	.366	.275	.632	**.417**	**.575**	

Note. Postpartum correlations are shown below the diagonal (n=147 to 150); control correlations are shown above the diagonal (n=75 to 78). All correlations are significant at $p<.001$. Bold text denotes correlations for instruments designed to test the same construct.

Although not shown here, there were few significant correlations between the instruments and background variables. Of most note is the correlation between sleep quality and the instruments, showing a tendency for women with poorer sleep quality to score higher on all instruments, and therefore evince higher levels of psychopathology. These correlations were in the range $r = -.34$ to $-.45$ for postpartum women, and $r = -.34$ to $-.55$ for controls.

5.2.3 Instrument Analysis

The correlational STAI trait difference between postpartum women and controls is also reflected in the t-test reported in Table 5.6, as postpartum women reported significantly lower trait anxiety than controls. There were no other significant differences between postpartum women and controls. Reliability of the scales was tested using Cronbach's Alpha and was found to be high for all scales. Results of these tests can also be seen in Table 5.6.

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Table 5.6. Instrument Means (SD) for postpartum women and controls (Adapting to Motherhood)

Instrument (Cronbach's α)	Postpartum Mean (SD)	N	Control Mean (SD)	N	Significant difference
EPDS (.861)	6.6 (4.2)	150	6.5 (4.9)	78	ns
CES-D (.920)	8.3 (8.4)	149	8.3 (10.5)	78	ns
DASS depression (.944)	3.5 (5.1)	148	4.0 (7.1)	75	ns
DASS stress (.927)	8.5 (7.1)	148	8.2 (7.4)	75	ns
DASS anxiety (.867)	2.4 (3.8)	148	2.4 (4.8)	75	ns
STAI state (.941)	31.9 (10.5)	150	34.4 (9.9)	77	ns
STAI trait (.939)	31.3 (9.3)	147	35.1 (11.0)	78	$t(223)=-2.7, p<.01$

5.2.3   Analyses Based on Instrument Cutoff Scores

As previously mentioned, self-report instruments do not identify clinical caseness, it is therefore appropriate to record multiple cutoff values to determine potential cases of depression, anxiety and stress. The proportions of women who were potential cases according to the instrument cutoff values employed are shown in Table 5.6. Reflecting the results shown in Table 5.6, the only significant difference in proportion of potential cases was that the control group was significantly more likely than postpartum women to score ≥40 on STAI trait, χ^2 (1, $N = 225$) = 7.0, $p<.014$.

Table 5.6. Proportion of potential cases of depression, anxiety and stress (Adapting to Motherhood)

Instrument cutoffs	Postpartum %	Control %
EPDS		
≥10	20.7%	24.4%
≥13	10.7%	6.4%
CES-D		
≥16	15.4%	17.9%
DASS Depression		
10-13 (mild)	5.4%	2.7%
14-20 (moderate)	2.7%	2.7%
21-27 (severe)	0.7%	0.0%
28+ (extremely severe)	1.4%	4.0%
Total ≥10	10.1%	9.3%
DASS Stress		
15-18 (mild)	10.1%	4.0%
19-25 (moderate)	5.4%	5.3%
26-33 (severe)	2.7%	1.3%
34+ (extremely severe)	0.7%	1.3%
Total ≥15	18.9%	12.0%
DASS Anxiety		
8-9 (mild)	2.0%	2.7%
10-14 (moderate)	3.4%	1.3%
15-19 (severe)	2.0%	0.0%
20+ (extremely severe)	0.7%	2.7%
Total ≥8	8.1%	6.7%
STAI State		
≥40	19.3%	26.0%
≥45	12.7%	15.6%
STAI Trait		
≥40	17.7%	33.3%
≥45	9.5%	15.4%

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Univariate ANOVAs were conducted to determine the effect that EPDS scores had on the results of other instruments. The 2 x 2 ANOVAs split the data into groups based on participant status (postpartum or control) and EPDS score (high or low). Given the two cutoff values (≥ 10 or ≥ 13) employed by the EPDS, two separate analyses were conducted. Inter-instrument sensitivity was determined by identifying the proportion of women scoring high on the EPDS who also scored high on the index instrument. It should be noted that the lowest cutoff values cited in this study to determine potential cases were used. For example, a cutoff of ≥ 40 was used for STAIs. This has the effect of increasing the chance that an individual scoring high on the EPDS would also score high on the index instrument. The results from these analyses are shown in Table 5.9 (for EPDS ≥ 10 results) and Table 5.10 (for EPDS ≥ 13).

Table 5.9. *Inter-instrument sensitivity, means (SDs) and univariate ANOVAs for instruments with EPDS split at ≥ 10 (Adapting to Motherhood)*

Instruments		Sensitivity	EPDS		Significant results (Univariate ANOVAs)
			<10	≥10	
CES-D	postpartum	64.5%	5.3 (4.2)	19.5 (10.7)	EPDS ≥10 sig. higher, $F(1,223)=171.8$, $p<.001$
	control	57.9%	4.5 (5.2)	20.2 (13.6)	
DASSd	postpartum	45.2%	1.7 (2.0)	10.2 (7.3)	EPDS ≥10 sig. higher, $F(1,219)=134.4$, $p<.001$
	control	31.6%	1.7 (2.4)	10.9 (11.0)	
DASSs	postpartum	71.0%	6.1 (4.7)	17.7 (6.9)	EPDS ≥10 sig. higher, $F(1,219)=110.9$, $p<.001$
	control	36.8%	6.1 (4.8)	14.4 (9.9)	
DASSa	postpartum	35.5%	1.3 (1.7)	6.7 (6.1)	EPDS ≥10 sig. higher, $F(1,219)=83.0$, $p<.001$
	control	26.3%	1.2 (1.5)	6.2 (7.5)	
STAI state	postpartum	64.5%	28.5 (6.6)	45.3 (12.1)	EPDS ≥10 sig. higher, $F(1,223)=138.3$, $p<.001$
	control	73.7%	30.9 (6.9)	45.1 (10.2)	
STAI trait	postpartum	36.7%	29.9 (8.6)	37.1 (10.1)	Control & EPDS ≥10 sig higher, $Fs(1,221)=15.5$ & 64.2, $p<.001$; sig. interaction effect, $F(1,221)=9.5$, $p<.01$
	control	78.9%	31.1 (7.3)	47.3 (11.4)	

Note. Cutoffs used for instruments: STAIs & STAIt ≥40; DASSd ≥10; DASSa ≥8; DASSs ≥15; CESD ≥17.

The ANOVAs revealed, not surprisingly, that women with high EPDS scores also scored higher on all the other instruments than women with low scores. The only other significant results for EPDS ≥10, showed controls scored higher on STAI trait anxiety overall, whilst an interaction effect showed the change in STAIt scores was much more marked for high scoring controls than for high scoring postpartum women. In Table 5.10, it is evident that for women scoring EPDS ≥13, controls scored higher for CES-D, DASS depression, DASS anxiety and STAIt. Interaction effects were also found and can be seen diagrammatically in Figure 5.1, however, the low numbers of women scoring EPDS ≥13 (postpartum, $n = 16$; control, $n = 5$) should be noted.

Table 5.10. Inter-instrument sensitivity, means (SDs) and univariate ANOVAs for instruments with EPDS split at ≥13 (Adapting to Motherhood)

Instruments		Sensitivity	EPDS		Significant results (Univariate ANOVAs)
			<13	≥13	
CES-D	postpartum	93.8%	6.2 (5.5)	25.1 (9.6)	Control & EPDS ≥13 sig higher, $Fs(1,223)=9.2$ &185.4, $p<.01$; sig. interaction effect, $F(1,223)=8.4$, $p<.01$
	control	100.0%	6.5 (6.9)	35.6 (15.7)	
DASSd	postpartum	68.8%	2.2 (2.8)	13.8 (7.7)	Control & EPDS ≥13 sig higher, $Fs(1,219)=31.6$ &271.8, $p<.001$; sig. interaction effect, $F(1,219)=28.0$, $p<.001$
	control	80.0%	2.5 (3.4)	25.0 (11.9)	
DASSs	postpartum	81.3%	7.0 (5.3)	20.9 (5.3)	EPDS ≥13 sig. higher, $F(1,219)=126.4$, $p<.001$
	control	80.0%	6.9 (5.0)	26.4 (11.3)	
DASSa	postpartum	37.5%	1.7 (2.7)	8.1 (6.6)	Control & EPDS ≥13 sig higher, $Fs(1,219)=15.5$ &136.7, $p<.001$; sig. interaction effect, $F(1,219)=17.3$, $p<.001$
	control	80.0%	1.5 (1.7)	15.0 (10.3)	
STAI state	postpartum	81.3%	29.8 (8.2)	50.0 (10.5)	EPDS ≥13 sig. higher, $F(1,223)=68.7$, $p<.001$
	control	80.0%	33.2 (8.7)	51.2 (12.6)	
STAI trait	postpartum	37.5%	30.6 (9.0)	37.5 (10.1)	Control & EPDS ≥13 sig higher, $Fs(1,221)=14.6$ &28.1, $p<.001$; sig. interaction effect, $F(1,221)=6.4$, $p<.05$
	control	80.0%	33.8 (9.4)	53.4 (16.8)	

Note. Cutoffs used for instruments: STAIs & STAIt ≥40; DASSd ≥10; DASSa ≥8; DASSs ≥15; CESD ≥17.
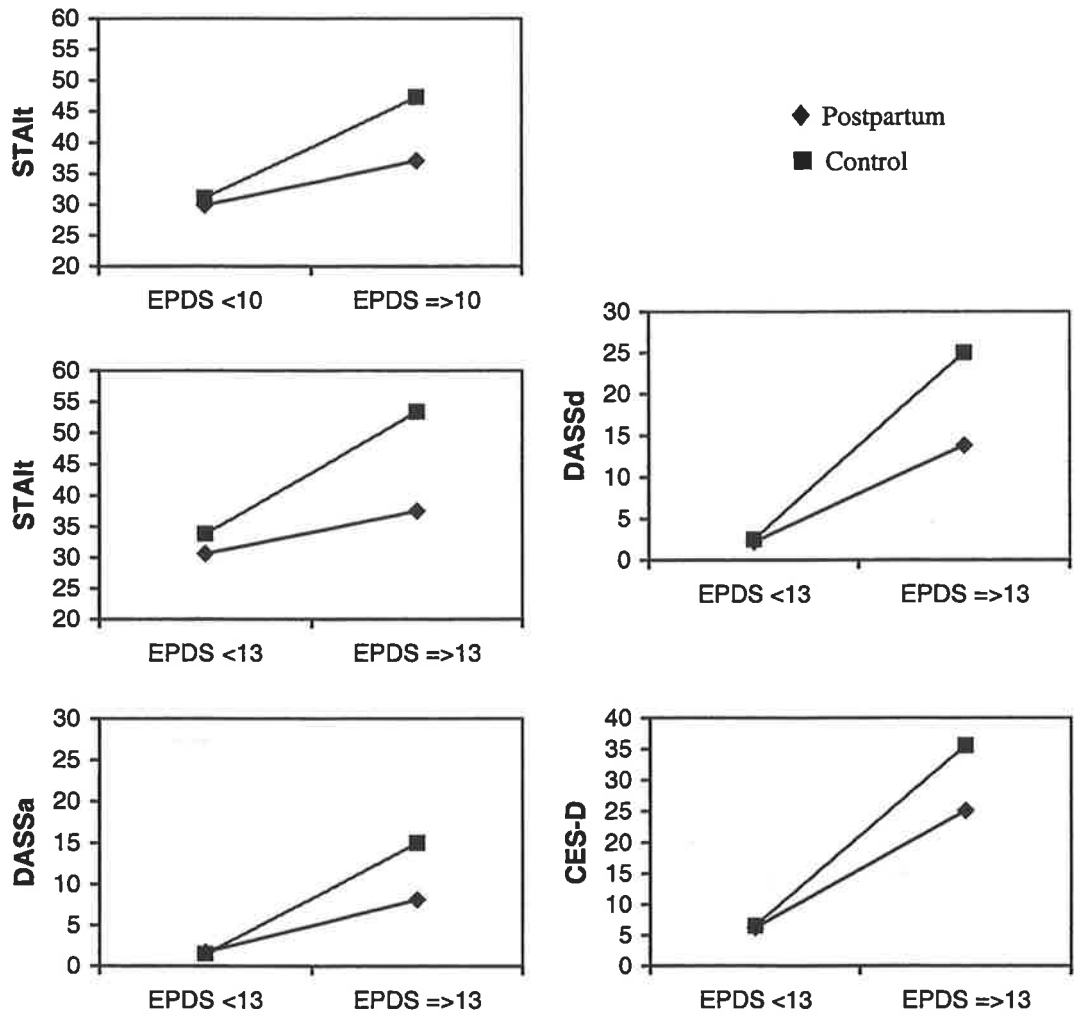
Figure 5.1. Significant interaction effects (Adapting to Motherhood)

5.2.4 Symptom Severity

An exploratory series of t-tests were conducted to identify any symptoms (instrument items) that were significantly different between the postpartum women and controls. There were no significant differences found for EPDS items, DASS depression or DASS stress. Significant results can be seen in Table 5.12. Not surprisingly, given that the STAI trait anxiety total score was higher for controls than postpartum women, controls scored higher on a number of individual items on this scale, indicating that they generally felt, for example, less pleasant, rested and happy than postpartum women. In

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contrast, postpartum women were more likely to feel lonely, that things were an effort and that they had a dry mouth.

Table 5.12. Significant differences between postpartum women and controls for instrument items (Adapting to Motherhood)

Instrument items	Postpartum Mean (SD)	Controls Mean (SD)	Significance
CES-D			
Everything an effort (Q7)	.67 (.74)	.40 (.78)	$t(225)=2.6, p<.01$
Felt lonely (Q14)	.72 (.88)	.42 (.71)	$t(186.8)=2.7, p<.01$
DASS anxiety			
Dryness in mouth (Q2)	.55 (.84)	.29 (.65)	$t(184.0)=2.6, p<.01$
STAI state			
I am tense (Q3)	1.73 (.67)	1.92 (.74)	$t(225)=-2.0, p<.05$
STAI trait			
I felt pleasant (Q21)	1.50 (.66)	1.77 (.70)	$t(223)=-2.9, p<.01$
I felt rested (Q26)	1.95 (.82)	2.38 (.86)	$t(223)=-3.7, p<.001$
Calm, cool & collected (Q27)	1.86 (.80)	2.19 (.98)	$t(132.6)=-2.6, p<.01$
I was happy (Q30)	1.41 (.64)	1.65 (.75)	$t(225)=2.6, p<.01$
Disturbing thoughts (Q31)	1.29 (.51)	1.51 (.80)	$t(111.3)=-2.2, p<.05$
I felt secure (Q33)	1.47 (.72)	1.76 (.81)	$t(223)=-2.7, p<.01$
Made decisions easily (Q34)	1.80 (.82)	2.13 (.93)	$t(223)=-2.7, p<.01$

5.3 DISCUSSION OF FINDINGS

5.3.1 Background Characteristics

Overall, the results showed very few differences between the background characteristics of the postpartum women and controls. The four significant differences reported in Table 5.1 can readily be accounted for, predominantly by the nature of the index group. It is not surprising that women who recently delivered a baby were more likely to be married or in de facto relationships, or that they were getting less sleep and rating their sleep quality as lower than women who were not pregnant and who did not have a young baby. In view of the finding that one-fifth of controls had at least one

child (many with a child under five years), it is logical to conclude that they were less likely to be employed full-time, as was the case. This figure is particularly pertinent, when considering that less than 44% of South Australian women with a child less than five years are engaged (full or part-time) in paid work (Australian Bureau of Statistics, 2001). The above findings, in combination with the recruitment method, make it reasonable to conclude that the postpartum women and controls come from the same population.

Given the above conclusion, it is also relevant to know how the sample fits within the broader population from which it was drawn. Accordingly, comparisons were made between the childbearing sample and childbearing women in South Australia (additional details of South Australian birth characteristics are shown in Appendix H). In comparing these groups, it is apparent that the primiparous women in the current study were having their first babies at a similar age to the average South Australian woman. They also delivered their babies after the same gestation and at the same birthweight as the South Australian average. However, a higher number (47%) of women in this study reported their labours were induced compared with 40% in South Australia. Similarly, more women in this study had Caesarean sections (28.7% compared with 23.9% in South Australia and 21.1% nationally), with the proportion reported in this study more closely reflecting the South Australian primiparous Caesarean rate of 26.5%. This sample though, did appear to be staying in hospital after the birth slightly longer than the norm, perhaps reflecting a higher number of private hospital patients.

Participants in most psychological studies have been found to be more highly educated and to come from higher social classes (Rosenthal & Rosnow, 1975). Similarly, it has often been reported that respondents to pregnancy or postpartum

studies tend to come from more socially advantaged groups and are invariably married (Campbell & Cohn, 1997; Hillier & Slade, 1989; Hopkins, Campbell, & Marcus, 1989; Kumar & Robson, 1984; Stuart et al., 1998). Although attempts were made in the research described here to solicit participants from a diverse and representative group of mothers, it appears that this study was unable to avoid the selection bias inherent in so many studies of its kind. No teenage mothers completed the questionnaire package, and only 3.3% (n = 5) of the mothers were single, compared to 13% in South Australia (Australian Bureau of Statistics, 2000). However, the proportion of married or co-habiting women in the present sample does reflect that of other Australian studies on depression in postpartum women (Horan-Smith & Gullone, 1998; Taylor, Starr, Dal Grande, & Woollacott, 2000).

All women in the present sample had attended New Parent's Groups and almost all had attended antenatal classes. When one considers the results of previous research that has found women from low socio-economic backgrounds are less likely to attend New Parent's Groups (Scott et al., 2001), and that women with tertiary education are more likely to attend antenatal classes (Lightfoot et al., 1982), it is little wonder that the present sample tended to be more highly educated, and from a higher SES, than the general female South Australian population. Forty-four percent of South Australian women have post-secondary education compared with 66% in this sample (Australian Bureau of Statistics, 2001). It is also likely that the very high response rate (84.5%), and the similarity between the number of women who scored ≥ 10 on the EPDS in this study and in other research, could be attributed to the fact that women who attend New Parent's Groups are the type of women who normally are asked, and respond, to this sort of questionnaire.

As far as comparability between the samples goes, it would seem that the recruitment method employed in this study was quite effective. Control and postpartum women deviated on only a few variables, which were readily accounted for by a recent childbirth. Furthermore, the postpartum women included in the sample were reasonably representative of South Australian childbearing women.

5.3.2 Anxiety and Depression

Contrary to Lovibond and Lovibond's (1995) work on the Depression Anxiety Stress Scale (DASS), the present study found very high correlations between the subscales of the DASS, particularly in control women. In fact, with the exception of the STAI trait scale for postpartum women, all instruments were highly and significantly intercorrelated (almost all over $r = .6$). This corresponds with previous reports that correlations testing convergent and divergent validity for depression and anxiety scales often range between .6 and .7 (Dobson 1985 cited by Clark, 1989; Dobson & Cheung, 1990). When considering the trait anxiety results, not only were the correlations for STAI trait in postpartum women quite different from those found in control women, but postpartum women also reported significantly lower trait anxiety than controls. One explanation for this may be that the controls were more anxious than the postpartum women. It is, however, unlikely that the two groups differ on this variable, particularly as they were the same on all other instruments.

It is suggested that this difference may be accounted for by the different instructional material provided for the two groups and the difficulty in providing accurate retrospective accounts of emotional state (e.g., Barlow, 1988; Miller & Rukstalis, 1999). As postpartum women had spent the previous year either pregnant or with a young baby, a novel circumstance for them all, it was necessary to give further definition to the STAI trait statement 'generally feel'. Interest in this research (as in

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previous research, e.g., Blumberg, 1980) was in pre-pregnancy trait anxiety, therefore postpartum women were requested to indicate how they generally felt *before* becoming pregnant, whereas control women were asked to indicate how they generally felt. Accordingly, postpartum women were requested to remember how they would have felt approximately twelve months previously. Whilst this was important to avoid the potentially biasing effects of pregnancy, it creates a different reference time frame for each group. Consideration was given to providing controls with the same instructions as postpartum women (i.e., how they generally felt one year ago), however, it was decided that unless a salient event had occurred in the intervening period it would be extremely difficult for controls to identify or differentiate how they generally felt one year ago.

The disparity in the results, therefore, may be due to control women not adequately differentiating between how they generally feel (trait) and how they are currently feeling (state), with their current status overly influencing their scores. Alternatively, it may be that postpartum women view their previous emotional state, compared with their current emotions, in an unrealistically positive light. It is suggested here, that women with a young infant, having recently undergone childbirth and the physiological strains of pregnancy, and who could currently be sleep deprived, may view their pre-pregnancy years through 'rose-coloured glasses'. Regardless of the reason, this disparity highlights the problematic nature of retrospective reports, and slight variation in instructional material.

Significantly more controls scored above the STAI trait cutoff score than postpartum women. This was the only significant difference between the groups when looking at the proportion of high scorers. The only other area of note (although not significant) was for DASS stress, where 18.9% of postpartum women scored above the

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cutoff value, compared with 11.9% of controls, with most of the difference lying in the mild range of the scale.

When investigating the results for women scoring high (≥13) on the EPDS, it was found that controls tended to score significantly higher than postpartum women on most of the other instruments (DASS depression, DASS anxiety, CES-D and STAI trait). These results should be viewed with caution given the low number (n=5) of control women who were included as potential cases in the high scoring category. However, combined with the other analyses, it does suggest that controls have higher levels of depression and anxiety than the postpartum women.

The exploratory analysis attempting to identify extreme symptoms experienced by postpartum women or controls produced limited results. Some of these findings (e.g., those for trait anxiety) can be accounted for by the inclusion criteria and methodology, such as the difficulty in responding to retrospective questions, as previously discussed. Some of the other differences also appeared to have obvious causes, for example, as 84% of postpartum women were still breastfeeding their infants, it was hardly surprising that they were thirstier and had drier mouths, than controls.

5.3.3   Limitations

A potential limitation of this study was the fact that the number of control participants was approximately half that of postpartum participants. This was due to the recruitment strategy, where it was considered more important to include women who were well matched on background characteristics and who were recruited by the same method, than to attempt to get a similar number of women through different recruitment techniques. Perhaps the largest limitation of the study, however, was the fact that postpartum women were recruited through New Parent's Groups (NPGs). This group of participants was selected as it was thought that they would contain a representative

sample of South Australian first-time mothers, and it was understood that Child and Youth Health staff attempt to invite all primiparous women to the groups. Despite their attempts, this group does not appear to be widely representative as women attending NPGs are likely to be more highly educated and come from higher socio-economic backgrounds.

A number of factors regarding the instruments used in this study also warrant further discussion. Although the EPDS was designed to be a measure of depression in postpartum women, the introductory chapters identify the problems inherent in the instrument's design and subsequent changes to the diagnostic criteria for depression and anxiety. This study has employed additional alternate instruments designed to assess depression and anxiety in an attempt to differentiate these constructs within the sample without success.

Criticisms have been raised about the applicability of the STAI for differentiating anxiety from depression, as the STAI has been found to correlate highly with measures of depression (Creamer et al., 1995). However, Creamer et al., suggest this may be due to criticisms of the first version (Form X) of the STAI, rather than the updated and current version (Form Y). In an endeavour to better differentiate anxiety from depression, Form Y removed and replaced many items in the STAI (Spielberger et al., 1983). From the results of this study, it appears that recent criticisms (e.g., Watson, Weber et al., 1995), that the STAI contains some items that assess depression, such as failure and unhappiness are warranted. A similar criticism has been raised regarding the CES-D, with claims that it contains items that are more relevant to an anxiety instrument, such as feelings of fear, than to a depression instrument (Watson, Weber et al., 1995).

5.4 SUMMARY

Firstly, this study aimed to identify whether postpartum women evinced higher levels of psychopathology than controls, this was not found to be the case. In fact, levels of psychopathology were similar for both groups. A number of background, health and obstetric variables were also studied for postpartum women to determine whether these affected levels of depression, anxiety or stress. Sleep quality and quantity were consistently implicated in higher levels of psychopathology. Women with a previous psychological diagnosis, and those whose babies were younger when they completed the assessment had higher anxiety levels. Whilst those who had spent time in hospital prior to the birth or who delivered babies at a lower birthweight were likely to report higher levels of trait anxiety. Although a number of instruments were employed, none appeared to differentiate between the two samples in terms of producing different results or separate symptom profiles. Finally, the scales showed high convergent and low divergent validity and were, therefore, unable to discriminate between women experiencing depression, anxiety or stress.

Chapter 6: Changing Emotions

In assessing women at six to twelve weeks after the birth of their child, the research detailed in *Chapter 5* found no differences between postpartum women and controls in current levels of depression, anxiety and stress. However, this research was unable to determine whether any of the postpartum women with high levels of psychopathology had these levels as a result of parturition or whether they were pre-existing. It was, therefore, necessary to consider longitudinal research. Table 6.1 provides a snapshot of longitudinal and controlled (using a nonpostpartum control) studies of depression in postpartum women. Although a number of studies have been conducted employing longitudinal methodology or a nonpostpartum control group, only two studies were found that longitudinally assessed postpartum and nonpostpartum women (O'Hara et al., 1990; Whiffen & Gotlib, 1993). These studies were rigorous and included clinical diagnosis of depression, however, neither of these studies included the EPDS as a self-report measure of depression. Furthermore, these studies did not consider levels of anxiety or stress within their sample.

A longitudinal controlled study, therefore, was designed to assess four aims. Firstly, the study sought to determine whether the findings of the *Adapting to Motherhood* study could be replicated. It was hypothesised that there would be no differences between childbearing women and controls on levels of depression, anxiety and stress at the six to twelve week assessment. The use of longitudinal design allowed deeper analysis of the scales an order to address the postpartum depression assumption that levels of psychopathology would increase for childbearing women after childbirth, but remain constant for controls. Secondly, the convergent and divergent validity of the

scales will be examined in an effort to differentiate depression, anxiety and stress using self-report measures. The third aim was to identify whether levels of postnatal depression, anxiety and stress at five to six months postpartum could be predicted by earlier assessment. Finally, this study aimed to track EPDS potential cases over time.

Table 6.1. Longitudinal and controlled studies on depression in postpartum women

Authors	Longitudinal (assessment times)	Non postpartum control	EPDS	Diagnosis of clinical depression
Whiffen & Gotlib, 1993	AN 1st prenatal appointment; PN 1 & 6 mths	✓		SADS[a] / RDC[b]
O'Hara et al., 1990	AN 2nd & 3rd trimester; PN 3, 6, & 9 wks	✓		SADS[a] / RDC[b]
Josefsson et al., 2001	AN 35-36 wks; PN 1-5 days, 6-8 & 26 wks		✓	
Green, 1998; Green & Murray, 1994	AN 16, 22 & 35 wks; PN 6 wks		✓	
Tamaki et al., 1997	AN 3rd trimester; PN 1, 3 & 4 mths		✓	
Brown et al., 1997	PN 8-9 & 20-27 mths		✓	
Terry et al., 1996	AN 3rd trimester, PN 4 wks & 5 mths		✓	
Stamp & Crowther, 1994	PN 6 wks & 6 mths		✓	
Aderibigbe et al., 1993	AN antenatal clinic; PN 2-3 days, 6-8 wks			PAS[c]
Cooper et al., 1988	AN 3rd trimester; PN 3, 6 & 12 mths			GHQ[d] & PSE[e]
Cutrona, 1983; 1984	AN 3rd trimester; PN 2 & 8 wks			HRS[f]
Elliott et al., 1983	18 assessments from 2nd trimester to 1 year postpartum			CCEL[g]
Cox et al., 1982	AN <20 & 35 wks; PN <10 days, 3-5 mths			SPI[h]
Pitt, 1968	AN 3rd trimester; PN 6-8wks			HRS[f] & MPI[i]
Da Costa et al., 2000	AN monthly from 3rd month; PN 4-5 wks			
Najman, Andersen et al., 2000; Najman, Williams et al., 2000	AN 18 wks; PN 3-5 days, 6 mths, 5 & 14 yrs			
Logsdon et al., 1994	AN 36 wks; PN 6 wks			
Cox et al., 1993		✓	✓	SPI[h]
Cox et al., 1996		✓	✓	SPI[h]
Cox, 1979b		✓		SPI[h]
Nieland & Roger, 1997		✓	✓	
Augusto et al., 1996		✓	✓	

[a] Schedule for Affective Disorders and Schizophrenia. [b] Research Diagnostic Criteria. [c] Psychiatric Assessment Schedule. [d] General Health Questionnaire. [e] Present State Examination. [f] Hamilton Rating Scale. [g] Crown-Crisp Experiential Index. [h] Goldberg's Standardised Psychiatric Interview. [i] Maudsley Personality Inventory.

6.1 METHODOLOGY

6.1.1 Participants and Procedure

Although women in the *Adapting to Motherhood* study provided a reasonably good match for the population of primiparous women in South Australia, Scott et al. (2001) noted that women attending groups for new parents tend to come from higher socio-economic backgrounds. Therefore, in an endeavour to encourage the participation of women from more diverse backgrounds and thereby to include a more representative sample, women were not recruited from New Parent's Groups for this longitudinal study. Instead, participants were recruited from the Women's and Children's Hospital (WCH), the largest public maternity hospital in South Australia. As such, the WCH delivers around 4000 babies annually (Women's and Children's Hospital, 2001).

Ethics approval was granted from the Ethics Committees of both the University of Adelaide and the WCH prior to commencement of this study. Participants were recruited from almost all consecutive antenatal classes held at the WCH (N=43), during the period from July to November 2000[6]. No information was available for childbearing women who indicated they did not wish to participate, or for those who originally agreed to participate, but did not subsequently return their questionnaire. Following the methodology employed in the *Adapting to Motherhood* study, all childbearing women who consented to participate in this study also agreed to recruit a 'friend' of a similar age, who was not currently pregnant and did not have a child less than one year old. This friend was used as the 'non-childbearing' control for the study.

Participants were provided with information sheets briefly describing the study (see Appendix J for postpartum women and Appendix K for controls) and were

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[6] The researcher is aware of six missed classes: unable to attend due to illness (*n*=2), and classes not available at the prearranged time (*n*=4).

requested to complete three slightly adapted questionnaires (see Section 6.1.2.1 for details) over an approximately eight-month period. The initial questionnaire was completed antenatally during the third trimester of pregnancy (AN), the second assessment was completed at six to twelve weeks postpartum (PN1), with the third questionnaire completed at five to six months postpartum (PN2). These, or similar, assessment periods have been used by a number of other researchers in this field (e.g., Ballard et al., 1993; Demyttenaere et al., 1995; Josefsson, Berg, Nordin, & Sydsjo, 2001; Terry et al., 1996). The first questionnaire was distributed to childbearing women at the time of recruitment; the two subsequent questionnaires were posted to the participants at the appropriate time to correspond with their due date, or their baby's date of birth (once known). If the questionnaires were not returned within two weeks, one phone call was made to remind the participants about the study. Non-childbearing women received and were asked to complete their questionnaires at a similar time as their childbearing friend.

Details of the differential response rates to the questionnaires are shown in Figure 6.1. A total of 141 childbearing women and 62 control women participated in at least one assessment for this study. However, once outliers were removed only 90 childbearing women and 41 controls participated in all three assessments. Multiparous childbearing women ($n = 5$) were removed from the analyses, as was one participant who completed the third questionnaire when her baby was over seven months old. One control was also removed, as at 56 years old she was not of childbearing age. Additionally, two participants (one childbearing and one control) returned the third questionnaire too late to be included in the analyses.

N=303 (approx.) at antenatal classes

Approx. 38.6% (n=117) declined to participate
- no further information is available for this group

61.4% (n=186) agreed to participate
- 173 (57.1%) consent rec'd on site
- 13 (4.3%) no consent rec'd on site

N=141 total childbearing participants
- 63.8% (n=90) participated in all assessments
- 36.2% (n=51) participated in 1 or 2 assessments
- *4.3% (n=6) outliers removed from analysis:* Index infant 2nd child (n=5), baby >7 months at PN2 assessment (n=1)
- *2.8% (n=4) Officially withdrawn:* 3rd trimester miscarriage (n=1); changed mind about involvement (n=3)

AN childbearing questionnaires (n=129)
- 91.5% of total childbearing women
- 74% return rate when consent rec'd
- 30.3% (39/129) returned after reminder

PN1 childbearing questionnaires (n=126)
- 89.4% of total childbearing women
- 15.1% (19/126) returned after reminder

PN2 childbearing questionnaires (n=104)
- 73.8% of total childbearing women
- 15.4% (16/104) returned after reminder

N=62 total control participants
- 66.1% (n=41) participated in all assessments
- 33.9% (n=21) participated in 1 or 2 assessments
- *1.6% (n=1) outlier removed from analysis:* Control aged 56 yrs
- *3.2% (n=2) Officially withdrawn:* Changed mind PN1 (n=1), family member murdered PN2 (n=1)

AN control questionnaires (n=62)
- 48.1% of AN childbearing women had a friend return the control questionnaire

PN1 control questionnaires (n=49)
- 79.0% of total controls
- 16.3% (8/49) returned after reminder

PN2 control questionnaires (n=46)
- 74.2% of total controls
- 17.4% (8/46) returned after reminder

Figure 6.1. Participant sampling details (Changing Emotions)

6.1.2 Instruments

The questionnaire used for the *Changing Emotions* study incorporated many of the elements of the *Adapting to Motherhood* questionnaire. The following questionnaires, the Edinburgh Postnatal Depression Scale (EPDS), Depression Anxiety Stress Scale (DASS) and State-Trait Anxiety Inventory (STAI) were retained. Changes to the background questionnaire and additional surveys are referred to in the following sections. The Center for Epidemiologic Studies – Depression Scale (CES-D) was removed from this study as it had not contributed any distinctive information to the initial study and in an endeavour to reduce the size of the questionnaire package.

6.1.2.1 Background questionnaire.

Many of the questions from the *Adapting to Motherhood* background questionnaire (see Section 5.1.2.1) were used in the *Changing Emotions* survey. However, minor changes were made to the response formats from the earlier questionnaire. All women were asked to indicate the actual amount of sleep they had at night and in a 24 hour period, rather than responding to a grouped option. Additionally, the background questionnaire used in the *Changing Emotions* study was slightly adapted at each assessment for childbearing women. For instance, questions were asked about the woman's birth experience at the first postnatal assessment only. Furthermore, some of the obstetric questions were slightly adapted to account for the time frame (antenatal, post-delivery or postnatal) at the respective assessments. For example, childbearing women were asked antenatally whether they planned to breastfeed their babies, and how long they anticipated doing so, whilst the postnatal question asked the women to describe their experience of breastfeeding, (i.e., whether they were currently breastfeeding, or whether they had tried breastfeeding but were unsuccessful) and how

long they intended to continue breastfeeding. This allowed women to report their expectations in some cases and provided a baseline in others. The background questionnaire used at the antenatal assessment for childbearing women can be seen in Appendix L, whilst that used for non-childbearing women is shown in Appendix M.

Research has consistently shown that satisfaction with marital relations declines from the antenatal to postnatal period (Cowan & Cowan, 1988). Therefore, a few questions raised in the *Adapting to Motherhood* study were also incorporated in this longitudinal study. As a brief measure of perceived social support, women were asked whether or not they were satisfied with their relationship with their partner. They were also asked how much they felt their partners would (and did) participate in their infant's care and how much they thought their partners would be (and were) responsible for their infant's care. Questions were asked about the amount of positive and negative change anticipated and experienced after the birth of their baby. Responses to the above questions were given as percentages. Additionally, a ten-point scale (from 1 = extremely poorly, through to 10 = extremely well) asked how women felt they would, and did, cope with their baby.

6.1.2.2 Mood and Anxiety Symptom Questionnaire (MASQ)

The Mood and Anxiety Symptom Questionnaire (MASQ) was devised by Watson and colleagues to test the Tripartite Model (Watson, Clark et al., 1995; Watson, Weber et al., 1995). The Tripartite Model is discussed in detail in Section 3.4.2.3.1. The MASQ contains a list of ninety symptoms with participants asked to respond on a five-point scale (1 = not at all, 5 = extremely) as to how much they had experienced each of the symptoms during the last week, with higher scores indicating higher levels of potential psychopathology. Most symptoms were drawn from DSM symptom profiles for generalised anxiety disorder, panic disorder, major depression and dysthymia,

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however, some symptoms were selected from criteria for posttraumatic stress disorder, bipolar disorder and cyclothymia. These symptoms were divided into five scales based on DSM-III-R criteria; however, thirteen MASQ items were not placed in any of the five scales, because they did not adequately fit any of the scales.

Of the five scales, the MASQ contains one scale measuring specific depression and another measuring specific anxiety. The three remaining scales assess non-specific general distress. The five scales are as follows:

- *Anhedonic depression (MASQad)* made up of 22 items that assess both loss of interest and positive affect
- *Anxious arousal (MASQaa)* contains 17 items measuring somatic hyperarousal
- *General distress: anxiety (MASQgda)* containing 11 nonspecific symptoms of anxiety
- *General distress: depression (MASQgdd)* contains 12 nonspecific items for depression
- *General distress: mixed (MASQmx)* consists of 15 symptoms found in both depression and anxiety disorders.

The authors firstly tested convergent and divergent validity by performing correlations on the five MASQ scales (Watson, Weber et al., 1995). Anxious arousal and anhedonic depression had the lowest intercorrelations, whilst the general distress factors of depression and anxiety were found to correlate more highly with each other than with the scale designed to specifically test the alternate construct. For example, whilst MASQgdd correlated well with MASQad, MASQgdd also correlated significantly lower with MASQaa, than with MASQgda. Secondly, correlational analyses were performed between the MASQ and other instruments designed to assess depression or anxiety (the Beck Depression and Anxiety Inventories and the Profile of Mood States). High convergent validity was reported as MASQ anxiety and depression scales correlated highly with other instruments designed to assess the same construct

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(Watson, Weber et al., 1995). Intercorrelations between anxious arousal and anhedonic depression were also found to be far lower ($r = .38$) than other instrument pairs ($r = .62$ for Beck Depression and Anxiety Scales; and $r = .69$ for the Profile of Mood States) at discriminating between the constructs. Moreover, anxious arousal and anhedonic depression also generally showed better discrimination from instruments measuring the alternate construct than the other scales. These findings have been confirmed by other authors (Reidy & Keogh, 1997; Ruth & Mehrotra, 2001). Furthermore, factor analysis has been employed by Watson et al. (1995) to provide additional support for their findings, with anxious arousal and anhedonic depression loading highest on the anxiety and depression factors respectively. Regression analyses also showed that the MASQ scales contained the largest amount of their respective target variance and smallest amount of non-target variance of the anxiety and depression scales tested.

6.1.2.3 Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was developed to measure subjective levels of global stress. As such, it measures the perceived level of life stress without assessing specific stressors, with its results thought to remain valid for between four to eight weeks. Fourteen items are included on the PSS, half of which are reverse scored. Items on the PSS address feelings about stress, coping and control in the previous month. For example, participants are asked to respond to questions such as how often they felt upset over unexpected events, did they felt nervous and stressed, and were they been able to control irritations in their lives. Possible response options range from 0 (never) to 4 (very often), resulting in scores from 0 to 56. Cohen and colleagues report a mean of 19.6 ($SD = 7.5$), whilst alpha reliability was found to be around .85 (Cohen et al., 1983; Cohen & Williamson, 1988).

This questionnaire has been used in previous research on postpartum women (Whiffen & Gotlib, 1993).

6.2 RESULTS

6.2.1 Demographic and Background Variables

Analyses were initially conducted to identify any general differences between the childbearing and control women who agreed to participate in the study. It is apparent from Table 6.2, that childbearing women were significantly more likely to be married or in de facto relationships, however, controls who were in relationships had been in the relationships for a longer time. Childbearing women were also significantly more likely to identify with an ethnic group.

Table 6.2. Background variables (Changing Emotions)

	Childbearing Mean (*SD*)	*N*	Control Mean (*SD*)	*N*	Significant difference
Age (yrs)	29.1 (4.6)	123	29.4 (6.2)	61	ns
Years in current relationship	6.4 (3.9)	92	8.5 (6.1)	25	$t(115)=-2.0, p<.05$
No. of miscarriages	0.3 (0.6)	121	0.3 (0.7)	60	ns
Categorical variables	%	*N*	%	*N*	
Married or de facto	92.6%	122	55.7%	61	$\chi2(1, N=183)=35.0, p<.001$
Identified with ethnic group	19.5%	123	8.2%	61	$\chi2(1, N=184)=3.9, p<.05$
Post secondary education	76.4%	123	67.2%	61	Ns
Employed fulltime (prior to preg.)	67.5%	123	73.8%	61	Ns
Long term health problems	14.6%	123	15.0%	60	Ns
Previous psychiatric diagnosis	15.6%	122	9.8%	61	Ns

A total of 129 childbearing women completed the antenatal assessment; they were at this time an average 35.2 (*SD* = 2.5) weeks pregnant. Most (65.0%) of the women had planned their pregnancy and were happy about it, with 22.8% happy about an unplanned pregnancy. The women had taken an average of 7.8 (*SD* = 16.1) months to

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get pregnant and around one third of the childbearing women were planning to look after their child full-time. A number of childbearing women (14.6%) reported that they had long-term health problems, with the largest proportion, one third of these, complaining of back pain. Other complaints (e.g., epilepsy, vascular or skin irritation) were only experienced by one or two women. Health problems with onset during pregnancy were more common (30.2%), with over one quarter of these specifically identified as obstetric or gynaecological problems. Pregnant women also reported the onset of vascular / circulation problems and skin irritation, amongst other things during their pregnancy. Of the sixty-two control women who returned the antenatal assessment, 78.7% were nulliparous.

One hundred and twenty-six childbearing women returned the questionnaire for the first postnatal assessment. Women completed the questionnaires when their babies were a mean age of 7.7 weeks ($SD = 2.2$). Babies were born after an average gestation of 39.7 weeks ($SD = 1.5$). One third of women had their labour induced, 82.2% had artificial pain relief, and 81.1% delivered vaginally (two women had planned Caesarean sections). Delivered after 14 hours ($SD = 8.6$) labour, at birth, an average baby weighed 3432 grams ($SD = 494$). Just over half (51.2%) the women were released from hospital within three days. Around one quarter of women reported that their baby had experienced health problems, mainly consisting of colds or minor health problems, with only 5% reporting ongoing health problems in their infants. Most women (99.2%) initially attempted to breastfeed their babies, with 78.5% still breastfeeding at the first postnatal assessment, 11.6% reported they tried breastfeeding but were unsuccessful. Almost all (94.6%) women who were breastfeeding planned to continue until their baby was at least five to six months old.

Childbearing women ($n = 104$) returned the second postnatal questionnaire when their babies were an average of 22.5 ($SD = 1.7$) weeks old. Half (51.0%) of these

women had attended New Parent's Groups and two-thirds of the respondents were still breastfeeding. At this stage 42% of women reported their babies had experienced health problems. One third of women had returned to the workforce, but only 7.1% had returned to full-time work. Of the 46 controls who returned this questionnaire, 8.9% were now pregnant.

Repeated measures ANOVAs with contrasts were conducted to identify a possible difference between childbearing women and controls. Analyses were conducted to determine whether the groups were matched on income level, quantity and quality of sleep, and on expectations (and subsequent experience) of motherhood. It should be noted that as these were repeated measures analyses, they could only be performed on women responding at all assessment times. The antenatal assessment was chosen as the baseline measure for both contrasts, as a pre-postpartum measure of the variables. Accordingly, two contrasts were performed, the first between the antenatal (AN) and the first postnatal (PN1) assessments, the second contrast between AN and the second postnatal (PN2) assessment. These contrasts were used for all subsequent repeated measures analyses, unless otherwise stated. The results relating to income and sleep (as seen in Table 6.3[7]), were not unexpected with the responses from controls remaining constant, whilst income for childbearing women reduced from AN to PN2, and sleep quantity reduced from AN to both PN1 and PN2. With less sleep at night, childbearing women also reported poorer sleep quality than controls.

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[7] All significant main and interaction effects are shown in Tables 6.3 and 6.4.

Table 6.3. Significant differences for longitudinally assessed background variables (Changing Emotions)

Variable		AN	PN1	PN2	Significant results (Repeated Measures ANOVAs)
Income[a]	Childbearing (n=83)	4.8 (1.4)	4.5 (1.5)	4.4 (1.5)	Income for childbearing women reduced significantly from AN to PN2, but remained constant for controls, $F(1,20)=5.3, p<.05.$
	Control (n=39)	4.5 (1.6)	4.5 (1.4)	4.6 (1.3)	
Sleep in 24 hrs	Childbearing (n=89)	8.0 (1.7)	6.7 (1.6)	7.2 (1.1)	Sleep in 24 hours remained constant for controls, but decreased significantly for childbearing women from AN to both PN1 and PN2, $Fs(1,128)=18.0$ & $7.5, p<.01.$
	Control (n=41)	7.6 (0.9)	7.7 (1.3)	7.5 (0.9)	
Sleep at night	Childbearing (n=87)	7.4 (1.4)	6.0 (1.4)	6.9 (1.0)	Sleep at night remained constant for controls, but decreased significantly for childbearing women from AN to PN1, $F(1,125)=22.4, p<.001$; with childbearing women sleeping significantly less at night than controls, $F(1,125)=17.0, p<.001.$
	Control (n=40)	7.6 (0.8)	7.4 (0.9)	7.4 (.9)	
Sleep quality	Childbearing (n=89)	6.2 (2.1)	6.0 (2.1)	6.4 (2.2)	Childbearing women reported significantly poorer sleep quality than controls, $F(1,128)=19.0, p<.001.$
	Control (n=41)	7.7 (1.5)	7.5 (1.6)	7.2 (1.6)	
Satisfied with relationship (%)	Childbearing (n=82)	92.4 (11.1)	84.6 (19.6)	80.6 (19.8)	Satisfaction with relationships decreased significantly from AN to both PN1 and PN2, $Fs(1,102)=7.1$ & $16.7, p<.01$, with childbearing women experiencing a more marked decline, $F(1,102)=3.6, p=.05.$
	Control (n=22)	89.3 (12.9)	86.1 (16.0)	85.0 (15.4)	
Partner participates (%)	Childbearing (n=83)	71.5 (21.1)	55.2 (28.3)	51.9 (26.8)	Childbearing women anticipated (AN) significantly more partner participation in their children's care than they experienced at PN1 and PN2, $Fs(1,82)=34.9$ & $48.3, p<.001.$
Partner responsible (%)	Childbearing (n=81)	40.7 (20.3)	40.1 (22.7)	39.4 (24.1)	ns
Positive change in lives (%)	Childbearing (n=88)	75.3 (16.3)	71.8 (24.1)	79.4 (15.5)	Childbearing women experienced significantly more positive change at PN2 than they anticipated AN, $F(1,87)=5.7, p<.05.$
Negative change in lives (%)	Childbearing (n=87)	22.4 (14.1)	25.2 (22.6)	20.3 (18.4)	ns
Coping[b]	Childbearing (n=90)	7.6 (1.2)	7.9 (1.8)	8.6 (1.0)	Childbearing women reported they coped significantly better at PN2 than anticipated AN, $F(1,89)=51.4, p<.001.$

[a] Income (AUS$) scored as 1=less than $14,999, 2=$15,000 to $24,999, etc, 6= more than $55,000 per year. [b] Coping measured from 1=extremely poorly to 10=extremely well

Both childbearing women and controls reported a significant decline in their satisfaction with their partners over the three assessment periods, however, the decrease for childbearing women was much more marked. Further, childbearing women anticipated that their partners would participate more in their infant's care than they subsequently reported that they did. However, there was no difference in the level of responsibility anticipated or experienced. Although childbearing women antenatally anticipated about 75% positive change in their lives, they reported that they experienced a significantly higher change at PN2. Childbearing women also reported that they coped significantly better at PN2 than they anticipated antenatally.

A number of exploratory statistical analyses were conducted on the *Changing Emotions* background variables and instrument totals to identify any systematic biases. T-tests, chi-square analyses and repeated measures ANOVAs were employed; the results of these tests are shown in Table 6.4. Although there was considerable variation in the findings, many of the results were not unexpected. For example, older women were more likely to be married, to have had more previous miscarriages, have higher incomes and have planned and been happy about their pregnancies. Women who were induced were more likely to have spent time in hospital prior to birth. Women who experienced longer labours were more likely to have used artificial pain relief, and those delivering by caesarean section reported more long-term health problems.

When considering the results for instruments, the most consistent findings were for women who had a previous history of psychological disorders, those who had planned and were happy about their pregnancies and for those attending New Parents' Groups (NPGs). All women with a history of diagnosed psychological disorders were combined into one group (given the low numbers who reported depression, anxiety and serious emotional disorders separately), and were then compared against women without a previous diagnosis. Significant differences between the groups were found for

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depression (EPDS, DASSd, MASQad and MASQgdd), stress (PSS and DASSs), non-somatic anxiety (STAIs and MASQgda), one somatic anxiety scale (DASSa) and mixed anxiety and depression (MASQmx) with women with a previous diagnosis scoring higher in all instances. MASQaa was the only scale without a main effect.

Women who had planned and were happy about their pregnancies were compared with a combined group of women who had either not planned or were unhappy about their pregnancies. Repeated measures ANOVAs showed that those who had planned and were happy about their pregnancies scored significantly lower on the depression (EPDS, DASSd, MASQad and MASQgdd), stress (PSS and DASSs), non-somatic anxiety (STAIs and MASQgda) and mixed anxiety and depression scales (MASQmx). However, there were no effects for the somatic anxiety scales (DASSa and MASQaa).

Although all primiparous women are encouraged to attend NPGs at about four to twelve weeks postnatally, only about half the current sample attended these groups. Repeated measures analyses were conducted to determine whether there were any systematic differences between women who attended or did not attend these groups. Women who chose to attend NPGs scored significantly higher on the depression scales (EPDS, DASSd and MASQad), pure anxiety (MASQaa) and mixed anxiety and depression (MASQmx), compared to women who had not attended NPGs. Although significant differences were not found for the other scales, attention to the mean scores showed that women who had attended NPGs were consistently lower on all other scales at all assessment periods (see Appendix O).

Table 6.4. Significant differences between categorical subsets for childbearing sample (Changing Emotions)

Test of difference between subsets:	Significant results	
	Background	Instruments (Repeated measures ANOVAs)
Attended NPGs: yes or no	Women who had attended NPGs had spent sig. longer in their relationships, $t(67)=2.4$, $p<.05$; were less likely to come from an ethnic group, $\chi^2(1, N=90)=4.0$, $p<.05$; reported less sleep in 24 hour period, $F(1,83)=6.4$, $p<.05$; and less sleep at night, $F(1,81)=6.0$, $p<.05$.	Women who had attended NPGs scored sig. lower on EPDS, $F(1,80)=4.8$, $p<.05$; DASSd, MASQad, MASQaa & MASQmx, $Fs(1,79)=3.9, 4.3, 4.4$ &7.4. $p<.05$.
Returned all 3 questionnaires: yes or no	Women who returned all questionnaires were sig. more likely to have planned and been happy about their pregnancy, $\chi^2(4, N=124)=11.2$, $p<.05$; have English as their first language, $\chi^2(1, N=112)=6.0$, $p<.05$; attend NPGs, $\chi^2(1, N=96)=11.6$, $p<.001$; have had shorter labours, $t(113)=-2.2$, $p<.05$; anticipated antenatally that their partners would be more responsible, $t(116)=-2.0$, $p<.05$, and participate more, $t(116)=2.4$, $p<.05$.	T-tests: Returned all questionnaires x instruments (at each assessment) Women who returned all questionnaires scored sig. lower on MASQaa at the antenatal assessment, $t(120)=-2.1$, $p<.05$.
Control questionnaire: returned or not	Women who had their control questionnaire returned were sig. less likely to be ethnic, $\chi^2(1, N=123)=3.9$, $p<.05$; and were less likely to have health problems in the last 2 months of pregnancy, $\chi^2(1, N=121)=4.3$, $p<.05$.	ns
Women: ≤ or >29 years old	Older women took sig. longer to become pregnant $t(36.8)=-2.3$, $p<.05$, had more miscarriages $t(89.1)=-2.3$, $p<.05$; had been in their relationships longer $t(90)=-2.0$, $p<.05$; had planned and were happy about their pregnancy $\chi^2(4, N=123)=14.3$, $p<.01$; had higher incomes $\chi^2(1, N=106)=9.7$, $p<.01$; were more likely to have attended NPGs, $\chi^2(1, N=90)=4.7$, $p<.05$; and were more likely to have breastfed, $\chi^2(1, N=94)=5.6$, $p<.05$.	Older women scored sig. higher on MASQmx at each assessment, $F(1,82)=3.9$, $p<.05$.
Long-term health problems: yes or no	Women with long-term health problems were sig. less likely to be employed full-time, $\chi^2(1, N=123)=7.9$, $p<.01$; and sig more likely to spend time in hospital after the birth, $t(109)=2.1$, $p<.05$; have a previous psychological diagnosis, $\chi^2(1, N=122)=8.7$, $p<.01$; and had a sig. higher caesarean rate, $\chi^2(1, N=111)=8.5$, $p<.01$.	ns
Previous psychological diagnosis: yes or no	Women with a previous psychological diagnosis had sig. more long term health problems, $\chi^2(1, N=122)=8.7$, $p<.01$; experienced more medical problems in pregnancy , $\chi^2(1, N=121)=5.6$, $p<.05$; spent longer in hospital after the birth, $t(108)=3.5$, $p<.001$; and anticipated and experienced less positive change, $F(1,85)=6.4$, $p<.05$.	Women with a previous psychological diagnosis scored sig. higher on the EPDS, $F(1,83)=8.8$, $p<.01$; STAIs & PSS, $Fs(1,80)=11.8$ & 6.2, $p<.05$; DASSa, DASSs & DASSd, MMASQad, MASQgdd, MASQgda, MASQmx, $Fs(1,81)=8.3, 14.6, 8.0, 7.2, 8.1, 9.2$ & 7.9, $p<.01$.
Miscarriage: ever or never	Women who had miscarried were sig. older, $t(119)=2.5$, $p<.05$; had a higher income, $\chi^2(1, N=105)=4.9$, $p<.05$; and were more likely to have received a previous psychological diagnosis, $\chi^2(1, N=120)=5.3$, $p<.05$.	Interaction effect: women who had experienced a miscarriage were sig. lower on DASSs, MASQgda & MASQmx AN but higher PN2 than those who hadn't, $Fs(1,82)=7.4, 6.8$ & 6.1, $p<.05$.
Income: < or ≥ AUS$45,000	Women with higher family incomes were sig. older, $t(104)=-3.4$, $p<.001$; had more miscarriages, $t(93.3)=-2.1$, $p<.05$; had been in their relationship longer, $t(76.3)=2.1$, $p<.05$; were more likely to consider returning to work, $\chi^2 (2, N=104)=7.5$, $p<.05$; had longer labours, $\chi^2 (1, N=112)=4.3$, $p<.05$; reported higher quality of sleep at all assessments, $F(1,84)=5.8$, $p<.05$; they also reported less sleep AN and more PN2 than those on lower incomes, $F(1,82)=7.6$, $p<.01$; and thought AN that their husbands would be less responsible, than they subsequently reported at PN2, whereas those on lower income expected more responsibility AN than was apparent PN2, $I(1,77)=5.1$, $p<.05$.	Interaction effects: women with higher incomes scored sig. lower AN and higher PN1 on the EPDS & DASSs than those on a lower income, $F(1,81)=6.0$, $p<.05$ & $F(1,79)=5.1$, $p<.05$; their MASQgda scores reduced more slowly from AN to PN1 & 2, than those on a low income, $Fs(1,79)=5.7$ & 6.0, $p<.05$.

Test of difference between subsets:	Significant results	
	Background	Instruments (Repeated measures ANOVAs)
Pregnancy: planned & happy about it, or other	Women who had planned and were happy about their pregnancies were sig. older, $t(121)=3.4, p<.001$; more likely to be married, $\chi^2(1, N=122)=12.25, p<.001$; had been in their relationship longer, $t(90)=2.0, p<.05$; had more previous miscarriages, $t(118)=3.2, p<.01$; were more likely to be looking after their child fulltime at PN2, $\chi^2(2, N=93)=6.6, p<.05$; expected and experienced more positive change and less negative change, $Fs(1,86)=6.2$ & $9.9, p<.05$; and anticipated they would, and reported they did, cope better, $F(1,88)=7.0, p<.01$. Interaction effect: although the same at AN & PN1, planned and happy women sleep sig. more at PN2 than others, $F(1,85)=5.1, p<.05$; and reported sig. lower partner participation at PN2, $F(1,81)=4.1, p<.05$.	Women who had planned and were happy about their pregnancies scored sig lower on EPDS, $F(1,84)=7.6, p<.01$; STAIs & PSS, $Fs(1,81)=10.9$ & $13.5, p<.001$; DASSs, DASSd, MASQad, MASQgda, MASQgdd & MASQmx, $Fs(1,82)=5.0, 8.8, 12.7, 7.0,12.0$ & $7.5, p<.05$. Interaction effect: planned and happy women increased on STAIs from AN to PN1, others declined, $F(1,81)=6.6, p<.05$.
Spent time in hospital before birth: yes or no	Women who spent time in hospital before the birth were sig. more likely to have their labour induced, $\chi^2(1, N=121)=40.5, p<.001$; have artificial pain relief, $\chi^2(1, N=117)=6.3, p<.05$; health problems after the birth, $\chi^2(1, N=90)=5.6, p<.05$.; experienced a far steeper drop from AN (expected) partner participation to PN2 participation, than those who hadn't, $F(1,81)=9.0, p<.01$.; and lower partner responsibility PN2 than anticipated AN, whilst women who hadn't spent time in hospital before the birth reported higher levels at PN2 than anticipated AN, $F(1,79)=8.4, p<.01$.	Interaction effect: women who spent time in hospital before the birth scored sig. higher on MASQad & MASQgda AN and lower PN1 than women who hadn't, $Fs(1,82)=6.1$ & $3.9, p<.05$.
Labour: induced or not induced	Women who were induced were sig. more likely to have spent time in hospital before birth $t(119)=3.9, p<.001$.	Interaction effect: women who were induced scored sig. higher on STAIs AN than PN1, whilst women who were not induced scored lower AN than PN1, $F(1,81)=5.1, p<.05$; induced women were higher on PSS & MASQgda AN and lower PN1, than non-induced women, $Fs(1,81)=4.2, p<.05$ & $F(1,82)=8.4, p<.01$.
Labour time: ≤ or >12 hours	Women with longer labours were sig. more likely to have artificical pain relief, $\chi^2(1, N=113)=5.9, p<.05$; and have higher incomes $\chi^2(1, N=112)=4.3, p<.05$.	Women with longer labours were sig. higher on STAIs and DASSs at each assessment, $F(1,79)=4.5, p<.05$ & $F(1,80)=3.9, p<.05$.
Delivery method: vaginal (V) or caesarean (C)	Women who delivered by Caesarean section were sig. less likely to have English as a first language, $\chi^2(1, N=102)=6.1, p<.01$; reported more long term health problems, $\chi^2(1, N=111)=8.5, p<.01$; had shorter pregnancies, $t(120)=2.0, p<.05$; spent longer in hospital after the birth $t(55.3)=-8.1, p<.001$; expected and experienced more negative life change, $F(1,85)=4.3, p<.05$; and slept more at night (AN) and less PN2 than those with vaginal deliveries, $F(1,85)=4.0, p<.05$.	Interaction effects: C sig. higher STAIs AN than PN2, V lower AN than PN2, $F(1,81)=7.4, p<.01$; C higher MASQad AN then PN1 or 2, V lower AN than PN1, $Fs(1,82)=3.9$ and $5.1, p<.05$; C higher MASQgdd AN than PN2, V lower AN than PN2, $F(1,82)=5.1, p<.05$.
Gender	Ns	Interaction effect: women with boys were sig. higher on MASQad AN than PN1 and 2, whilst those with girls were lower AN than PN1 and 2, $F(1,82)=6.5$ & $5.2, p<.05$.
Baby's birthweight: ≤ or > 3420gms	Women with lower birthweight babies sig. more likely to be older, $t(103)=2.3, p<.05$; had shorter pregnancies $t(91.7)=-4.9, p<.001$; but longer labours $\chi^2(1, N=110)=3.9, p<.05$,; were more likely to have girls, $\chi^2(1, N=116)=5.9, p<.05$; expected and experienced more negative life change, $F(1,80)=4.0, p<.05$; and found their partners to be more responsible at PN2 than they anticipated AN, whilst those with higher birthweight babies found the opposite, $F(1,74)=7.2, p<.01$.	Women with lower birthweight babies were sig. higher on DASSd at each assessment, $F(1,77)=4.3, p<.05$. Interaction effects: women with lower birthweight babies were sig. lower on DASSd, MASQad & MASQgdd AN and higher PN1, whilst higher birthweight babies higher AN than PN1, $Fs(1,77)=4.1, 6.4$ & $4.2, p<.05$.
Sleep quality: =>6 at all assessments or other	Women who reported consistently higher sleep quality delivered heavier babies, $t(82)=-2.4, p<.05$; were less likely to be ethnic, $\chi^2(1, N=89)=6.2, p<.05$; slept more in 24hrs, $F(1,86)=7.8, p<.01$; and slept more at night, $F(1,84)=11.0, p<.001$. Interaction effects: women reporting higher sleep quality reported increasingly positive life change, whilst others declined from AN to PN1 and increased at PN2 to AN levels, $Fs(1,85)=11.9$ & $8.4, p<.01$, whilst reporting the opposite negative life changes, $Fs(1,84)=6.6$ & $7.0, p<.05$; they also reported increased coping at each assessment, whereas other women declined at PN1, $F(1,87)=5.4, p<.05$.	Women who reported consistently higher sleep quality were lower on the EPDS, $F(1,83)=4.0, p<.05$: and lower on DASSs, MASQaa & MASQmx, $Fs(1,81)=4.8, 5.4$ & $12.5, p<.05$. Interaction effects: women reporting higher sleep quality were consistently low on the DASSa, whilst other women declined from AN to PN2, $F(1, 81)=5.9, p<.05$

Few interaction effects were found for the instrument analyses. For example, induced women reported a decline in anxiety (STAIs) from the AN to PN1 assessments, whilst non-induced women increased over the same time period. MASQgda also declined over this period for induced women, but remained constant for non-induced women. Although both groups reported higher stress (PSS) at PN1 than antenatally, non-induced women were significantly less stressed AN and more stressed at PN1 than induced women. The heightened antenatal anxiety levels may be accounted for by the fact that induced women were also more likely to have spent time in hospital before the birth.

In a similar vein, women who delivered by caesarean section were more depressed (MASQad) antenatally than at PN1; and more anxious (STAIs) and depressed (MASQad and MASQgdd) at PN2, than women delivering vaginally. This finding is despite the fact that those delivering by caesarean reported more sleep antenatally. It is possible, however, that the higher antenatal scores for this subgroup may be due to the fact they also reported more long-term health problems. The only background variable that significantly affected depression scales (DASSd, MASQad and MASQgdd) without affecting any stress or anxiety instruments was the baby's birthweight, as women with lower birthweight babies were more depressed at PN1 than AN. These women also reported their partners to be more responsible at PN2 than they had anticipated antenatally.

Sleep quality was determined by dividing the childbearing women into two groups based on whether they consistently recorded a high sleep quality (=>6) or whether they reported low sleep at a minimum of one assessment. Using this criterion 38.2% of women reported consistently high sleep quality. The background variables revealed that women with high sleep quality perceived more positive and less negative life changes and also reported better coping. Women with higher sleep quality also

scored lower on depression (EPDS), somatic anxiety (MASQaa), stress (DASSs) and mixed anxiety and depression (MASQmx).

When considering the effect of the background and health variables on the EPDS, the only significant effect, in addition to those already mentioned, was for income level, where an interaction effect was found. Women reporting a higher income scored significantly lower on the EPDS antenatally than women with an annual household income of less than $45,000, with the high income group also experiencing a significant increase in EPDS from AN to PN1, whereas the low income group declined slightly over this time period. Both groups then declined to a similar level at PN2.

6.2.2 Correlations

Pearson's correlational analyses were conducted between instruments at each assessment period for both childbearing women and controls. Significant correlations are shown separately for the antenatal (Table 6.5), first postnatal (Table 6.6) and second postnatal assessments (Table 6.7). It is clear that there is good convergent and poor divergent validity for all scales at each assessment. For example, although the depression scales intercorrelate highly, they also tend to correlate highly with the anxiety and stress scales, a pattern that is repeated for each construct at each assessment. The best convergent and divergent validity is shown fairly consistently in the specific DASS scales. The pure anxiety measure MASQaa generally correlates best with DASSa and MASQgda, and lowest with MASQad. Similarly, MASQad tends to correlate best with DASSd and MASQgdd, and lowest with MASQaa.

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Table 6.5. *Instrument correlations for childbearing and non-childbearing women at the antenatal assessment (Changing Emotions)*

	EPDS	DASSd	MASQad	MASQgdd	STAIt	STAIs	DASSa	MASQaa	MASQgda	DASSs	PSS
EPDS		**.695**	**.712**	**.792**	.788	.749	.682	.541	.627	.695	.680
DASS depression	**.710**		**.841**	**.908**	.774	.666	.748	.558	.658	.723	.588
MASQ anhedonic depression	**.649**	**.630**		**.791**	.731	.714	.631	.450	.626	.645	.680
MASQ general distress depression	**.763**	**.771**	**.614**		.782	.670	.724	.611	.675	.722	.649
STAI trait	.525	.545	.419	.549		**.624**	**.729**	**.582**	**.688**	.627	.761
STAI state	.688	.657	.668	.712	**.891**		**.675**	**.497**	**.751**	.677	.764
DASS anxiety	.599	.726	.443	.658	**.516**	**.611**		**.757**	**.657**	.608	.521
MASQ anxious arousal	.514	.589	.484	.612	**.415**	**.500**	**.757**		**.595**	.547	.446
MASQ general distress anxiety	.623	.639	.497	.703	**.577**	**.714**	**.708**	**.633**		.776	.644
DASS stress	.666	.744	.523	.648	.538	.693	.799	.630	.708		**.668**
Perceived Stress Scale	.767	.628	.629	.701	.622	.755	.590	.515	.628	**.681**	

Note. Childbearing correlations shown below the diagonal (n =120 to 123); non-childbearing correlations shown above the diagonal (n =48 to 61). All correlations significant at $p<.001$. Bold text denotes correlations for instruments designed to test the same construct

Table 6.6. Instrument correlations for childbearing and non-childbearing women at the first postnatal assessment (Changing Emotions)

	EPDS	DASSd	MASQad	MASQgdd	STAIs	DASSa	MASQaa	MASQgda	DASSs	PSS
EPDS		**.767**	**.760**	**.822**	.831	.634	.594	.751	.693	.712
DASS depression	**.722**		**.780**	**.907**	.787	.816	.675	.741	.785	.638
MASQ anhedonic depression	**.709**	**.833**		**.765**	.821	.579	.546	.690	.732	.794
MASQ general distress depression	**.831**	**.866**	**.773**		.844	.802	.701	.840	.749	.681
STAI state	.791	.796	.804	.789		**.617**	**.632**	**.817**	.754	.762
DASS anxiety	.700	.752	.615	.694	**.736**		**.771**	**.754**	.559	
MASQ anxious arousal	.592	.573	.530	.584	**.569**	**.834**		**.805**	.474	
MASQ general distress anxiety	.757	.751	.594	.780	**.772**	**.772**	**.766**		.653	.605
DASS stress	.756	.805	.743	.778	.861	.748	.591	.812		**.720**
Perceived Stress Scale	.795	.689	.767	.737	.811	.658	.522	.698	**.689**	

Note. Childbearing correlations shown below the diagonal (n =117 to 119); non-childbearing correlations shown above the diagonal (n =47 to 48). Only correlations significant at $p<.001$ shown. Bold text denotes correlations for instruments designed to test the same construct

Table 6.7. Instrument correlations for childbearing and non-childbearing women at the second postnatal assessment (Changing Emotions)

	EPDS	DASSd	MASQad	MASQgdd	STAIs	DASSa	MASQaa	MASQgda	DASSs	PSS
EPDS		**.570**	**.542**	**.659**	.604	.567	.525	.733	.567	.540
DASS depression	**.746**		**.746**	**.814**	.528	.546		.572	.588	.458
MASQ anhedonic depression	**.737**	**.836**		**.647**	.560			.509	.497	.683
MASQ general distress depression	**.784**	**.872**	**.792**		.713	.573	.478	.649	.657	.589
STAI state	.793	.817	.845	.821		**.506**		**.639**	.730	.662
DASS anxiety	.698	.702	.644	.699	**.711**		**.697**	**.514**	.570	
MASQ anxious arousal	.541	.534	.539	.560	**.494**	**.676**		**.652**	.562	
MASQ general distress anxiety	.641	.620	.557	.684	**.732**	**.725**	**.536**		.728	.602
DASS stress	.758	.795	.764	.753	.857	.748	.447	.763		**.588**
Perceived Stress Scale	.772	.709	.804	.790	.845	.635	.466	.635	**.754**	

Note. Childbearing correlations shown below the diagonal (*n* =94 to 96); non-childbearing correlations shown above the diagonal (*n* =43 to 44). Only correlations significant at *p*<.001 shown. Bold text denotes correlations for instruments designed to test the same construct

Overall, the EPDS generally correlated the lowest with the scales measuring the somatic symptoms of anxiety (MASQaa and DASSa). The MASQ general distress depression and the state anxiety scale of the STAI correlated the highest with the EPDS, however the stress scales (DASSs and PSS) also correlated highly particularly for childbearing women. Childbearing correlations of trait anxiety with the other antenatal scales are again (see Section 0) quite different to control correlations, however, in this case there was no significant difference between STAI trait means for childbearing women and controls.

At the antenatal assessment there were few correlations for women between the instruments and demographic variables. Correlations with DASS anxiety and MASQ anxious arousal were often low and insignificant and, therefore, are not included in the summary below. The most consistent results found showed were that women who were less satisfied with their relationships tended to score higher on most scales. This was generally in the range $r = -.34$ to $-.42$, $p < .001$ for childbearing women, and $r = -.40$ to $-.74$ for non-childbearing women. Correlations for childbearing women at the first postnatal assessment tended to be in the range $r = -.28$ to $-.43$, whereas controls scored $r = -.40$ to $-.78$. Interestingly, correlations at the second postnatal assessment were higher ($r = -.55$ to $-.70$) for childbearing women than controls but with only DASS depression and the Perceived Stress Scale correlations significant (r's $= -.41$, $p<.05$).

Correlations between quality of sleep and the instruments were almost always less than $-.25$ for childbearing women. The same correlations were often between $-.35$ and $-.50$ for controls, showing sleep quality was impacting on controls more than it did on antenatal childbearing women. This difference was not apparent at the postnatal assessments where a limited number of correlations were found between sleep and the instruments for postpartum women and controls.

6.2.3 Test-Retest Reliability

Although the EPDS was designed to be used with postpartum women, questions regarding test-retest reliability do not yet appear to have been asked. Given that the EPDS and the other scales were used in this instance for testing childbearing women and controls, it was pertinent to consider the stability of the scores over time. Test-retest reliability for the instruments were determined by correlations between the instruments administered at the antenatal and first postnatal assessment, and at the first and second postnatal assessments. These results are shown in Table 6.8.

Table 6.8 Instrument test-retest reliability (Changing Emotions)

Correlations between		AN – PN1	PN1 – PN2
EPDS	Childbearing	.404***	.499***
	Control	.172	.378*
DASS depression	Childbearing	.385***	.405***
	Control	.241	.436**
MASQ anhedonic depression	Childbearing	.379***	.531***
	Control	.269	.543***
MASQ general distress depression	Childbearing	.443***	.500***
	Control	.397**	.616***
STAI state	Childbearing	.400***	.520***
	Control	.538***	.616***
DASS anxiety	Childbearing	.356***	.485***
	Control	.350*	.705***
MASQ anxious arousal	Childbearing	.344***	.596***
	Control	.451***	.726***
MASQ general distress anxiety	Childbearing	.479***	.649***
	Control	.444**	.371*
DASS stress	Childbearing	.499***	.565***
	Control	.531***	.504***
PSS	Childbearing	.460***	.520***
	Control	.422**	.575***

Note. Childbearing n = 87 to 111; Control n = 39 to 48. Significance levels $p < .05$*, $p < .01$** & $p < .001$***

Test-retest reliability tended to be in the low to moderate range from the antenatal to first postnatal assessment, and in the moderate to high range from the first to second postnatal assessment. Interestingly, although it was anticipated that reliability would be

higher for controls, this was not always the case. In fact, for the depression scales, control reliability was considerably lower than the reliability for childbearing women.

6.2.4 Longitudinal Analyses of the Instruments

Repeated measures ANOVAs (2 x 3) with contrasts were conducted on the longitudinal data of all instruments to determine whether childbearing women had higher levels of depression, anxiety or stress as measured by the self-report instruments than the controls. Only women who responded to all assessments were included in these analyses. Two contrasts were again performed with the antenatal assessment as the baseline. The first contrast was between the antenatal and the first postnatal assessment, the second contrast was between the antenatal and the second postnatal assessment. Means, standard deviations and results of the tests are reported in Table 6.9. Cronbach's Alpha was calculated for all instruments at each assessment period; these results can also be found in Table 6.9. Accordingly, it can be seen that instrument reliability is high, and varies little across the assessment times.

Four significant results are reported in Table 6.9 and are shown diagrammatically in the following figures. Figure 6.2 shows that depression measured by DASSd increases for childbearing women from the antenatal to the second postnatal assessment, whilst decreasing for controls over this time period. Anxiety measured by MASQaa can be seen (Figure 6.3) to decrease for childbearing women from the antenatal assessment to the first postnatal assessment where it joins the level of the controls. Both stress measures revealed different interaction effects, firstly stress measured by PSS is lower for childbearing women (than controls) antenatally, and increases at the first postnatal assessment to meet the control level of stress (see Figure 6.4). The DASSs measure of stress can be seen in Figure 6.5 to decline over time for controls, whilst increasing from the antenatal assessment for childbearing women.

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Table 6.9. Longitudinal analyses of scales for childbearing and non-childbearing women (Changing Emotions)

Instrument (Cronbach's α)		AN	PN1	PN2	Significant results (Repeated Measures ANOVAs)
EPDS (.83, .85, .84)	Childbearing (*n*=86)	6.9 (4.0)	7.8 (4.7)	6.2 (4.3)	ns
	Control (*n*=39)	8.1 (4.6)	7.4 (4.8)	6.5 (3.7)	
DASSd (.92, .96, .94)	Childbearing (*n*=84)	4.1 (4.6)	5.6 (7.6)	4.7 (6.4)	Interaction effect: childbearing women lower AN than at PN2, whilst controls higher AN than at PN2, $F(1,122)=4.4, p<.05$
	Control(*n*=40)	5.9 (7.1)	6.5 (8.4)	4.0 (4.8)	
MASQad (.93, .95, .94)	Childbearing (*n*=84)	53.4 (12.1)	55.9 (15.7)	51.2 (13.5)	ns
	Control(*n*=39)	55.1 (15.7)	54.1 (16.8)	49.9 (13.4)	
MASQgdd (.89, .93, .90)	Childbearing (*n*=84)	19.7 (6.0)	21.6 (8.3)	19.4 (6.7)	ns
	Control(*n*=39)	21.7 (7.2)	21.9 (9.4)	19.7 (5.6)	
STAI state (.95, .96, .95)	Childbearing (*n*=83)	35.9 (10.9)	37.3 (11.6)	35.0 (11.3)	ns
	Control(*n*=40)	38.6 (11.9)	38.4 (13.3)	36.1 (10.3)	
DASSa (.83, .86, .87)	Childbearing (*n*=84)	4.7(4.4)	3.7 (4.8)	2.8 (4.2)	ns
	Control(*n*=40)	2.9 (4.3)	2.7 (4.2)	2.3 (3.2)	
MASQaa (.81, .77, .81)	Childbearing (*n*=84)	27.8 (6.7)	21.5 (4.8)	20.7 (4.9)	Interaction effect: childbearing women higher AN than PN1 or 2, whilst controls remain constant, $Fs(1,121)=29.2$ and $44.0, p<.001$
	Control(*n*=39)	20.6 (4.2)	20.7 (4.9)	21.1 (4.7)	
MASQgda (.81, .84, .82)	Childbearing (*n*=84)	19.6 (5.6)	18.2 (6.3)	16.9 (5.3)	ns
	Control(*n*=39)	18.2 (5.6)	19.0 (6.5)	16.7 (4.5)	
MASQmx (.81, .89, .88)	Childbearing (*n*=84)	33.2 (7.5)	30.8 (10.1)	28.6 (8.7)	ns
	Control(*n*=39)	28.4 (8.2)	29.0 (9.6)	27.0 (7.2)	
PSS (.84, .84, .85)	Childbearing (*n*=83)	19.6 (6.2)	22.9 (6.8)	20.4 (7.4)	Interaction effect: childbearing women lower AN than at PN1 or 2, whilst controls higher AN than at PN1 or 2, $Fs(1,121)=8.2$ and $10.0, p<.01$
	Control(*n*=40)	24.1 (8.1)	23.3 (8.5)	20.7 (6.8)	
DASSs (.92, .94, .95)	Childbearing (*n*=84)	9.3 (6.7)	11.0 (8.5)	10.1 (8.7)	Interaction effect: childbearing women lower AN than PN2, whilst controls higher AN than at PN2, $F(1,122)=4.1, p<.05$
	Control(*n*=40)	9.9 (8.1)	9.4 (7.4)	7.8 (6.5)	

Note. Instrument reliability (Cronbach's α) is shown for each assessment period. This calculation only includes data from the sample who responded to all three questionnaires.
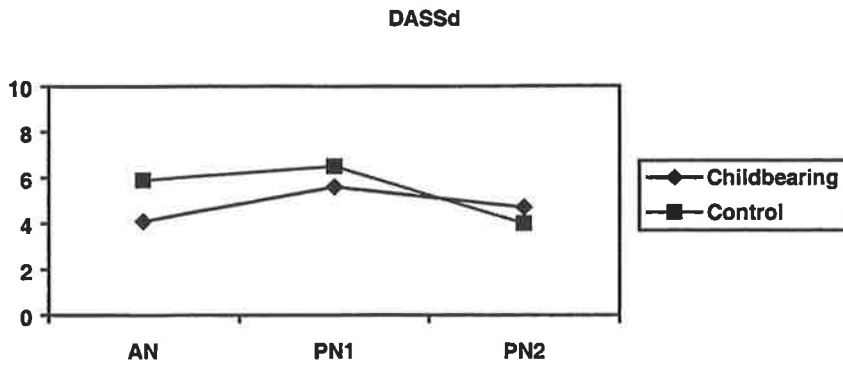
Figure 6.2. DASSd interaction effect (Changing Emotions)
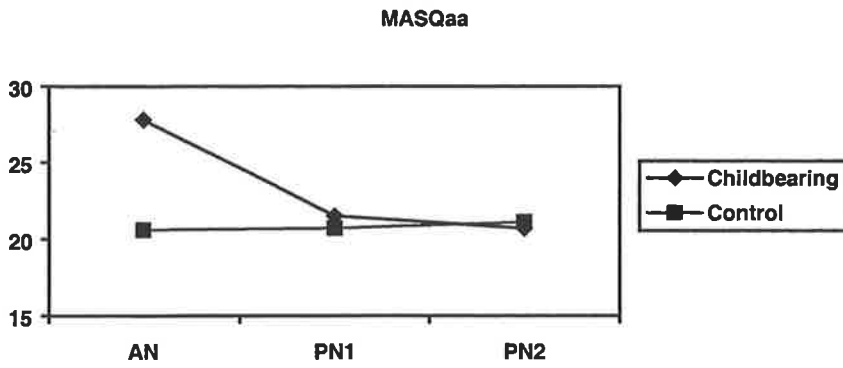
Figure 6.3. MASQaa interaction effect (Changing Emotions)
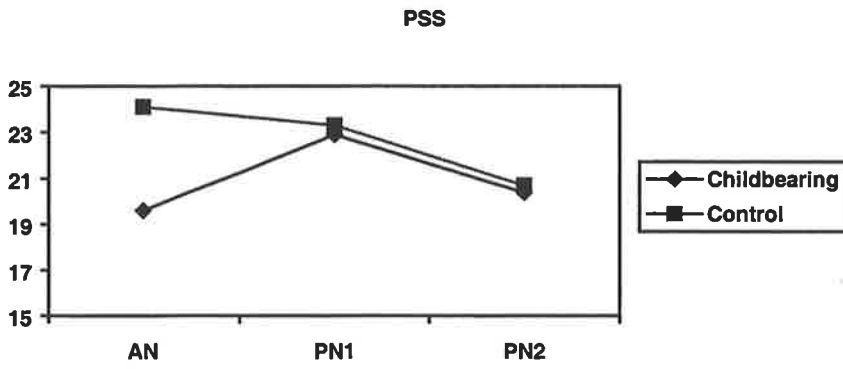
Figure 6.4. PSS interaction effect (Changing Emotions)

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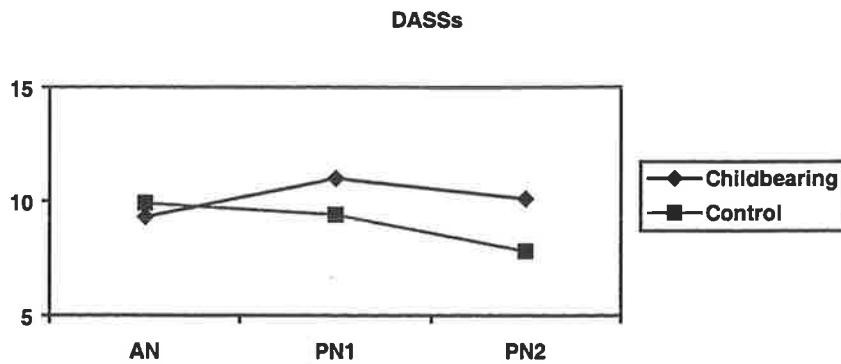
Figure 6.5. DASSs interaction effect (Changing Emotions)

6.2.5 Analyses Based on Instrument Cutoff Scores

The authors of the EPDS, DASS and STAI have assigned cutoff values to indicate

potential caseness, these are shown for each assessment in Table 6.10. It is clear that the

proportion of childbearing and control women who fit the criteria for potential caseness

is much the same for almost all instruments across the three assessment times. The

exception, DASSa, shows a higher proportion of childbearing women than controls

identified as potential cases at each assessment. However, this was only significant

antenatally, χ^2 (1, $N = 183$) = 8.4, $p<.01$, and at the first postnatal assessment, χ^2 (1, $N =$

166) = 4.8, $p<.05$.

As the EPDS is the most commonly used self-report instrument of depression in

postpartum women, additional examination was conducted on EPDS results for women

who responded at all three assessment periods. The proportion of cases (new and

continuing) of childbearing women and controls who scored above the two cutoff levels

for the EPDS ($\geq$10 and $\geq$13) recommended by Cox et al. (1987) can be seen in Figure

6.6. It is apparent that the proportion of women who are identified as cases is much the

same at the AN and PN1 assessments, however, there is a decrease at the PN2

assessment for both childbearing women and controls. It can also be seen that around

half of the women identified as potential cases at the antenatal assessment continue to

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score highly on the EPDS at six to twelve weeks postpartum. Seven percent of

childbearing women, and 10.3% of controls, scored ≥10 on the EPDS at all assessments,

whilst 3.5% and 2.6% (respectively) scored ≥13.

Table 6.10. Potential cases of depression, anxiety and stress (Changing Emotions)

Instrument cutoffs	% Antenatal		% Postnatal 1		% Postnatal 2	
	Childbearing	Control	Childbearing	Control	Childbearing	Control
EPDS						
≥10	30.1%	35.0%	29.8%	29.2%	20.8%	20.9%
≥13	13.0%	15.0%	14.0%	10.4%	11.5%	7.0%
DASS Depression						
10-13 (mild)	8.9%	5.0%	10.2%	10.4%	5.2%	4.5%
14-20 (moderate)	4.9%	8.3%	5.1%	4.2%	5.2%	2.3%
21-27 (severe)	2.4%	1.7%	3.4%	0.0%	3.1%	2.3%
28+ (extremely severe)	0.0%	3.3%	2.5%	6.3%	1.0%	0.0%
Total ≥10	16.2%	18.3%	21.2%	20.9%	14.5%	9.1%
DASS Stress						
15-18 (mild)	7.3%	8.3%	6.8%	12.5%	10.4%	6.8%
19-25 (moderate)	8.9%	5.0%	9.3%	6.3%	4.2%	9.1%
26-33 (severe)	4.1%	6.7%	5.9%	4.2%	8.3%	0.0%
34+ (extremely severe)	0.0%	0.0%	2.5%	0.0%	1.0%	0.0%
Total ≥15	20.3%	20.0%	24.5%	23.0%	23.9%	15.9%
DASS Anxiety						
8-9 (mild)	10.6%	0.0%	5.1%	0.0%	3.1%	0.0%
10-14 (moderate)	6.5%	3.3%	5.9%	0.0%	8.3%	4.5%
15-19 (severe)	3.3%	3.3%	2.5%	2.1%	1.0%	2.3%
20+ (extremely severe)	4.1%	0.0%	3.4%	2.1%	0.0%	0.0%
Total ≥8	24.5%	6.6%	16.9%	4.2%	12.5%	6.8%
STAI State						
≥40	36.6%	32.8%	31.4%	37.5%	27.4%	34.1%
≥45	21.1%	23.0%	21.2%	25.0%	16.8%	18.2%
STAI Trait						
≥40	30.8%	31.3%				
≥45	16.7%	20.8%				
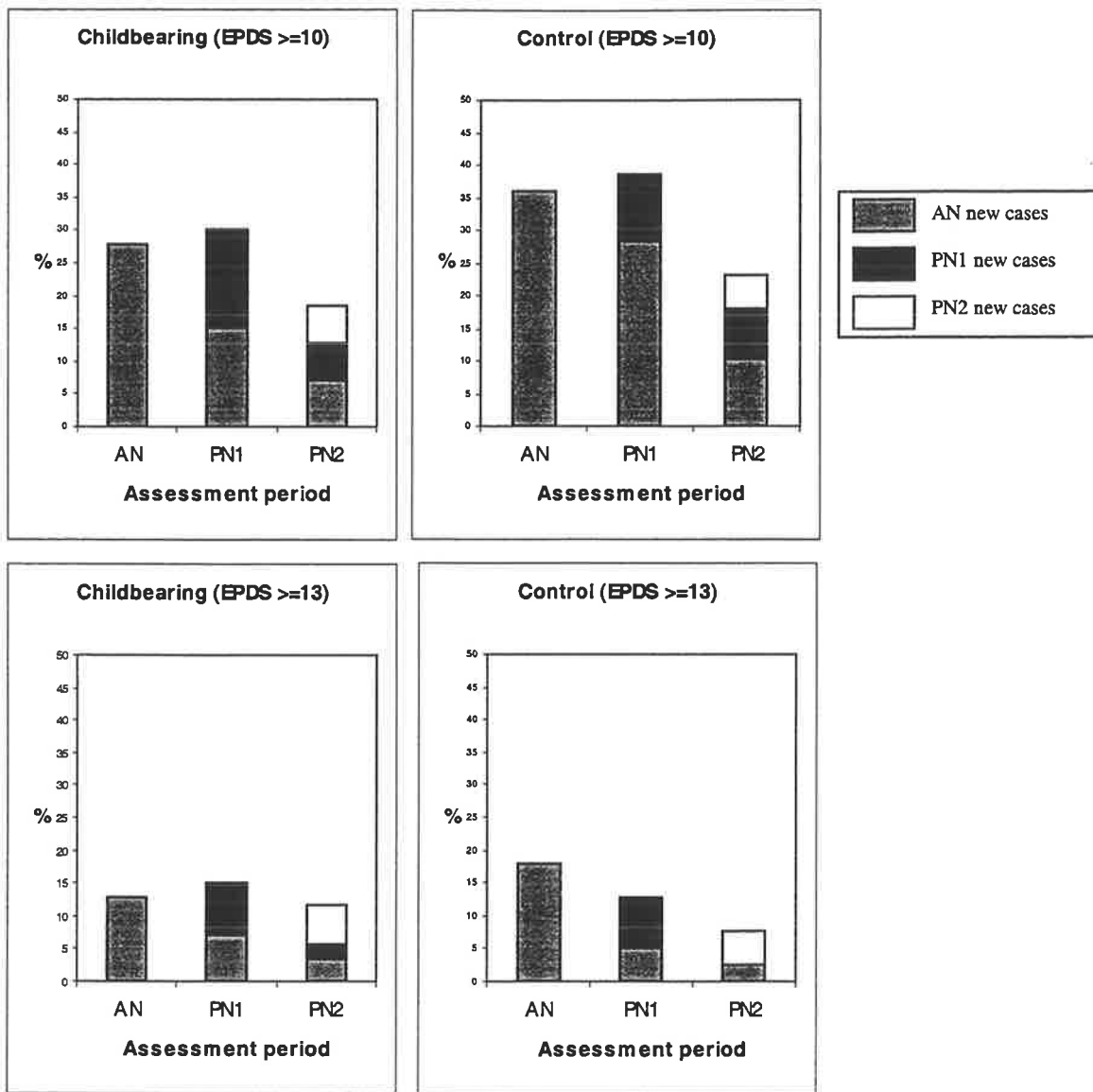
Figure 6.6. Proportion of childbearing women (n=86) and controls (n=39) at each assessment who scored EPDS ≥10 and ≥13 (Changing Emotions)

6.3 DISCUSSION OF FINDINGS

6.3.1 Comparisons Between Childbearing Women and Controls

As with the *Adapting to Motherhood* study, there were few demographic differences between childbearing women and controls. Childbearing women were more likely to be in relationships than controls, whereas those controls who were in

relationships were more likely to have been in relationships longer than childbearing women. Childbearing women were also more likely to identify with an ethnic group. As in the previous study, these differences were likely to have occurred as a result of the recruitment method as well as the inclusion and exclusion criteria.

Of note, is the similarity between this sample and women giving birth in South Australia and at the Women's and Children's Hospital (WCH) in general. It is apparent from the statistics summarised in Appendix I, that the primiparous women in the *Changing Emotions* study are of a similar age, have babies of a similar gestation and weight as the South Australian and WCH averages (Women's and Babies' Division, 1999). Moreover, although forty percent of South Australian women had their labours induced, the 33.6% of women in the current study reporting induction more closely reflects the 29% WCH rate (Women's and Babies' Division, 1999). The most obvious difference between this sample and other childbearing women was the Caesarean rate of 18.9%, slightly lower that the South Australian (23.9%) or national (21.1%) rates, and considerably lower than the proportion reported in primiparous women in South Australia (26.5%) and the WCH (26.1%). However, this sample reported similar lengths of stay in hospital after birth (5.5 days for Caesarean section, 3.5 days for Vaginal delivery) as the WCH average (5.4 days and 3.3 days respectively).

6.3.2 Differentiating Constructs

As mentioned in Section 3.4.2.3, researchers have identified difficulties with differentiating the constructs of depression and anxiety. The results discussed in this thesis identified similar problems with many of the instruments and scales used to identify potential cases of depression, anxiety and stress. This is particularly evident in the correlation tables, where correlations within the scales used to identify a construct are invariably very similar to correlations between scales used to identify different

constructs. However, it is also apparent that within construct correlations are quite variable in some circumstances (e.g., antenatal correlations of .63 for childbearing women and .84 for controls when MASQ anhedonic depression is correlated with DASS depression).

Watson et al. (1995) claimed that the MASQ scales were superior to many other scales in their ability to differentiate between the constructs of depression and anxiety. The results shown in Section 6.2.2 support these claims as MASQaa usually correlated highest with DASSa and MASQgda, and lowest with MASQad, whereas MASQad tended to correlate best with DASSd and MASQgdd, and lowest with MASQaa.

Lovibond and Lovibond (1995) have made similar claims regarding the ability of the DASS to differentiate depression, anxiety and stress. The findings relating to the DASS are less clear than those for the MASQ, for although correlations between the DASSa and MASQaa (and correlations between DASSd and MASQad) were generally high, the correlations between DASSa, DASSd and DASSs were often equally high.

As the MASQaa and DASSa scales focus on the somatic symptoms of anxiety, it should be noted that these symptoms are less ambiguous and have a less obvious relationship with standard depression or anxiety scales. Therefore, given the somatic nature of the MASQaa and DASSa, it is not surprising that the EPDS correlated the least with these scales. Other correlations, however, were mixed with high correlations found between the EPDS and the MASQgdd, STAI state, DASSs and PSS, thereby confiming that the EPDS is measuring more than depression.

6.3.3 Longitudinal Change

In contrast to generally held assumptions about increased psychopathology in postpartum women, there were few significant differences over the three assessment periods for childbearing women in this study. However, despite few significant findings,

an interesting but insignificant pattern emerged for childbearing women (this pattern was not apparent for controls). The anxiety scales (DASSa, MASQaa and MASQgda) and the mixed general distress scale (MASQmx) all declined, in a linear fashion, from the antenatal to the first, and then second, postnatal assessment. All other scales, those for depression (EPDS, DASSd, MASQad and MASQgdd), anxiety (STAI state) and stress (DASSs and PSS) were low antenatally, peaked at the first postnatal assessment and declined at the second assessment. As this finding was fairly consistent for non-somatic scales, this would suggest that in the early postpartum period childbearing women experience a slight increase in levels of psychopathology, one that with a larger sample size may have been significant.

Researchers have previously identified the problems of somatic items in scales when attempting to find depression in childbearing women (see Section 2.3). In attempting to differentiate depression from anxiety in childbearing women, this study has identified a similar problem with the content of scales built specifically to differentiate the constructs within the general population. For example, MASQ anxious arousal includes questions such as "hands were shaky", "was short of breath" and "felt like I was choking", whilst items for DASS anxiety include having "a feeling of shakiness", "a feeling of faintness" and "trembling". That is, the anxiety scales of the DASS and MASQ are predominantly measuring somatic symptoms and, therefore, are likely to be heavily influenced by the change in physiological condition from pregnancy to postpartum.

Figure 6.6 shows the proportion of women who, at some time, scored as potential cases on the EPDS. It is apparent that there were considerable changes among the women who were recorded as potential cases at each assessment period, regardless of whether they scored ≥ 10 or ≥ 13 on the EPDS. Approximately half the high scoring women at the antenatal assessment were no longer considered cases at the first postnatal

assessment. This finding was reflected at the second postnatal assessment where about half the women identified as potential cases at the first postnatal assessment subsequently scored below the threshold. Similar findings were reported by Cooper et al. (1988) as they found that only one third of those identified as cases at three months were still cases at six months

6.3.4 Limitations

Around two-thirds of the total sample of childbearing women and controls participated at all of the three assessment periods. This represents a similar dropout rate to that reported by other longitudinal studies of this kind (e.g., Ballard et al., 1993). As is apparent in Table 6.4, childbearing women who continued participating were more likely to have planned and been happy about their pregnancy, to have attended New Parent's Groups, have shorter labours, and to have accurately anticipated their partners level of participation, and responsibility for, their infant's care. Although other research (e.g., Lightfoot et al., 1982; Romito et al., 1999) has identified some demographic factors (e.g., research drop-outs have been reported to be younger, have a lower education level, be unemployed or employed in a job requiring low qualifications) as indicators for women lost to follow-up, these factors were not implicated in this study. In fact, the only demographic difference was that women returning all questionnaires were more likely to speak English as a first language.

Although it cannot be known whether the onset of a psychopathological condition resulted in the decision not to participate in one or more assessments in this study, responses to instruments at previous assessment periods fail to indicate this as a factor for this sample. In fact, the only instrument difference was that women who did not return all questionnaires scored lower on anxiety (MASQaa) at the antenatal assessment.

Recruitment of a sample through antenatal classes has limitations. It has previously been reported that around one quarter of primiparous mothers in the Adelaide metropolitan region do not attend antenatal classes (Taylor et al., 2000). However, it is suggested that this recruitment method produced a more representative sample than that from the *Adapting to Motherhood* due to the fact that around half of the women from the *Changing Emotions* study had attended New Parent's Groups, whereas almost all women who attended the *Adapting to Motherhood* study had attended antenatal classes. It therefore appears that the *Changing Emotions* study is potentially drawing on a wider sample. However, it should also be noted that Taylor et al. reported women from households with lower annual incomes or from non-English speaking backgrounds were less likely to attend antenatal classes, a potential biasing factor.

6.4 SUMMARY

The first aim of this study was to replicate the findings of the *Adapting to Motherhood* study. On the whole this was achieved, as significant main effects were not found for childbearing women and controls. There were, however, four interaction effects. These findings were consistent in that childbearing women experienced an increase in levels of depression (DASSd) and stress (DASSs and PSS) from the antenatal to the second postnatal assessment (and to the first postnatal assessment for PSS), whilst controls experienced a decline over the same time frame. The only other significant effect was for somatic anxiety (MASQaa), with a decline in the levels of anxiety for childbearing women from the antenatal to postnatal assessments, whilst controls remained constant. The limited findings cited above would appear to contradict theory on the increased prevalence of depression in postpartum women, particularly as the widely used EPDS showed no significant effect.

As with the *Adapting to Motherhood* study, high convergent and low divergent validity was found for the depression, anxiety and stress scales. Although this finding was generally reinforced by the inclusion of the PSS and the MASQ, the specific anxiety and depression (MASQaa and MASQad) scales of the latter generally showed the highest convergent and divergent validity of all scales. The inclusion of the MASQ also provided clarity regarding how the use of somatic items in anxiety scales, such as the DASSa and MASQaa, serves to discriminate these scales from non-somatic scales. This study also revealed that apart from these somatic anxiety scales, most other scales of depression, anxiety and stress tended to identify a general non-specific type of distress.

The longitudinal assessment used in this study allowed women scoring high on the EPDS to be tracked over time. It showed that a higher proportion of controls than childbearing women scored in the moderate range for potential caseness. The *Changing Emotions* research allowed a more detailed analysis of the psychopathology of childbearing women than is possible in non-longitudinal research. Assumptions about the relationship of this psychopathology to the postpartum period were challenged, as was the exclusive identification of depression during this time. The next chapter examines the construction of the EPDS more closely and considers the implications this has on identification of depression in childbearing women.

Chapter 7: The Role of Anxiety in 'Postpartum Depression'

It is clear from the preceding two chapters that non-somatic self-report measures of anxiety, depression and stress are highly intercorrelated in both childbearing women and controls. Given the high correlations between the EPDS and other non-somatic scales, it would seem that the EPDS is measuring components of depression, anxiety and stress. As the EPDS is most commonly used by researchers to detect depression in postpartum women the poor divergent validity of this scale is problematic. Therefore, further analysis of the EPDS in childbearing women from the *Adapting to Motherhood* and *Changing Emotions* studies will be conducted.

The designers of the EPDS appear to have used the intuitive approach (see Section 3.4.1.4) for the construction of their self-report scale. As this approach requires a definition first and then matches symptoms to the definition, it would seem that ideological preferences and inaccuracies have the potential to become embedded in the scale. As previously mentioned (see Section 4.2.1), the EPDS was derived from three depression and anxiety self-report scales. However, despite subsequent changes to diagnostic criteria, the use of anxiety scales to measure depression in postpartum women appears to have been accepted unproblematically by researchers in this area with little, if any, comment. As the use of anxiety items in a depression scale is counter to distinct theories of these disorders, it would seem apparent that factor analysis would help to prise apart the constructs. Factor analysis reduces a number of variables into a small number of relatively discrete clusters by examining the pattern of variable intercorrelations. It is, therefore, surprising that a recent search of the postpartum

depression literature found only three published English language studies reporting specific details of factor analysis on the EPDS. Two of these analyses produced similar findings, whilst one produced quite different factors.

Using a Dutch version of the EPDS, Pop et al. (1992) reported the results of both exploratory Principal Axis factor analysis, which produced three factors, and a confirmatory factor analysis, which produced two factors. The factors produced by the confirmatory analysis were named 'depressive symptoms' (items 1, 2, 7, 8, 9 and 10) and 'cognitive anxiety' (items 3, 4, 5 and 6). Although the specific details of the factor analysis are unpublished, Green (1998) reported similar findings to those described by Pop et al. Another study (Des Rivieres Pigeon et al., 2000) also reported the results of a factor analysis of the EPDS producing an anxiety and depression factor[8].

Another Dutch report of factor analysis on the EPDS, this time conducted antenatally at 24 weeks gestation, produced three factors with four items loading higher than .4 on two components (Brouwers et al., 2001). Component 1, 'depressive symptoms', contained items 1, 2, 6, 7, 8, and 9; items 3, 4, 5 and 6 loaded on Component 2, 'anxiety symptoms'; with Component 3 most clearly distinguished by item 10, and also containing items 7, 8 and 9. By removing all items that loaded similarly on two factors, and disregarding item 10, subscales were developed from these results: anxiety (items 3, 4 and 5) and depression (items 1, 2 and 8).

Guedeney and Fermanian (1998), with a French version of the EPDS, used Principal Components analysis with Varimax rotation, and found two different factors: 'depressive symptoms' (items 3, 4, 5, 6, 7 and 9) and 'depressive mood' (items 1, 2, 8 and 10). They also identified the fact that the depressive symptoms factor was most

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[8] As the Des Rivieres Pigeon et al. (2000) study was published in French, only the English-language abstract has been cited.

highly correlated with free-floating anxiety, whilst the other factor was most related to sadness. Both articles concluded that, despite identifying two factors within the EPDS, the scale in its current form should continue to be used, as it was well accepted by participants and identified depression. However, this conclusion does little for identifying and refining the psychological processes for childbearing women.

The analyses conducted in this chapter focus primarily on the assessments made at six to twelve weeks postpartum. This is, firstly, because many studies of depression in postpartum women have identified the first three months as a time of particular susceptibility (e.g., Cooper et al., 1988; Taylor, 1995). Secondly, it is the closest assessment available to parturition in this study, and there was some evidence of a slight peak in the non-somatic self-report instruments for childbearing women in the longitudinal study (*Changing Emotions*).

7.1 METHODOLOGY

Factor analyses were conducted on the EPDS data collected from childbearing women for the two studies, *Adapting to Motherhood* and *Changing Emotions*, reported in the previous two chapters. The exploratory Principal Components analysis was conducted on EPDS items from the former study when the women were six to twelve weeks postpartum. The first confirmatory factor analysis was conducted on data from the second assessment (6 to 12 weeks postpartum) of the *Changing Emotions* study. Subsequent confirmatory analyses were conducted on the data from the first (antenatal) and third (5 to 6 months postpartum) assessments. EPDS data (at 6 to 12 weeks postpartum) from the two studies was then combined to conduct a profile analysis of responses for childbearing women and controls. It was appropriate to combine this data due to the consistency of the results from both studies, the use of data collected at the same time during the postpartum period and the similarity in recruitment methods.

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7.2 RESULTS

7.2.1 Factor Analysis

Initially, an exploratory Principal Component analysis with Direct Oblimin rotation was conducted on items of the EPDS from the *Adapting to Motherhood* study in order to test construct validity. Principal Component analysis is appropriate for exploratory analysis as it allows all variables to be included as factors. Direct Oblimin rotation was selected as the anticipated factors were known to be highly correlated (Tanaka & Huba, 1984).

Two factors with eigenvalues greater than one, and accounting for 56.4% of the variance, were extracted by the Principal Component analysis. Direct Oblimin rotation, converged in four iterations, with the results of the pattern matrix shown in Table 7.1. Factor 1, hereafter named EPDSdepr, included items (1, 2, 7, 8, 9 and 10) in the EPDS that were related to depression. Factor 2, or EPDSanx, included items (3, 4 and 5) more accurately attributed to anxiety. Item 6 was found to make a similar, but relatively small, contribution to both EPDSanx and EPDSdepr. These factors fairly consistently reflect the clinical and theoretical understanding of the disorders evident in Table 4.3.The correlation between the factors EPDSdepr and EPDSanx (excluding item 6) was moderate at $r=.55$, however, it was lower than correlations between any of the state instruments shown in Table 5.4.

To assess the reliability of the two identified factors, Cronbach's alpha statistics were calculated, resulting in $\alpha = .80$ for the six item EPDSdepr, and $\alpha = .78$ for the three item EPDSanx. These coefficients did not substantially differ when item 6 was added to the analyses (EPDSdepr with item 6, $\alpha = .82$; EPDSanx with item 6, $\alpha = .79$). These results demonstrate sound support for considering the EPDS as two distinct scales. Furthermore, as Cronbach's alpha (.86) for all items of the EPDS is similar to that

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found in Cox et al.'s (1987) original study (α = .87), it is likely that the findings could fit the data for other sample groups.

Table 7.1. EPDS Principal Components analysis with direct Oblimin rotation (Adapting to Motherhood)

Item	Factor1	Factor2
1 (laugh)	**.72**	-.03
2 (looked forward)	**.70**	-.01
3 (blamed myself)	.04	**.82**
4 (anxious)	-.06	**.87**
5 (scared)	.01	**.78**
6 (getting on top of me)	**.42**	**.37**
7 (difficulty sleeping)	**.58**	.09
8 (sad)	**.83**	.00
9 (crying)	**.78**	-.03
10 (harming myself)	**.69**	-.03
Initial Eigenvalues	4.50	1.13
Rotated Eigenvalues	4.09	3.31

Note. Loadings greater than 0.3 are shown in bold.

Although it is appropriate to use exploratory factor analysis to identify potential factors and to assist the development of theoretical models, it does not allow for statistical tests of its output. Therefore, as confirmatory factor analysis requires data to fit the model prior to interpretation, it should be used to provide additional support, or to negate the results, of the theoretical models developed by the exploratory factor analysis (Burns & Eidelson, 1998; Tanaka & Huba, 1984). Accordingly, confirmatory factor analysis using Amos version 4.01 was applied to determine the suitability of the model for the *Changing Emotions* childbearing data at the same assessment time (six to twelve weeks postpartum).

The model produced by this confirmatory analysis, with standardised regression weights can be seen in Figure 7.1. This analysis produced a reasonable, but not entirely satisfactory fit for the data, χ^2 (33, N=121)=79.0, p<.001. However, it should be noted that moving item 6 to either EPDSdepr or EPDSanx further reduced the fit of the data.

Correlations between the two factors of EPDSdepr and EPDSanx (not including item 6) were moderate at r=.44, however, they were lower than all correlations seen between both somatic and non-somatic instruments in Table 6.6.
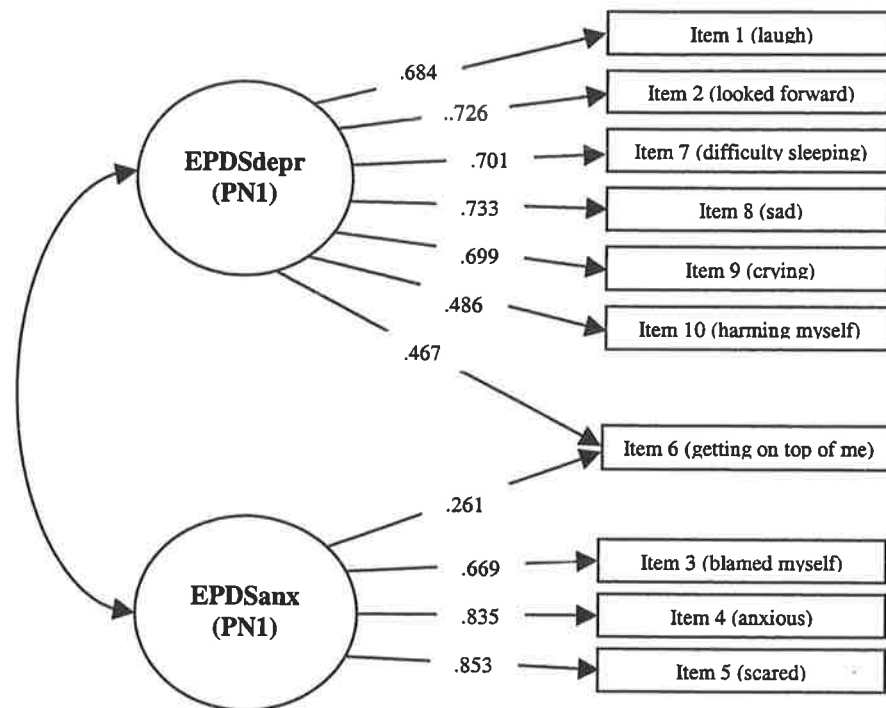
Figure 7.1. Confirmatory factor analysis model with standardised regression weights at the first postnatal (PN1) assessment (Changing Emotions)

Confirmatory analyses were also conducted for the *Changing Emotions* antenatal (AN) and second postnatal assessments (PN2) with similar findings. Results of χ^2 (33, N=123)=76.8, p<.001 for the antenatal data and χ^2 (33, N=99)=73.7, p<.001 for the second postnatal assessment showed a reasonable fit for all data sets to the same two factor model. The models with standardised regression weights can be seen in Figure 7.2 for AN data, and Figure 7.3 for PN2 data. Confirming the model identified in the analysis for PN1, moving item 6 to load exclusively on either factor reduced the fit of the data. Correlations between the factors were moderate and highly significant (p<.001) at each assessment period, with r = .53 antenatally and r =.54 at PN2.

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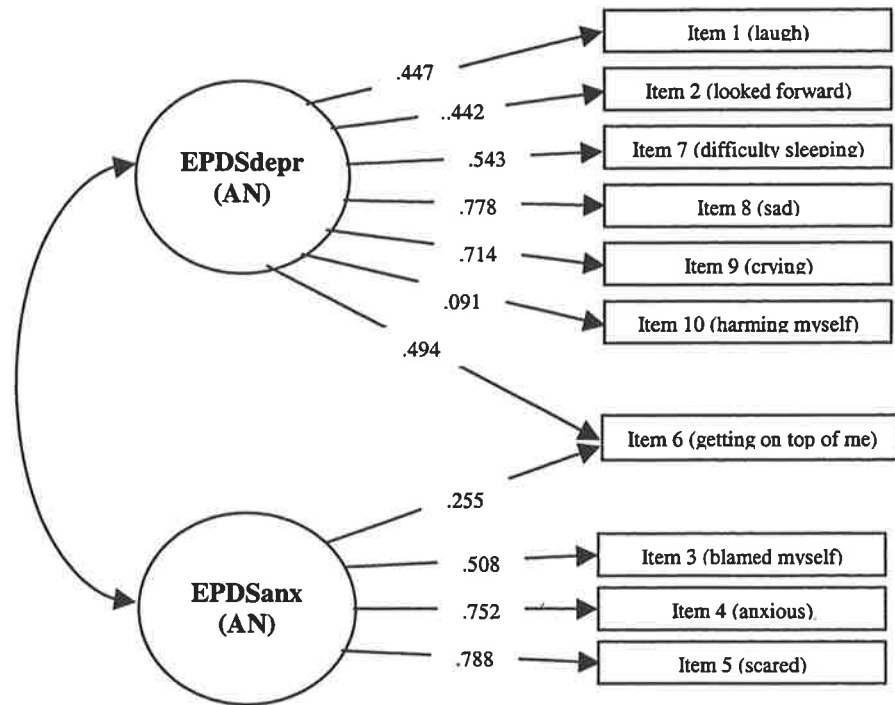
Figure 7.2. Confirmatory factor analysis model with standardised regression weight sat the antenatal (AN) assessment (Changing Emotions)
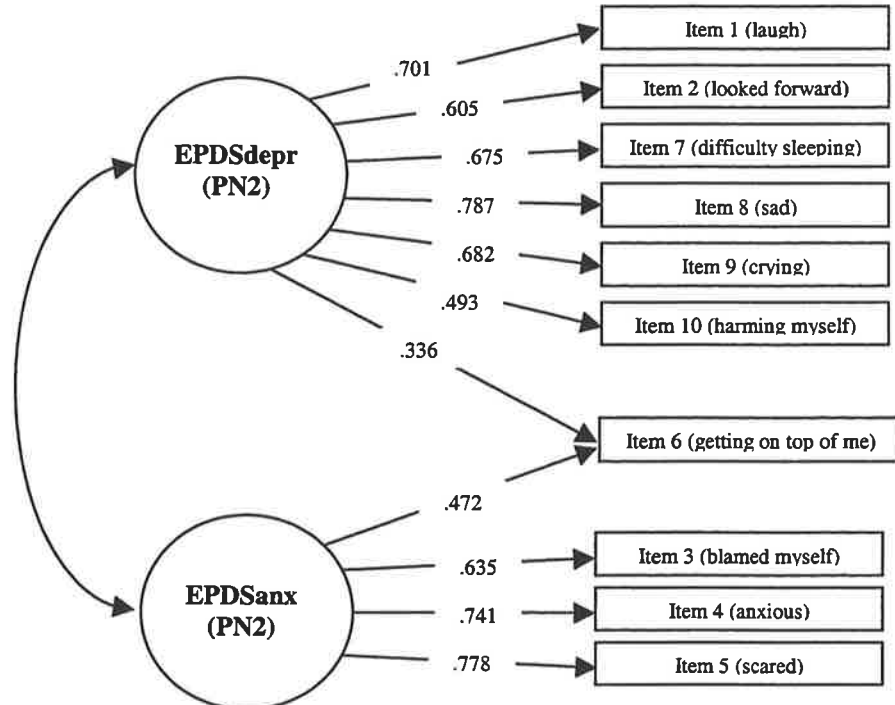
Figure 7.3. Confirmatory factor analysis model with standardised regression weights at the second postnatal (PN2) assessment (Changing Emotions)

Independent t-tests and chi-square analyses were conducted to identify general differences between the background characteristics of childbearing women who participated in either the *Adapting to Motherhood* or *Changing Emotions* studies. The participants for both groups did not differ on most variables including age, marital status, income, ethnicity, or on proportion of participants with previous psychological diagnosis. Infant-related variables were also much the same with women from both groups taking the same time to become pregnant, giving birth after the same gestation period, and delivering babies of the same weight. Significant differences were found with the *Adapting to Motherhood* sample experiencing shorter labours, $t(223.3)=2.8$, $p<.01$, but more likely to have been induced, $\chi^2(1, N=271)=4.96$, $p<.05$, employed fulltime before their pregnancy, $\chi^2(1, N=271)=6.61$, $p<.01$, and less likely to have experienced a previous miscarriage, $t(224.2)=2.24$, $p<.05$. T-tests at the shared assessment time period (PN1) were also conducted on the EPDS, EPDSdepr and EPDSanx, with no significant differences found. Therefore, it was determined that the childbearing data could be combined for future analyses of the EPDS during this time frame.

Pearson's correlations were produced looking at relationships between all instruments and EPDS, EPDSdepr and EPDSanx at PN1. Results of these analyses are shown in Table 7.3. Correlations with trait anxiety (STAIt) are low. Correlations between the instruments and the EPDSdepr are consistently higher than correlations with EPDSanx. EPDSdepr correlations are highest with the other depression scales and lowest with the somatic anxiety scales (DASSa and MASQaa). Although still accounting for around 14% to 26% of the variance, correlations between EPDSanx and the pure depression (DASSa and MASQad) and anxiety (DASSa and MASQaa) scales were lower than those for all other state scales.

Table 7.3. Comparisons of the correlations between EPDS, EPDSdepr, EPDSanx and other scales for childbearing women at PN1

	n	EPDS	EPDSdepr	EPDSanx
DASSd	266	.725	.787	.429
MASQad	118	.709	.766	.377
MASQgdd	118	.831	.846	.535
CESD	149	.772	.787	.539
STAIt	147	.291	.247	.267
STAIs	268	.766	.717	.578
DASSa	266	.644	.598	.509
MASQaa	118	.592	.557	.445
MASQgda	118	.757	.743	.531
DASSs	266	.736	.695	.543
PSS	119	.795	.689	.616

Note. All correlations significant at $p<.001$

7.2.2 Profile Analysis

Although no significant difference was found between childbearing women and controls in total EPDS scores, it was appropriate to identify whether they were responding differentially to the items of the EPDS. Accordingly, a profile analysis using multivariate ANOVA was employed. A profile analysis allows for the comparison of two of more data sets that have been measured on the same scale (Tabachnick & Fidell, 2001). Primarily, a profile analysis tests the parallelism of profiles, and in this case it tested whether the profile of EPDS responses for childbearing women and controls were parallel. Analyses using Wilks' Lambda showed significance, $\Lambda = .90$ ($F_{approx}(10, 385)=4.46$, $p<0.001$), therefore parallelism could not be assumed. The divergence in parallelism was accounted for by a significant difference on item 7, $F(1, 394)=5.91$, $p<.05$, with controls reporting more difficulty sleeping due to unhappiness, and on item

9 where childbearing women were more likely to have been crying due to unhappiness, $F(1, 394)=7.31, p<.01$.

Profile analyses also test the equality of profiles. This reveals whether the average responses for one group are higher than the responses for the other group. This test was insignificant, showing that the profile of responses for childbearing women and controls was equal. The results from the profile analyses can be seen diagrammatically in Figure 7.4, with mean responses plotted for both groups.
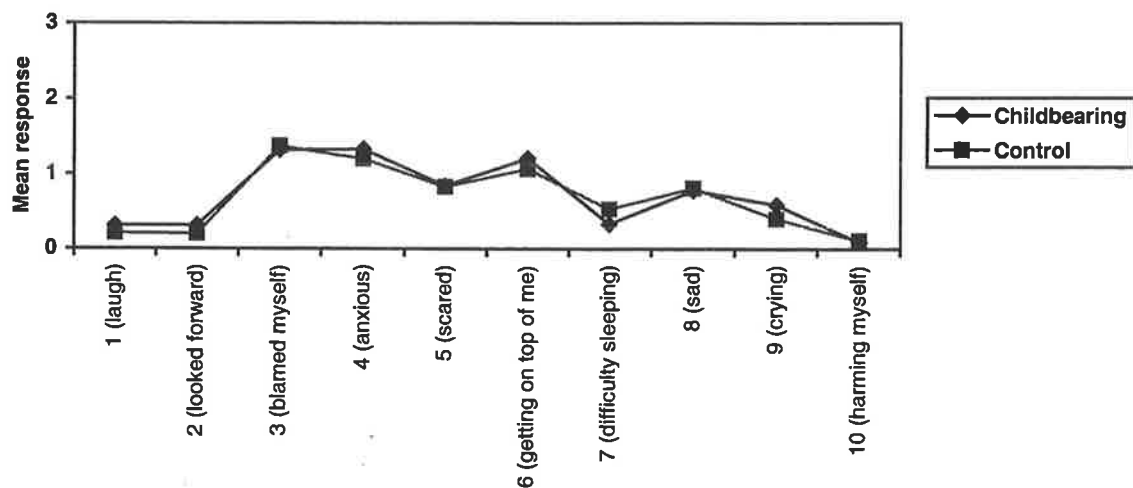
Figure 7.4. EPDS item profile for childbearing women (n=271) and controls (n=126)

Figure 7.5 shows item means for childbearing women with low (EPDS <10), moderate (EPDS ≥10 <13), and high scores (EPDS ≥13). Although it is inappropriate to conduct profile analyses on these results (given the circular nature of such analyses) the response profiles have some apparent differences. Firstly, it is clear that the potential of the low scorers to diverge is limited by floor effects on some items. Moderate scorers diverge most markedly from low scorers on the items contributing to Factor 2, EPDSanx (items 3, 4, 5 and 6), and increase less than .5 on the EPDSdepr items. When considering the high scorers results, a flattening effect can be seen, as the EPDSanx

items increase only slightly, whilst the EPDSdepr items increase by approximately the same margin as that found between low and moderate scorers.
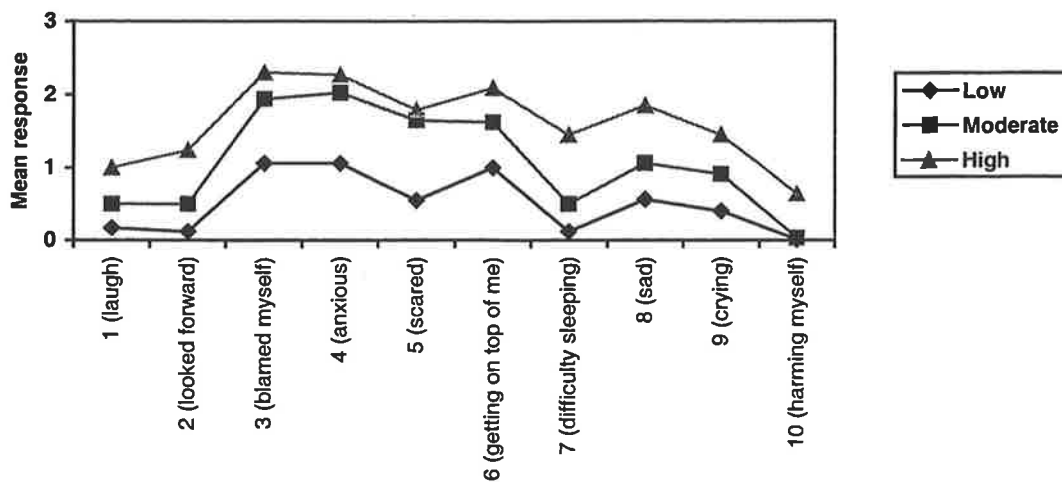
Figure 7.5. EPDS item profile for childbearing women with low (n=204), moderate (n=34) and high (n=33) scores at PN1

Perhaps the largest divergence within the response profiles is evident when considering item 10. Although not evident in the figures, ninety-nine percent of low scoring (EPDS <10) women responded that they had not thought of self-harm at all (with 1% (n=2) 'hardly ever' considering it). For moderate scorers, only one respondent had thought of self-harm, again fitting the 'hardly ever' category, whereas, 48.5% of women scoring ≥13 on the EPDS had considered self-harm in the previous week (one third 'hardly ever'; and 15.2% 'sometimes'). With self-harm or suicidal ideation a major concern for depressed individuals, this finding gives a good indication of the level of pathology these women are experiencing.

It can also be seen in the above figures, that items 3, 4, 5 and 6 were rated consistently higher than the other items regardless of group membership. Accordingly, descriptive statistics were calculated for the two factors, EPDSdepr (items 1, 2, 7, 8, 9

&10) and EPDSanx (items 3, 4 & 5)[9], with results shown in Table 7.4. It can be seen

that the comparative contribution of the anxiety items to the total EPDS score, at each

assessment period, is much greater than that of the depression items, as EPDSanx,

containing only three items, consistently had a higher mean than the six item

EPDSdepr. However, when comparing the childbearing means for the low, moderate

and high scorers a different pattern emerges (as seen in Figure 7.6), with depression

contributing more to the high scorers total EPDS score than anxiety.

Table 7.4. Means (SD) for factors EPDSdepr and EPDSanx

Factor	Assessment	Mean (SD)
EPDSdepr	*Changing Emotions* AN *(n=123)*	2.54 (2.07)
	Adapting to Motherhood (n=150)	2.15 (2.35)
	Changing Emotions PN1 (n=121)	2.73 (2.77)
	Changing Emotions PN2 (n=99)	2.13 (2.36)
EPDSanx	*Changing Emotions* AN (n=123)	3.67 (1.99)
	Adapting to Motherhood (n=150)	3.32 (1.97)
	Changing Emotions PN1 (n=121)	3.70 (2.40)
	Changing Emotions PN2 (n=99)	3.07 (2.01)
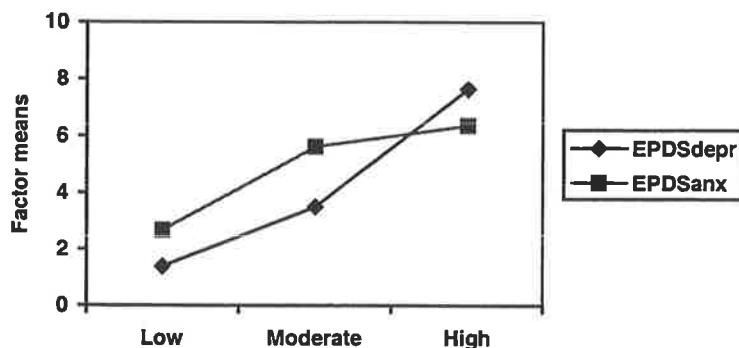
Figure 7.6. Factor mean responses for low, moderate and high EPDS scorers at PN1

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[9] Please note, item 6 was not included in these analyses due to its ambiguous placement within both factors.

7.3 DISCUSSION OF FINDINGS

The Principal Components analysis reported here produced almost identical results to the confirmatory analysis conducted by Pop et al. (1992), including some difficulty in determining the correct factor placement for item 6. These results are different from those found by Guedeney and Fermanian (1998), who suggested the difference between their results and those of Pop et al., may be due to different sample size ($N = 87$ for their study and $N = 293$ for the Pop et al., study), or to the different type of analyses conducted. However, it seems unlikely that variation in the type of analysis produced the different results, as another exploratory analysis of the *Adapting to Motherhood* data using Principal Components analysis with Varimax rotation (as used by Guedeney and Fermanian, rather than Oblimin) failed to produce different factors. It is possible that different participant selection methods could have played a role. Half of Guedeney and Fermanian's participants were recruited due to suspected postpartum depression. This resulted in a much higher mean EPDS score of 9.8, compared to the means from the unselected samples used by Pop et al., and the combined studies (at six to twelve weeks postpartum) reported in this dissertation (5.9 and 7.1 respectively).

It is also apparent that Cronbach's alpha in the Guedeney and Fermanian study was considerably lower than that reported by many studies on the EPDS. They reported an alpha of .76 for the total EPDS with $\alpha = .66$ for the 'depressive symptoms' subscale, whereas the 'depressive mood' subscale had the lower alpha of .53. This can be compared with the alphas from the combined results of the *Adapting to Motherhood* and *Changing Emotions* studies of .86 for the total scale, .82 for EPDSdepr and .80 for

EPDSanx[10]. This discrepant result may also be due to the selection method employed in this study, and it fails to produce sound support for their two factor model.

Factor analysis is a useful tool for identifying the number of factors within self-report instruments. However, it must be recalled that the labelling of any factors identified by factor analysis is determined by the theoretical position of the researcher. The position taken in this dissertation, developed in Section 3.4.2, that anxiety and depression are distinctly different diagnoses. However, the question could be raised as to whether it is appropriate to identify Factor 2, containing EPDS items 3, 4 and 5 as 'anxiety'. As previously mentioned (in Section 4.2.1), the EPDS was designed predominantly using items from three instruments (ID&A, HADS and DSSI/sAD). It can be seen in Table 4.1, that EPDS items 4 and 5 were clearly derived from questions used to identify anxiety in the aforementioned scales. It is also apparent (see Table 4.3) that they fit DSM-4-TR criteria for anxiety disorders. Item 3, whilst not having a parallel question within the source instruments, can be seen to add to anxiety or depression, as blame and guilt can contribute to feelings of worry, anxiety and depression. However, its placement with items 4 and 5 suggests that, in this case, the primary association is with the other anxiety items.

EPDSdepr was found to correlate marginally higher with other depression scales than the total EPDS, and substantially higher than EPDSanx, accounting for between 59% and 72% of the variance, compared with 14% to 29% for EPDSanx. Problematically, and contrary to expectations, EPDSanx did not correlate higher than EPDSdepr for any of the scales, correlating lowest with the pure depression and anxiety scales and accounting for between 28% to 38% of the variance in the other state scales. A similar finding was reported by Brouwers et al. (2001) who suggested that as anxiety

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[10] The reported alpha values for EPDSdepr and EPDSanx do not include EPDS item 6.

is said to be made up of both cognitive and physiological components, the lack of items assessing hyperarousal in the anxiety factor of the EPDS may have produced this result. They further suggest that the questions included in EPDSanx contain a "subjective, negative judgement" (p.662) where participants answer whether their self-blame was 'unnecessary', and whether their anxiety or panic was for 'no good reason'. From this perspective, Brouwers et al. suggest that EPDSanx could be assessing an alternate construct to anxiety, that of low self-esteem.

Hannah et al. (1992) reported the means of individual items on the EPDS with similar results to those reported here. At six weeks postpartum, they found that mothers who scored ≥13 on the EPDS scored higher on items 3, 4, 5 and 6 than the other items, however, comparisons with low scorers cannot be made as these were not reported. The profile of item means for high scorers shown in Figure 7.5 appears to closely parallel the specific pattern of items shown by Hannah et al. This correspondence, combined with similar means and proportions of potentially depressed women, demonstrates that the current results are not anomalous, and are likely to reflect the response patterns of postpartum women who have contributed to other studies.

As the EPDS is an instrument devised to detect depression, it was hypothesised that the profile of responses might be different for high scorers (EPDS ≥13) and moderate scorers (EPDS ≥10 and <13). This was found to be the case, as depression made a larger contribution to the total EPDS score for high scorers than it did for moderate or low scorers. Accordingly, as childbearing women scoring ≥13 on the EPDS were found to respond proportionately higher to the depression items, and that 48.5% had considered self-harm in the last week (particularly as self-harm is a marker of depression), it would seem appropriate to consider this as a cutoff for potential depression. Women scoring in the moderate range reported symptom profiles that better indicate levels of anxiety or general distress.

Extrapolating from the results of the factor analysis and the profile analysis it can be seen that although incorporating only three items, the factor EPDSanx accounts for a large component of the total score of the EPDS regardless of group membership. It is clear from this that anxiety makes a predominant contribution to the total score of the EPDS. Although it is believed that the EPDS is a valuable resource to help identify cases of emotional distress in postpartum women, interpreting the results of the EPDS as 'depression' clouds the true clinical picture and may lead to inappropriate treatment.

Chapter 8: General Discussion

This dissertation explored the concept of 'postpartum depression' through theoretical, methodological, clinical and experiential frameworks focusing primarily on factors that have influenced the development of the construct. Additionally, this research explored the way in which the conception of anxiety and depression in the 1960s and 1970s has shaped and informed lay and professional belief about postpartum psychopathology today.

For more than two thousand years postpartum women have been viewed as susceptible to mental illness. This historical understanding has influenced the development of the modern concept of postpartum depression. However, belief about the form, function and outcome of this psychopathology has varied considerably over the centuries. Moreover, there has been limited previous research that has challenged the two implicit assumptions of postpartum depression: firstly, that postpartum women are more susceptible to psychological disorders and, secondly, that the psychopathology experienced by women at this time *is* depression.

There is little doubt that *some* postpartum women experience psychopathology. However, as detailed in *Chapter 2*, clarity with regard to definition, symptoms, diagnosis, prevalence, onset, course and treatment has been lacking. Additionally, it is clear that the failure of many studies to adequately differentiate between puerperal psychosis, postpartum depression and the blues has led to much of this confusion. In recent times, Marce provided the most detailed account of postpartum mental illness (cited by Kendell et al., 1981). Consideration of the symptoms Marce discussed shows that the disorder he was treating has its modern correspondence in puerperal psychosis

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rather than the milder postpartum depression. However, this distinction has not always been explicitly stated leading to diagnostic confusion. The problem has been compounded further by the ill-defined temporal specificity of the disorder and adherence to an exclusive depression framework.

This research also considered the development of diagnostic classification systems and the impact these have had on the diagnosis of depression and anxiety within the general population. This dissertation has shown that, although the diagnostic criteria for depression and anxiety have changed substantially in the last twenty-five years (particularly in regard to hierarchical structure), many of the pre-existing beliefs about the pre-eminence of depression remain entrenched. This is especially pertinent for the current research as postpartum depression was originally named 'atypical' depression, was said to have a different symptom profile to 'typical' depression and has anxiety as its most common symptom. Given the nosological changes, it would seem appropriate that, at the very least equal consideration should be given to anxiety as to depression in postpartum women. Moreover, in recent times, the distinction between postpartum depression and major depression has become somewhat blurred. This is problematic as many researchers and clinicians claim that postpartum depression has distinct characteristics that differentiate it from depression in the general population. The blurring has resulted in women identified with postpartum depression receiving the same treatment protocols as women diagnosed with other depressive disorders, with little consideration to the atypical descriptor for the postpartum condition and, with very limited research into the efficacy of treatment protocols in postpartum women.

Inter alia, this research also considered the construction and use of the EPDS. Currently, the EPDS is widely used and broadly accepted by the lay and professional population, with the use of the scale appearing to exemplify and maintain the diagnostic confusion. It appears that little consideration has been given to the structure of this

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scale, the use of anxiety items to identify depression and the fact that diagnostic changes have not resulted in corresponding changes to self-report instruments. As the EPDS has been validated for use with pregnant and non-childbearing women, it is also difficult to discern how the scale identifies an atypical form of depression.

8.1 SUMMARY OF FINDINGS

The *Adapting to Motherhood* research was an exploratory study of the key assumptions of postpartum depression. This study found that the prevalence of state depression, anxiety and stress was the same for postpartum women and matched controls. It further identified a link between poor sleep quality and quantity, and higher levels of psychopathology. This research also showed high convergent and low divergent validity for the self-report scales used and was therefore unable to discriminate between women experiencing depression, anxiety or stress.

As the *Adapting to Motherhood* research was unable to determine whether any of the postpartum women with high levels of psychopathology developed the high levels during the postpartum period or whether they pre-existed parturition, a longitudinal study was designed. The *Changing Emotions* study tracked childbearing women and controls over an approximately eight-month period with an antenatal and two postnatal assessments. This research showed that levels of psychopathology were not higher in women six weeks to six months after delivering a child. However, for childbearing women there was a consistent, but insignificant, peak in levels of non-somatic depression, anxiety and stress in the early postpartum months when compared with the antenatal and second postnatal assessments. This effect was not enduring in the postpartum sample and was not evident in control group responses.

Two instruments were employed in the longitudinal study specifically to differentiate depression and anxiety. They were the Depression Anxiety Stress Scale

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(DASS) and the Mood and Anxiety Symptom Questionnaire (MASQ). Two other instruments were used in this study to identify anxiety (STAI) and stress (PSS) within the sample. Although these scales had all been standardised within the normal population, difficulties with using a childbearing sample were evident in the high number of somatic items used in the anxiety-specific scales of the MASQ and DASS. These difficulties were not unexpected, however, as the use of somatic items in depression scales for postpartum women have previously been challenged. Despite this, it is apparent that correlations between all of the scales were generally in the high range ($r > .6$) regardless of assessment time or childbearing status. Therefore, the findings from the *Adapting to Motherhood* study of good convergent and poor divergent validity was supported with a different sample, providing further confirmation that the scales could not adequately differentiate between depression, anxiety and stress.

The highest childbearing instrument correlations with the EPDS were with general depressive distress (MASQgdd), the state scale of the STAI, and the two stress scales (PSS and DASSs). The lowest correlations for the EPDS (still in the moderate to high range, $r > .45$) were with the somatic anxiety scales (MASQaa and DASSa). These findings suggest that depression, non-somatic anxiety and stress all contribute to the disorder known as 'postpartum depression', and that somatic anxiety plays a less important role.

The longitudinal design used in the *Changing* Emotions study also provided the opportunity to track the changing levels of symptomatology over time. Close examination of the EPDS showed that between 30% to 60% of cases at the two postnatal assessments were pre-existing from an earlier assessment. It is also noteworthy that only 3.5% and 2.6% of childbearing women and controls, respectively, scored ≥ 13 on the EPDS at all assessments.

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As it was apparent, from both the *Adapting to Motherhood* and *Changing Emotions* studies that the EPDS was measuring anxiety and stress as well as general depressive distress, another series of analyses further challenged the ability of the EPDS to identify depression specifically. EPDS factor analyses at all assessments supported the limited previous analyses in this area. The EPDS was found to contain a two-factor structure with a six-item depression cluster (EPDSdepr) and a three-item anxiety cluster (EPDSanx). As item 6 was found to load similarly on both factors it could not appropriately be attributed to either factor and was therefore not included in subsequent analysis of the EPDS subscales. On further analysis of this data it was apparent that EPDSanx contributed more to the total EPDS score than EPDSdepr, despite the fact that it contained half the number of items.

Additional examination of the EPDS compared the item response profiles for childbearing women and controls to determine whether the pattern of responses was the same for these two groups. It is apparent in Figure 7.4 that childbearing women and controls responded in a very similar fashion to the items of the EPDS, diverging slightly on two items about unhappiness, with childbearing women more likely to cry, and controls reporting more difficulty with sleep when they were unhappy. This, combined with similar mean scores at each assessment, again suggests that the EPDS does not measure a psychopathology that is specific to postpartum women.

8.2 METHODOLOGICAL ISSUES

The methodology used in this research has a number of strengths. Most particularly, it is one of relatively few longitudinal studies on psychopathology in postpartum women that has also tested a matched control group of non-postpartum women (see Table 6.1 for other published studies). Perhaps the main limitation of this research is the lack of clinical diagnosis for women identified by self-report as possible

cases of postpartum depression, but whilst this is troublesome it reflects a similar deficit in many other studies in this area (e.g.,Terry et al., 1996). The use of clinical diagnosis in some research, however, does not obviate this problem as, in many cases, diagnostic interviews have only been conducted on a subsample of participants (e.g., Aderibigbe et al., 1993; Cox et al., 1993). Moreover, as the criterion for clinical diagnosis has changed with the subsequent editions of DSM it would seem apparent that cross-edition diagnosis using different interview schedules is potentially problematic.

8.2.1 Sample

Previous research on postpartum women has reported sampling bias. In an Australian study, Brown et al. (1997) identified the fact that women who agreed to participate in a follow-up study were older, more likely to be multiparous, married, on higher incomes and less likely to come from non-English speaking backgrounds. Another longitudinal study on childbearing women reported similar findings—that younger, single, less educated and unemployed women had been more likely to drop out of their research (Green & Kafetsios, 1997).

Childbearing women in the *Adapting to Motherhood* and *Changing Emotions* studies were predominantly either married or in de facto relationships (96.7% and 92.6% respectively). This is a higher proportion than would be expected of a representative South Australian or Women's and Children's Hospital sample, given the fact that 13% of childbearing women in this state (Australian Bureau of Statistics, 2000) and 15.6% of women giving birth at the Women's and Children's Hospital in 1999 were single (Women's and Babies' Division, 1999). However, many previous studies of childbearing women have included few, if any, unmarried women (e.g., Cutrona, 1984; Elliott et al., 2000; Hopkins et al., 1989). Therefore, the higher proportion of married or de facto women in the current studies serve to make the results more readily comparable

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with much of the previous research on postpartum depression. On a similar note, the current studies, by virtue of their methodologies (recruiting women from New Parent's Groups and antenatal classes) were made up entirely of primiparous women. This can, again, be seen to reflect the samples included in many other studies in which multiparous women were purposely excluded from a sample to avoid additional confounding variables (e.g., Cutrona, 1984; Hopkins et al., 1989).

It is a common phenomenon in psychological studies that participants tend to be more highly educated and to come from higher social classes (Rosenthal & Rosnow, 1975). Such a sampling bias has also been reported in studies on depression in postpartum women. For example, Cutrona (1984) reported the participants in her study were middle-class and well educated, Hopkins et al.'s (1989) participants were identified as middle-class and white, whilst an Australian study also reported a middle-class bias (Terry et al., 1996). Although social class, *per se*, was not identified in the current research, it is apparent that participants tended to have a higher socio-economic status and level of education than the general female South Australian population. Over seventy percent of childbearing women in the current research reported a post-secondary education compared to 44.3% of South Australian women, whilst income was also above the South Australian average (Australian Bureau of Statistics, 2001).

Ethical requirements, such as informed consent, ensure that participants are made aware of many research details before they agree to become involved in the research. Although such requirements are important, there are limitations inherent in alerting participants to these details. Given the nature of depression and anxiety, it is possible that women prone to, or experiencing, either of these conditions may decide not to become involved in research. This has led some researchers to suggest that existing reports are likely to underestimate the true number of women experiencing postpartum mental health problems. It is, however, difficult to determine the veracity of these

suggestions. Elliott et al. (2000) compared the vulnerability of women who declined to participate in an ongoing assessment after completing an antenatal questionnaire. They reported that women who were more vulnerable (e.g., had lower socio-economic status and poorer social support) were less likely to continue involvement in their research.

Along similar lines, comparisons were made in the *Changing Emotions* study between women completing the survey across the three assessment periods and women responding to either one or two assessments (findings reported in Table 6.4). This showed that childbearing women returning all three surveys were less likely to report somatic anxiety (MASQaa) antenatally, but were similar to non-responders on all other scales. Considering the background and obstetric variables, similarities can be drawn with Elliott et al.'s conclusion that non-responders are potentially more socially vulnerable. Women who returned all questionnaires (in the *Changing Emotions* survey) were significantly more likely to have planned and been happy about their pregnancies, speak English as their first language, attend New Parent's Groups, have shorter labours and to have anticipated antenatally that their partners would be more responsible for, and participate more in, their infant's care. It should be noted that whilst the aforementioned findings include women who originally agreed to participate in the study and subsequently dropped out, there is no evidence to link these findings with women who do not agree to participate in research. Nevertheless, it is apparent that the demographic profile of the respondents in this and other studies of depression in postpartum women have implications for the generalisability of the findings.

The existence of a control group of non-childbearing women in the current research is identified here as a strength. However, there were approximately twice as many childbearing participants as controls. This is, at least, partially due to the recruitment strategy, which relied on the childbearing women to ask a friend to participate and for the non-childbearing woman to then return the questionnaires.

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Although the unequal numbers of childbearing women and controls resulting from this recruitment method could be seen as a problem, it was considered more important to include women well matched on background characteristics and recruited by the same technique than to recruit more controls by employing a different method.

8.2.2 Instruments

A number of difficulties have already been identified in the preceding chapters with regard to the instruments used in this research. Two of the scales (DASSa and MASQaa) designed to assess pure anxiety predominantly measure levels of somatic anxiety and, therefore, do not give sufficient weight to items assessing the cognitive contribution to anxiety. In fact, the MASQaa does not include any items assessing cognitive anxiety. As previously mentioned, somatic measures of depression have been avoided in studies of postpartum women in order not to confuse the physiological changes of pregnancy, childbirth and breastfeeding with any apparent psychopathology. However, when considering the results of the current longitudinal and comparative study, it is apparent that although somatic symptoms were higher for childbearing women during pregnancy, they had declined sufficiently by the first postnatal assessment to be comparable with the scores of non-childbearing women.

Researchers have also previously identified problems with the content and veracity of the EPDS. It should be acknowledged here, that the current research is not claiming that postpartum women do not experience depression at all. Rather, it suggests that the EPDS does not identify depression *per se*, but that it identifies women experiencing symptoms of depression *and* anxiety. This suggestion was supported by the findings. EPDS anxiety items were found to contribute more than the depression items to the total EPDS score, and thereby to a research understanding of postpartum depression. While this was undeniably the case, it is apparent that responses to the

individual EPDS items may be affected by the different scaling options available. For example, extreme responses in the negative include the options of 'not at all', 'hardly at all', 'no, never', 'no, not at all', 'never' and 'no, I have been coping as well as ever'; whereas extreme positive response options are 'as much as I always could', 'yes, most of the time', 'yes, very often', 'yes, quite a lot', 'yes, quite often' and 'yes, most of the time I haven't been able to cope at all'. Although it is quite likely that the differing response options were a purposeful attempt to create variation and maintain interest in the questionnaire, it is problematic to assume that, for example, 'very often' has the same meaning to respondents as 'quite often'. From this perspective, it is noted that it is possible that scaling difficulties with the individual items of the EPDS may have resulted in greater weight given to the identified anxiety items than to the depression items.

8.2.3 Other Factors

8.2.3.1 Pre-existing mental illness

A history of mental illness has been identified as one of the most consistent predictors of postpartum depression (Beck, 1996a; O'Hara & Swain, 1996). In the current studies, psychological history was assessed by identifying participants who had previously been diagnosed with depression, anxiety or a serious emotional illness. Due to the low number of women experiencing the individual disorders, responses were combined to provide a single category of women previously diagnosed with a psychopathology. Women who fit this criteria were then compared with women without a previous diagnosis. Although only trait anxiety (STAIt) was higher for postpartum women with a previous diagnosis in the *Adapting to Motherhood* study, all scales (except MASQaa) were consistently and significantly higher for childbearing women

with a previous diagnosis in the *Changing Emotions* study. The lack of uniformity between these studies may result from the low (9.3%) proportion of childbearing women with a previous diagnosis in the *Adapting to Motherhood* study, particularly as when the data from the two studies were combined all scales, except the CES-D[11], were significantly higher for women with a previous diagnosis. It is noteworthy, however, that not all childbearing women with a previous diagnosis experienced a potential postpartum episode, as most women (61.3%) with a psychological history scored below the ≥10 EPDS cutoff.

8.2.3.2 Background, obstetric, gynaecological and health factors

A number of background, obstetric, gynaecological and health factors have previously been considered as risk factors for depression in postpartum women. This study assessed a number of these. It is interesting to note that significant findings from these variables were not usually consistent across the two studies. For example, in both studies, childbearing women who had previously experienced a miscarriage were more likely to have received a prior psychological diagnosis, but were significantly older and on a higher income only in the *Changing Emotions* study. In another example, induced women from the first study had been pregnant longer, had more personal long-term health problems, and were less likely to have a baby experiencing health problems, whilst showing no differences for the self-report instruments. However, induced women from the *Changing Emotions* study were more likely to have spent time in hospital before the birth, reported less stress (PSS) and general anxiety (MASQgda), but more STAIs anxiety antenatally, than at the first postnatal assessment.

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[11] CES-D was not included in the *Changing Emotions* survey and therefore the results remained insignificant.

The above examples provide evidence of the inconsistency that can be found in the literature. Despite the fact that the same or very similar questions were asked in both the studies reported in this dissertation, few variables showed constant results. The only background, obstetric, gynaecologic and health factors that were consistent across the studies for childbearing women were as follows. Women over the age of 29 had higher incomes, whilst those with a higher income were more likely to be considering a return to work. Women who had experienced a miscarriage with a prior pregnancy or who had long-term health problems were more likely to report a previous psychological diagnosis. Women who had planned and were happy about their pregnancy were more likely to have been in their relationship with their partner for longer. Not surprisingly, women who delivered their baby by Caesarean section had spent longer in hospital after the birth. Finally, babies with lower birthweights were delivered after shorter pregnancies. None of the background, obstetric, gynaecologic or health variables were implicated in levels of depression, anxiety or stress across both studies.

8.2.3.3 Antenatal and postnatal education

Antenatal and postnatal education classes were used to recruit the childbearing sample for the current research. The decision to recruit women from these classes was made in an attempt to include a diverse cross-section of women, and with the understanding that these classes were widely advertised and attended. However, as with many recruitment strategies, there was a bias in the types of women attending the groups, and a further bias in the women from these groups who chose to participate in the research. The most interesting effect of this bias was evident in comparisons between the women in the *Changing Emotions* study who attend New Parent's Groups (NPGs) and those who did not. Women who attended NPGs scored significantly lower on depression (EPDS, DASSd and MASQad), somatic anxiety (MASQaa) and mixed

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depression and anxiety (MASQmx) at all assessment periods. This is not to say that attendance at NPGs increased the mental health of these women, as the lower levels were apparent at the antenatal assessment (i.e., before attendance at the NPGs). However, the results do suggest that women who make the decision to attend NPGs are less inclined to have high levels of psychopathology both antenatally and postnatally, whilst the specific aetiology of this effect is unknown.

Childbearing women and researchers have often reported a need for more antenatal and postnatal education addressing areas such as postpartum depression, relationship change (particularly with partners) and potential problem areas with the baby such as sleeping, feeding and crying (e.g., Rowe et al., 1996). This has been reflected in a recent endeavour to reduce the levels of postpartum psychopathology through an increase in the level of antenatal education (National Goals Targets and Strategies for Improving Mental Health, 1994). However, many do not believe that this response adequately addresses the problem (Brown, Small, & Lumley, 1997; Lumley & Brown, 1993).

As highlighted in the current research, increasing the levels of antenatal education has the potential to impact only on women who attend classes. When one considers that those often considered most at risk (i.e., younger, unmarried women, from a lower SES and with a lower level of education) are less likely to attend antenatal classes (Lumley & Brown, 1993), then simply increasing the levels of antenatal education is unlikely to have an effect. Moreover, the findings from a recent Australian government report suggests that the emphasis on antenatal care can often obscure consideration of the long-term impact and benefits of appropriate and timely postnatal care (Senate Community Affairs References Committee, 1999). Criticisms have also been raised about the fragmentation of services due to the structure of funding arrangements which

introduce discrete services for antenatal, birth and postnatal care, rather than continuity through the entire period (Senate Community Affairs References Committee, 1999).

8.3 IMPLICATIONS

Although factor analysis on the EPDS consistently showed a two-factor solution, the slightly lower reliability of the EPDSanx and EPDSdepr, compared with the reliability of the total EPDS, does not encourage the separate use of the two subscales. Further, the EPDSdepr subscale correlated higher than the EPDSanx scale, with all other depression, anxiety and stress state scales. On the one hand, poorer correlations between EPDSanx and the other anxiety scales could be attributed to the somatic scales (MASQaa and DASSa) used in the studies, but these lower correlations were also found in the non-somatic anxiety scales (STAIs and MASQgda). Alternately, the low number of items in both EPDS subscales may have limited the purview of the scales and thereby their correlational ability (particularly the 3-item EPDSanx).

It would seem that the EPDS is best used in its current form, but with this perspective a few comments are warranted. The EPDS uniformly failed to differentiate childbearing women and controls. It, therefore, is clearly not identifying a form of atypical depression that is specific to postpartum women. EPDS scores did not alter significantly from the antenatal to postnatal assessments, further suggesting that women are not more at risk in the postpartum period. Moreover, while showing convergent validity with other depression scales, the EPDS was unable to show adequate divergent validity from the stress and non-somatic anxiety scales. Although the authors and others have stated that the scale has high face validity and is quick and easy to complete (see Section 4.2.1), it is clear that it is measuring a level of distress that encompasses both depression and anxiety and a form of distress that is not specific to postpartum women.

Given that, currently, the diagnosis of psychopathology in postpartum women will invariably be for depressive illness, it is important to consider the remedial consequences of such diagnoses. A diagnosis of depression leads to treatment for depression, but it is clear that this is not always appropriate for postpartum women. The current research has shown that childbearing women with high levels of 'postpartum depression' are often showing a pre-eminence of anxiety and stress. There is, therefore, a need to consider all aspects of their condition, and not to ignore the role of anxiety or the stress of parenthood for a new mother.

8.4 FURTHER RESEARCH

8.4.1 Anxiety and Depression

Although reviewing some findings about anxiety and depression in the general population, this dissertation focused on psychopathology in postpartum women. Given the finding that prevalence of depression and anxiety in postpartum women was similar to prevalence in non-childbearing women, it would seem that many of the conclusions from this dissertation could generalise to research within the general female population. A couple of research topics are therefore suggested. Future research on anxiety and depression could look at the agreement between self-report instruments and the current diagnostic manual (DSM-IV-TR), with particular focus on the changing diagnostic criteria. Alternately, researchers could explore the poor divergent validity of scales designed to measure anxiety and depression, with this problem potentially stemming from the lack of symptom differentiation for these disorders.

8.4.2 Postpartum Depression

It has been suggested that there are three distinct groups of women with postpartum depression, those whose illness antedates their pregnancy, those whose

illness begins during pregnancy, and those whose illness begins postpartum (Melhuish, Gambles, & Kumar, 1988). Whilst, it would appear that the details presented in Figure 6.6 support Melhuish et al.'s conclusion, the low sample sizes for women presenting as previously depressed or as potential cases either at the antenatal, first or second postnatal assessment, limits any further analysis of the subgroups. Research focusing on this aspect would be a valuable contribution to the postpartum literature.

Moreover, the research discussed in this dissertation recommends that researchers shift their focus to include anxiety and stress in childbearing women. It is apparent that exclusive depression research limits our understanding of the experiences of childbearing women, particularly as the high instrument correlations show that many women are scoring high on a variety of scales. More problematically, it limits our ability to appropriately diagnose and treat women experiencing difficulties at this time.

8.4.3 Social Support

Relationship satisfaction has previously been identified as a factor in depression in postpartum women (see Section 2.6.3.1). In the *Changing Emotions* study, although partner satisfaction declined for both childbearing women and controls, the decline from the antenatal to second postnatal assessments for childbearing women was much steeper at 12%, than the decline for controls (4%). Moreover, whilst childbearing correlations between satisfaction and the depression, anxiety and stress scales were reasonably low (accounting for less than 18% of the variance at the antenatal and first postnatal assessments), correlations at the second postnatal assessment accounted for 30% to 50% of the variance. It would appear that a change had occurred by six months postpartum that increased the correlation between partner satisfaction and psychopathology. Although the current research is unable to identify the reason for this, it is suggested

that it may be profitable to look at longitudinal changes to partner satisfaction levels and the role this plays in psychopathology.

8.5 CONCLUSION

Today, 'normal' women or good mothers are expected to experience joy and fulfilment from childbirth and raising children (S. Brown et al., 1997; Nicolson, 1998; Romito et al., 1999; Taylor, 1995; Thurer, 1994). Television programs and commercials, magazine articles and advertisements in women's magazines all emphasise the smiling, happy, contented mother and baby (S. Brown et al., 1997). However, usually missing from these images is evidence of sleepless nights, untidy homes, health concerns, feeding problems and crying babies.

Combining the historical view of women as content in the domestic sphere, the increasing medicalisation of childbirth and the picture of a modern supermum created and perpetuated by the media, it is little wonder that women readily accept the label 'postpartum depression'. With this acceptance, unhappiness, worry and stress during the postpartum period is considered to be psychopathological rather than a normal reaction to extreme change. Moreover, the label of postpartum depression can be seen as serving to transfer a woman's unhappiness and discontent with traditional social and domestic roles to the realm of a mental health disorder (Mauthner, 1993; Nicolson, 1986; Taylor, 1995).

Postpartum depression continues to be widely accepted in the lay and professional community despite a number of studies identifying equal prevalence of depression in childbearing and non-childbearing women. In part, this may be due to women attempting to identify and label a discrepancy between their experience of motherhood and the popular conception of motherhood, including notions of how mothers *should* act and feel in relation to their children. By this rationale, the label of postpartum

depression can be seen to serve a purpose as it alleviates a woman's responsibility for negative feelings at a time that society dictates she should be joyous and content. Cox (1994a) also claims that the term postpartum depression is helpful to women from the perspective that women believe that depression is different postnatally than at other times. However true Cox's assertions may be, it is also likely that women have learnt of this disorder from health professionals, the media, or their social networks and unproblematically accepted the theories put forward distinguishing postpartum from nonpostpartum depression.

It has been suggested from the social constructionist model of postpartum depression, that not only have women played a role in the medicalisation of postpartum depression as a disease, but that the labelling of this disorder serves a valuable purpose for women (Taylor, 1995). It enables women to reconstruct the role of motherhood in contemporary Western society, and provides a label for women when they are unable to fit the traditional mothering caregiver role. This can serve the dual and opposing functions of reinforcing the traditional subordination of women, and providing a tool for women to collectively resist the status quo (Taylor, 1995). It also serves a purpose for the psychological diagnostic systems that, for both medical and political reasons, are notoriously resistant to change.

While this dissertation has focused on the methodological problems inherent in the identification of depression and anxiety in postpartum women, it is pertinent to note that most women have a predominantly positive transition to motherhood. It is not the intent of this research to assert that no postpartum woman is depressed; rather, the current research found that a number of postpartum women fit self-report criteria for significant debilitating psychological condition. This thesis has shown, however, that if the theoretical understanding of a disorder is inadequate, then the conceptualisation and treatment will invariably be flawed.

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Appendices

Appendix A: Edinburgh Postnatal Depression Scale (EPDS)

Appendix B: Postpartum information sheet (Adapting to Motherhood)

Appendix C: Control information sheet (Adapting to Motherhood)

Appendix D: Postpartum background questionnaire (Adapting to Motherhood)

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Appendix F: Depression, Anxiety and Stress Scale (DASS)

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Appendix I: South Australian birth characteristics

Appendix J: Postpartum information sheet (Changing Emotions)

Appendix K: Control information sheet (Changing Emotions)

Appendix L: Antenatal background questionnaire (Changing Emotions)

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Appendix M: Mood and Anxiety Symptom Questionnaire (MASQ)

Appendix O: Means (SDs) for women attending New Parent's Groups (Changing Emotions)

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Appendix A. Edinburgh Postnatal Depression Scale (EPDS)

As you have recently had a baby, we would like to know how you are feeling. Please MARK A CROSS next to the answer which comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

Here is an example, already completed:

I have felt happy:

☐ Yes, all the time
☒ Yes, most of the time
☐ No, not very often
☐ No, not at all

This would mean: "I have felt happy most of the time" during the past week. Please complete the other questions in the same way.

In the past 7 days:

1. I have been able to laugh and see the funny side of things

☐ As much as I always could
☐ Not quite so much now
☐ Definitely not so much now
☐ Not at all

2. I have looked forward with enjoyment to things

☐ As much as I ever did
☐ Rather less than I used to
☐ Definitely less than I used to
☐ Hardly 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 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

© Cox, J. L., Holden, J.M. & Sagovsky, R. (1987) Detection of Postnatal Depression *British Journal of Psychiatry, 150*, pp.782.786

Appendix B. Postpartum information sheet (*Adapting to Motherhood*)

THE UNIVERSITY OF ADELAIDE

Department of Psychology

Is your baby between 6 and 12 weeks old?
Do you have around 30 minutes to spare?

Can you help us?

- *We would like to understand how women adapt to motherhood*

- *All women are different and have different experiences of motherhood*

- *Some women slip easily into motherhood, whilst others do not*

- ***We want to look at the feelings and emotions of women with young babies***

- *We would like to ask you some questions about you, your pregnancy and your baby*

Please turn over for more information

Adapting to Motherhood

We are looking at a woman's emotions and feelings when a new baby is brought home, and we hope that you can help us.

*The following pages contain a number of questions about you, your pregnancy and your baby. These questions are important to help us understand **your** life as you adapt to a new baby, with a focus on the effect this has had on **you**. In providing us with this information you will be contributing to an understanding of if (and how) women experience positive and negative emotions when they have a baby.*

We are also looking at the feelings of women who are not pregnant and who have not had a baby in the last twelve months, and would again like to ask for your help (see below). These women's responses will help us to determine how new mother's responses might differ from the responses of women who have not recently had a baby.

If you are willing to help us, we ask that you:

1. Please sign the consent form today, and return the questionnaire (in the reply paid envelope provided) within the next seven days.

2. Please pass on to a female friend (of a similar age to you, who is not pregnant and has not had a baby in the last twelve months) the second package of questionnaires that we will give you.

The questionnaire is quick and easy to complete (just follow the instructions on each page) and should take around 30 minutes. Women who have completed similar questionnaires have found that they have provided them with valuable "food for thought". We hope that you may find the same benefits.

Be assured that all information provided by you and your friend is <u>strictly confidential.</u>
Also be assured that your relationship with Child and Youth Health will in no way be affected by your decision either to participate, or not to participate in this study.

Following completion of this study a summary of the general findings will be available. If you have any further questions or wish for a copy of the summary, please contact us on the phone numbers below.

Thank you for your time

Ann-Louise Hordacre
Phone: (08) 8303 3182

Dr Don Pritchard
Phone: (08) 8303 4934

Department of Psychology
Phone: (08) 8303 5693
University of Adelaide
ADAPTING TO MOTHERHOOD

PLEASE RETAIN THIS SHEET FOR YOUR INFORMATION

Appendix C. Control information sheet (*Adapting to Motherhood*)

You are reading this because your friend has agreed to help us with a study we are conducting

Can you also help us?

- *Some women slip easily into motherhood whilst others do not*

- *All women are different and have different experiences*

- *Your friend is helping us understand the feelings of mothers with young babies*

- **We also need to understand the feelings of women who do not have young babies (this is where you come in)**

- *We would like to ask you some questions about **you***

Please turn over for more information

Adapting to Motherhood

Your friend has given you this package of questionnaires to complete and return to us, we hope you will take the time to read this information sheet

The following pages contain a number of questions about you. These questions are important to help us understand your feelings. In providing us with this information you will be contributing to an understanding of if (and how) women experience positive and negative emotions. Your responses will help us to determine how new mothers' responses might differ from the responses of women who have not recently had a baby.

- *If you are **not** pregnant*

- *If you have **not** had a baby in the last twelve months*

- *And if you are willing to help us*

- **Please sign the consent form and return it along with the questionnaire (in the reply paid envelope provided) as soon as possible.**

The questionnaire is quick and easy to complete (just follow the instructions on each page) and should take around 30 minutes. Women who have completed similar questionnaires have found that they have provided them with valuable "food for thought". We hope that you may find the same benefits.

Be assured that all information provided by you and your friend is <u>strictly confidential</u>.

*Following completion of this study a summary of the general findings will be available. **If you have any questions at all** or wish for a copy of the summary, please contact us on the phone numbers below.*

Thank you for your time

Ann-Louise Hordacre **Phone: (08) 8303 3182**	**Dr Don Pritchard** **Phone: (08) 8303 4934**	**Department of Psychology** **Phone: (08) 8303 5693** **University of Adelaide** ADAPTING TO MOTHERHOOD

PLEASE RETAIN THIS SHEET FOR YOUR INFORMATION

Appendix D. Postpartum background questionnaire (*Adapting to Motherhood*)

Please follow the individual instructions printed at the beginning of each questionnaire.
Questions are printed on both sides of the page.

Please answer all the questions by either **placing a cross in the box** or **answering in the space provided**. If you have any further comments or cannot fit your answer in the space provided please use the blank section of the page below Question 23.

Your age: _____ years   **Baby's Age:** _____ weeks   **Your Postcode:** _____

1. How many children do you have? ☐ 1; ☐ 2; ☐ 3; ☐ 4; if more than 4 please indicate how many _____
    How many of your children are under 5 years old? _____

2. Did you attend an **antenatal (childbirth preparation) class** for your pregnancy?

    ☐ Yes, I attended all sessions of the class   ☐ No, I have never attended an antenatal class

    ☐ Yes, I attended most sessions of the class   ☐ No, I did not attend an antenatal class for my last pregnancy,
                                                                                    but I have attended an antenatal class in the past

    ☐ Yes, I attended a couple of sessions of the class

3. How many weeks pregnant were you when your baby was born? _____ weeks

    What was your baby's weight? _____

    Was your labour induced? ☐ Yes or ☐ No

4. How long was your labour? _____ hours

    Was your delivery ☐ Vaginal; ☐ Emergency Caesarian section   or ☐ Planned Caesarian section

    If you had a Caesarian delivery could you please explain why

    _____

    _____

    Were there any delivery complications (that are not noted above)? ☐ Yes or ☐ No

    If yes, could you please describe them

    _____

    _____

    _____

5. How many days were you in hospital when you had your baby?

    Before the birth _____ days   After the birth _____ days

6. Please indicate the statement that best describes your experience of breastfeeding your infant?

    ☐ Tried breastfeeding but was not successful   ☐ Am currently breastfeeding

    ☐ Was not interested in breastfeeding   ☐ Initially breastfed but have since given up

7. Your pregnancy was:

    ☐ **Planned**, and I was **happy** about it   ☐ **Unplanned**, but I was **happy** about it

    ☐ **Planned**, but I was **uncertain** whether I was happy or   ☐ **Unplanned**, but I was **uncertain** whether I was happy
        unhappy about it   or unhappy about it

    ☐ **Planned**, but I was **unhappy** about it   ☐ **Unplanned**, and I was **unhappy** about it
                        If planned, how many months did it take you to become pregnant? _____ months

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8. How many miscarriages have you had? ☐ 0; ☐ 1; ☐ 2   If more than 2 please indicate how many _____

9. Since having your baby, how many hours of sleep do you normally get in a **24 hour period**?
   ☐ 1-2; ☐ 3-4; ☐ 5-6; ☐ 7-8; ☐ more than 8

   How many hours have you been **sleeping at night** since having your baby?
   ☐ 1-2; ☐ 3-4; ☐ 5-6; ☐ 7-8; ☐ more than 8

   On a scale of 1 to 10 how would you rate the **quality of your sleep?**   (Circle the number that represents your answer)

   Very poor |1 |2 |3 |4 |5 |6 |7 |8 |9 |10| **Very Good**

10. Do you have any **long term** health problems/disorders?   ☐ Yes or ☐ No

    If yes, were these problems worse during your pregnancy?   ☐ Yes or ☐ No

    If yes, have these problems been worse since the baby was born?   ☐ Yes or ☐ No

    If yes to any of the above, could you please briefly describe the problems

    _____
    _____
    _____

11. Did you experience any **other** problems **during your pregnancy** that required medical attention? ☐ Yes or ☐ No
    If yes, could you please briefly describe them

    _____
    _____
    _____

12. Have any of **your children** been diagnosed with any medical conditions/disorders? ☐ Yes or ☐ No
    If yes, could you please tell us which child, and describe the condition.

    _____
    _____
    _____

13. Marital status (please place a cross in the box that best represents your current status):

    ☐ Married; ☐ Defacto; ☐ Single; ☐ Separated; ☐ Widowed; ☐ Divorced

    If you are currently married or in a defacto relationship please indicate the time spent in this relationship. Years __ Months __

14. Do you identify with a particular ethnic group? ☐ Yes or ☐ No   If so, which group?_____

    Do you speak English at home as your first language? ☐ Yes or ☐ No

    If no, what language do you primarily speak? _____

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15. What is the **highest** level of education have you received?

☐ up to year 10 high school   ☐ 1 to 3 years tertiary education (e.g. TAFE)   ☐ more than 3 years uni. education

☐ from year 11 to 12 high school   ☐ 1 to 3 years university education

16. What was your employment status **prior to becoming pregnant**?

☐ home duties   ☐ employed full time   ☐ student

☐ unemployed   ☐ employed part time

    If employed what was your occupation? _____

17. Are you **currently**:

☐ employed as above   ☐ planning to look after your child/children full time

☐ on maternity leave and planning to return to work   ☐ planning to change or have changed occupation

☐ other (please describe) _____

    If changed what is your new occupation _____

    Are you planning to work ☐ full time or ☐ part time?

18. What is the current combined income for your family?

☐ less than $14 999 per year   ☐ between $35 000 and $44 999 per year

☐ between $15 000 and $24 999 per year   ☐ between $45 000 and $54 999 per year

☐ between $25 000 and $34 999 per year   ☐ over $55 000 per year

19. In the last year have you experienced the loss of someone you consider to be a close family member or friend?

    ☐ Yes or ☐ No

If yes, what relationship did you have with this person (e.g. mother) _____

20. Have **you** ever been diagnosed with

Anxiety ☐ Yes or ☐ No   Serious emotional illness ☐ Yes or ☐ No

Depression ☐ Yes or ☐ No   If yes to serious emotional illness, please describe it

_____

21. Have **you** ever been prescribed

Antidepressants ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Antianxiety drugs ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Are you currently taking any **other** medication? ☐ Yes or ☐ No

If yes to any of the above, could you please provide the name of the medication/s and the length of time they were/ have been used

_____

_____

_____

The following questions allow you to describe your own specific situation, *we are interested in what you have to say*, but answers to the questions on this page are not essential. After Question 23, space is provided for you to make any comments that you wish or to finish any answers that you needed more space for.

22. Generally speaking, how have you been feeling since your baby's birth?

_____
_____
_____
_____

23. Please describe how your life has changed (if it has) since you have had your baby

_____
_____
_____
_____

24. If you have a partner, what role do they have in the childcare and household tasks?

_____
_____
_____
_____

General comments

_____
_____
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_____

Please continue to the next questionnaire

Appendix E. Control background questionnaire (*Adapting to Motherhood*)

**Please follow the individual instructions printed at the beginning of each questionnaire.
Questions are printed <u>on both sides</u> of the page.**

Please answer all the questions by either **placing a cross in the box** or **answering in the space provided**. If you have any further comments or cannot fit your answer in the space provided please use the blank section of the page below Question 15.

Your age: _____ years   **Your Postcode:** _____

1. Marital status (please place a cross in the box that best represents your current status):

   ☐ Married;   ☐ Defacto;   ☐ Single;   ☐ Separated;   ☐ Widowed;   ☐ Divorced

   If you are currently married or in a defacto relationship please indicate the time spent in this relationship. Years __ Months __

2. Do you identify with a particular ethnic group? ☐ Yes or ☐ No   If so, which group? _____

   Do you speak English at home as your first language? ☐ Yes or ☐ No

   If no, what language do you primarily speak? _____

3. What is the **highest** level of education have you received?

   ☐ up to year 10 high school   ☐ 1 to 3 years tertiary education (e.g. TAFE) ☐ more than 3 years uni education

   ☐ from year 11 to 12 high school ☐ 1 to 3 years university education

4. What is your employment status?

   ☐ home duties   ☐ employed full time   ☐ student

   ☐ unemployed   ☐ employed part time

   If employed what was your occupation? _____

5. What is the current combined income for your family?

   ☐ less than $14 999 per year   ☐ between $35 000 and $44 999 per year

   ☐ between $15 000 and $24 999 per year   ☐ between $45 000 and $54 999 per year

   ☐ between $25 000 and $34 999 per year   ☐ over $55 000 per year

6. How many children do you have? ☐ 0; ☐ 1; ☐ 2; ☐ 3; ☐ 4; if more than 4 please indicate how many __

   How many of your children are under 5 years old? _____

7. How many miscarriages have you had? ☐ 0; ☐ 1; ☐ 2   If more than 2 please indicate how many _____

8. How many hours of sleep do you normally get in a **24 hour period**?

☐ 1-2; ☐ 3-4; ☐ 5-6; ☐ 7-8; ☐ more than 8

On a scale of 1 to 10 how would you rate the quality of your sleep? (Circle the number that represents your answer)

Very poor 1 2 3 4 5 6 7 8 9 10 **Very Good**

9. Do you have any **long term** health problems/disorders? ☐ Yes or ☐ No

If yes, could you please briefly describe the problems

_____

_____

_____

10. **If you have children**, have any of them been diagnosed with any medical conditions/disorders? ☐ Yes or ☐ No

If yes, could you please tell us which child and describe the condition.

_____

_____

_____

11. Have **you** ever been diagnosed with

Anxiety ☐ Yes or ☐ No   Serious emotional illness ☐ Yes or ☐ No

Depression ☐ Yes or ☐ No   If yes to serious emotional illness, please describe it

_____

12. Have **you** ever been prescribed

Antidepressants ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Antianxiety drugs ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Are you currently taking any other medication? ☐ Yes or ☐ No

If yes to any of the above, could you please provide the name of the medication/s and the length of time they were/ have been used

_____

_____

_____

Please continue to the next page

The following questions allow you to describe your own specific situation, *we are interested in what you have to say*, but answers to the questions on this page are not essential. After Question 15, space is provided for you to make any comments that you wish or to finish any answers that you needed more space for.

13. Generally speaking, how have you been feeling over the last three months?

_____

_____

_____

_____

14. Please describe how your life has changed (if it has) over the last three months

_____

_____

_____

_____

15. If you have a partner, and children, what role does your partner have in the childcare and household tasks?

_____

_____

_____

_____

General comments

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Please continue to the next questionnaire

DASS

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

The rating scale is as follows:

0	Did not apply to me at all
1	Applied to me to some degree, or some of the time
2	Applied to me to a considerable degree, or a good part of time
3	Applied to me very much, or most of the time

Scoring

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

DASS

0   Did not apply to me at all
1   Applied to me to some degree, or some of the time
2   Applied to me to a considerable degree, or a good part of time
3   Applied to me very much, or most of the time

Scoring

22	I found it hard to wind down	0	1	2	3	stress
23	I had difficulty swallowing	0	1	2	3	anxiety
24	I couldn't seem to get any enjoyment out of things I did	0	1	2	3	depression
25	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3	anxiety
26	I felt down-hearted and blue	0	1	2	3	depression
27	I found that I was very irritable	0	1	2	3	stress
28	I felt I was close to panic	0	1	2	3	anxiety
29	I found it hard to calm down after something upset me	0	1	2	3	stress
30	I feared that I would be "thrown" by some trivial but unfamiliar task	0	1	2	3	anxiety
31	I was unable to become enthusiastic about anything	0	1	2	3	depression
32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3	stress
33	I was in a state of nervous tension	0	1	2	3	stress
34	I felt I was pretty worthless	0	1	2	3	depression
35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3	stress
36	I felt terrified	0	1	2	3	anxiety
37	I could see nothing in the future to be hopeful about	0	1	2	3	depression
38	I felt that life was meaningless	0	1	2	3	depression
39	I found myself getting agitated	0	1	2	3	stress
40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3	anxiety
41	I experienced trembling (eg, in the hands)	0	1	2	3	anxiety
42	I found it difficult to work up the initiative to do things	0	1	2	3	depression

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation Monograph.

Appendix G. Raw categorical data (*Adapting to Motherhood*)

Table G.1. Categorical data (Adapting to Motherhood)

Categories	Postpartum n (%)	Control n (%)	Categories	Postpartum n (%)	Control n (%)
Marital status			**Diagnosed with Anxiety**		
Married	123 (82.0%)	35 (44.9%)	Yes	3 (2.1%)	1 (1.4%)
Defacto	22 (14.7%)	12 (15.4%)	No	142 (97.9%)	73 (98.6%)
Single	5 (3.3%)	29 (37.2%)			
Separated		1 (1.3%)			
Widowed					
Divorced		1 (1.3%)			
Ethnic			**Diagnosed with Depression**		
Yes	19 (12.8%)	7 (9.0%)	Yes	11 (7.4%)	5 (6.5%)
No	129 (87.2%)	71 (91.0%)	No	137 (92.6%)	72 (93.5%)
English 1st language			**Diag. serious em. illness**		
Yes	145 (98.0%)	78 (100%)	Yes	2 (1.4%)	73 (100%)
No	3 (2.0%)		No	141 (98.6%)	
Education			**Prescribed antidepressants**		
≤ Year 10 High school	7 (4.7%)	2 (2.6%)	Yes & taking them now	2 (1.4%)	1 (1.3%)
Year 11 to 12 High school	44 (29.3%)	25 (32.1%)	Yes but not taking them now	7 (4.7%)	5 (6.4%)
1 –3 yrs tertiary (e.g. TAFE)	32 (21.3%)	14 (17.9%)	No	139 (93.9%)	72 (92.3%)
1-3 yrs university	37 (24.7%)	17 (21.8%)			
>3 yrs university	30 (20.0%)	20 (25.6%)			
Employment (prior to preg.)			**Prescribed anxiolytics**		
Home duties	1 (0.7%)	8 (10.4%)	Yes & taking them now		
Unemployed	3 (2.0%)	1 (1.3%)	Yes but not taking them now	3 (2.1%)	
Employed full-time	120 (81.1%)	47 (61.0%)	No	143 (97.9%)	74 (100%)
Employed part-time	21 (14.2%)	14 (18.2%)			
Student	3 (2.0%)	7 (9.1%)			
Hours of sleep (24hrs)			**Other medication**		
1-2hrs			Yes	23 (16.7%)	21 (29.2%)
3-4hrs	3 (2.0%)		No	115 (83.3%)	51 (70.8%)
5-6hrs	51 (34.7%)	10 (12.8%)			
7-8hrs	74 (50.3%)	51 (65.4%)			
>8hrs	19 (12.9%)	17 (21.8%)			
Income (per annum)			**Long term health problems.**		
≤$14,999	3 (2.0%)	8 (10.7%)	Yes	22 (14.7%)	17 (21.8%)
$15,000 to $24,999	17 (11.6%)	3 (4.0%)	No	128 (85.3%)	61 (78.2%)
$25,000 to $34,999	31 (21.1%)	14 (18.7%)			
$35,000 to $44,999	29 (19.7%)	16 (21.3%)			
$45,000 to $54,999	24 (16.3%)	9 (12.0%)			
≥$55,000	43 (29.3%)	25 (33.3%)			

NOTE: Missing data not included

Table G.2. Frequency of postpartum responses to health and obstetric questions (Adapting to

Motherhood)

Variable (responses)	Postpartum n (%)
Long term health problems	
Yes, and these were worse during pregnancy	8 (5.3%)
Yes, but they were not worse during pregnancy	14 (9.3%)
No	128 (85.4%)
Pregnancy	
Planned & I was happy about it	109 (72.7%)
Unplanned but I was happy about it	26 (17.3%)
Planned but I was uncertain about it	8 (5.3%)
Unplanned & I was uncertain about it	7 (4.7%
Attendance at antenatal class	
Yes, all sessions of the class	122 (81.3%)
Yes, most sessions of the class	15 (10.0%)
Yes, a couple of sessions of the class	6 (4.0%)
No, but has in the past	2 (1.3%)
No, never	5 (3.3%)
Labour induced	
Yes	70 (47.0%)
No	79 (53.0%)
Delivery method	
Vaginal	107 (71.3%)
Emergency Caesarean	37 (24.7%)
Planned Caesarean	6 (4%)
Breastfeeding	
Currently breastfeeding	126 (84.0%)
Initially breastfed, but given up	5 (3.3%)
Tried breastfeeding, but not successful	16 (10.7%)
Not interested in breastfeeding	3 (2.0%)

Appendix H. South Australian birth characteristics

Unless otherwise stated, the following data relates to South Australian (S.A.) statistics from 1998, generally this data reflects similar proportions to that found nationally. Records show there were 18,612 live births[1] (3.6% more than 1999) from 18,420 confinements, 39.8% (n=7337) of which were for primiparous women (Nasser, Sullivan, Lancaster, & Day, 2001), around two thirds of these (n=5168) were first nuptial confinements (Australian Bureau of Statistics, 2000). Multiple births occurred in 1.7% of cases (Nasser et al., 2001). Almost all S.A. births took place in a hospital with the remaining 5.7% of confinements occurring in either a birth centre, at home, or when infants were born unexpectedly, prior to arrival in hospital. Only two South Australian hospitals delivered over 2000 babies, the Women's and Children's Hospital is the largest of these with around 4000 babies born annually, around 20-25% of South Australian babies (Women's and Children's Hospital, 1998). In 1998, 70.4% of *all* confinements were in a public hospital, such as the Women's and Children's Hospital.

Eighty-seven percent of *all* confinements involved women who were either married or in defacto relationships. The age of first nuptial confinement has risen in recent years, women had a median age of 27.4 in 1989, this age steadily increased to 29.5 years in 1998 (Australian Bureau of Statistics, 2000). The duration from marriage to confinement has remained stable at median 2.8 years over this time, reflecting the fact that couples are getting married at an older age than previously. Just over 2.2% of *all* confinements in S.A. were to Indigenous women. Eighty-four percent of *all* confinements were to women born in Australia (Nasser et al., 2001).

The mean gestational age for babies born in S.A. in 1998 was 39 weeks, with only 7.3% born at less than 37 weeks (Nasser et al., 2001). Just over 60% of women went into spontaneous labour (with 38% of these later having their labour augmented), 27.3% of labours were induced, and 12% of women had no labour. Resulting in a total of 37.8% non-induced, non-augmented labours from all confinements. Almost all infants (94.2%) presented in the correct vertex position at delivery, with a spontaneous vaginal delivery rate of 62.8%. Forceps deliveries accounted for 8.2% and vacuum extraction for 4.7% of births.

S.A. has the highest rate for Caesarean sections in Australia, with 23.9% (compared with 21.1% nationally) in 1998, this includes 10% elective, and 13.8% emergency. Women in private hospitals were more likely to deliver by caesarean births, with 29% compared with 21.7% in public hosptials. National figure show that older women, who are having their first baby were more likely to undergo Caesarean deliveries, and that this was 5% to 12% more likely when women were confined in a private hospital. In S.A., primiparous women were more likely to

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[1] Please note: this number include multiple births

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have caesarean sections (26.5%) than multiparae (22.2%), whilst the rate for twin births was over 50% and the three other multiple births were all caesarean sections. Well over one third of babies with birthweights less than 2500g were delivered by Caesarean section. In 20.5% of S.A. deliveries, women were given episiotomies, with a similar proportion (20.7%) having lacerations sutured (Nasser et al., 2001).

The high numbers of women receiving Caesarean sections and the discrepancies in the Caesarean rate across states and in different institutions has been criticised (Senate Community Affairs References Committee, 1999). Although it is accepted that the higher Caesarean rate in private patients *may* be accounted for by age, there is evidence that when attempts were made to lower the rate, this was achieved without higher incidence of negative outcomes.

Women delivering their first baby were likely to stay in hospital between three and six days (70.6%), however this was affected by a number of factors (Nasser et al., 2001). Public hospital patients were much more likely to be discharged in less than four days (77.5%), whereas 61.8% of private patients were discharged between five to eight days after birth. Women who give birth by Caesarean section are more inclined to spend longer in hospital with 64.4% staying five to eight days, whilst 77.1% of women delivering vaginally returned home within four days. Women delivering in large hospitals (particularly those delivering over 2000 babies per year) were more likely to go home within the first two days after childbirth.

There were slightly more male babies (50.6%) born in S.A. in 1998 (Nasser et al., 2001). The mean birthweight was 3356 grams, with 7% of babies born weighing less than 2500 grams, and only 1.4% weighing less than 1500 grams. Eighty-nine percent of babies received no form of resuscitation at birth, 9.6% received a bag and mask with the remainder undergoing more extreme efforts. Seventy-seven percent of babies had gone home within five days of their birth, with another 18% within two weeks. Generally speaking babies of low birthweight, and / or those who had been born preterm were the most likely to spend more than two weeks in hospital after birth. Around one half of the babies were still being partially or fully breastfed at six months, in study of a stratified sample of mothers in S.A. (Taylor, Starr, Dal Grande, & Woollacott, 2000).

Being a Woman and a Mother

Changing emotions

- *All women are different and have different experiences of pregnancy and motherhood*

- *We would like to understand women's changing emotions as they adapt to motherhood*

- *Some women move easily into motherhood, whilst others do not*

- *This study aims to help women going through this transition period*

- **We want to look at the feelings and emotions of women who are pregnant, and after they have their babies**

- *We will also be looking at the feelings and emotions of women who are not pregnant and do not have young babies*

- *We would like to ask you some questions now, about you and your pregnancy and later, about your life after you take your baby home*

THE UNIVERSITY OF ADELAIDE

Department of Psychology

We are exploring the transition to motherhood, following women from pregnancy through to the early months of their baby's life. We hope that you can help us.

*The following pages contain a number of questions about you and your pregnancy. These questions are important to help us understand **your** life before you have your baby. In providing us with this information you will be contributing to an understanding of the kinds of feelings and emotions experienced by women during pregnancy. Two further questionnaires will be mailed to you after the birth of your baby. These questionnaires will be used to assess if and how your emotions change as you adapt to motherhood.*

We are also looking at the feelings and emotions of women who are not pregnant and who have not had a baby in the last twelve months, and would like to ask for your help (see below). These women's responses will help us to determine how pregnant women and new mother's responses might differ from the responses of women who have not recently had a baby.

If you are willing to help us, we ask that you:

1) Please sign the consent form today, and return the questionnaire (in the reply paid envelope provided) within the next seven days.

2) Agree to complete two further questionnaires: the first one to be mailed to you around 6-8 weeks after your due date; and the second one to be mailed to you around 5-6 months after your baby is born.

3) Please pass on to a female friend (of a similar age to you, who is not pregnant and has not had a baby in the last twelve months) the second package of questionnaires that we will give you.

All the questionnaires are quick and easy to complete (just follow the instructions on each page) and should take around 30 minutes. Women who have completed similar questionnaires have found that they have provided them with valuable "food for thought". We hope that you may find the same benefits.

This research project has been reviewed by the University of Adelaide and the Women's and Children's Hospital Ethics Committees. If you wish to contact someone not directly involved with this project to gain further information about the conduct of the project or information about your rights as a participant or you wish to make a confidential complaint, you may contact the Secretary of the Women's and Children's Ethics Committee, Ms Brenda Penny on Telephone: (08) 8204 6521.

Be assured that all information provided by you and your friend is <u>strictly confidential</u>. Also be assured that your relationship with the Women's and Children's Hospital will in no way be affected by your decision either to participate, or not to participate in this study.

Following completion of this study a summary of the general findings will be available. If you have any further questions or wish for a copy of the summary, please contact us on the phone numbers below.

Thank you for your time

| | Ann-Louise Hordacre   Dr Jane Blake-Mortimer |
| Phone: (08) 8303 3856 | Phone: (08) 8303 4628 |

PLEASE RETAIN THIS SHEET FOR YOUR INFORMATION

Adelaide South Australia 5005

Ann-Louise Hordacre   Tel: (08) 8303 3856   Fax: (08) 8303 3770   E-mail: ann-louise.hordacre@psychology.adelaide.edu.au

Being a Woman and a Mother

Changing emotions

- *Some women move easily into motherhood, whilst others do not*

- *All women are different and have different experiences*

- *Your friend is helping us to understand the feelings and changing emotions of women who are pregnant as they progress through the early stages of motherhood*

- **We also need to understand the feelings of women who are not pregnant and do not have young babies (this is where you come in)**

- *We would like to ask you some questions about* **you**

This study aims to help women going through the transition to motherhood. You are reading this because your friend has agreed to be involved. We hope that you will also be prepared to participate. Please see the back of this page for more information.

THE UNIVERSITY OF ADELAIDE

Department of Psychology

Your friend has given you this package of questionnaires to complete and return to us, we hope you will take the time to read this information sheet and participate in this study.

This study aims to determine whether women who are adapting to motherhood for the first time, experience the same (or different) feelings and emotions to women in general. Along with the current questionnaire we are planning to assess women at two other stages. We hope that you will agree to complete the two further questionnaires we will post to you (the first questionnaire to be mailed in about 3-4 months, and the second one, in about 7-8 months). This is to see whether you experience any emotional changes during this period.

The following pages contain a number of questions about you. These questions are important to help us to understand your feelings. In providing us with this information you will be contributing to an understanding of if (and how) women experience positive and negative emotions. Your responses will help is to determine how the responses of pregnant women and new mothers might differ from the responses of women who have not recently had a baby.

- *If you are **not** pregnant*

- *If you have **not** had a baby in the last twelve months*

- *And if you are willing to help us*

- ***Please sign the consent form and return it along with the questionnaire (in the reply paid envelope provided) as soon as possible.***

The questionnaire is quick and easy to complete (just follow the instructions on each page) and should take around 30 minutes. Women who have completed similar questionnaires have found that they have provided them with valuable "food for thought". We hope that you may find the same benefits.

This research project has been reviewed by the University of Adelaide and the Women's and Children's Hospital Ethics Committees. If you wish to contact someone not directly involved with this project to gain further information about the conduct of the project or information about your rights as a participant or you wish to make a confidential complaint, you may contact the Secretary of the Women's and Children's Ethics Committee, Ms Brenda Penny on Telephone: (08) 8204 6521.

Be assured that all information provided by you and your friend is strictly confidential.

*Following the completion of this study a summary of the general findings will be available. **If you have any questions at all** or wish for a copy of the summary, please contact us on the phone numbers below.*

Thank you for your time

Ann-Louise Hordacre   Dr Jane Blake-Mortimer

Phone: (08) 8303 3856   Phone: (08) 8303 4628

PLEASE RETAIN THIS SHEET FOR YOUR INFORMATION

Adelaide South Australia 5005
Ann-Louise Hordacre Tel: (08) 8303 3856 Fax: (08) 8303 3770 E-mail: ann-louise.hordacre@psychology.adelaide.edu.au

Appendix K. Antenatal background questionnaire (*Changing Emotions*)

**Please follow the individual instructions printed at the beginning of each questionnaire.
Questions are printed <u>on both sides</u> of the page.**

Please answer all the questions by either **placing a cross in the box** or **answering in the space provided**. If you have any further comments or cannot fit your answer in the space provided please use the blank section of the page below Question 25.

Your age: _____ years   **Number of weeks pregnant:** _____   **Your Postcode:** _____

1. Are you expecting a multiple birth?   ☐ Yes or ☐ No

   If yes, how many babies are you expecting? _____

2. How do you expect to deliver your baby?

   ☐ Vaginally   ☐ Planned Caesarian section   ☐ Emergency Caesarian section

   If you are expecting a Caesarian delivery could you please explain why

   _____

   _____

3. Are you planning to breastfeed your infant?   ☐ Yes or ☐ No

   If yes, how many **months** do you plan to breastfeed your infant?

   ☐ 1-2;   ☐ 3-4;   ☐ 5-6;   ☐ 7-12;   ☐ more than 12

4. Your pregnancy was:

   ☐ **Planned**, and I was **happy** about it   ☐ **Unplanned**, but I was **happy** about it

   ☐ **Planned**, but I was **uncertain** whether I was happy or   ☐ **Unplanned**, but I was **uncertain** whether I was
      unhappy about it   happy or unhappy about it

   ☐ **Planned**, but I was **unhappy** about it   ☐ **Unplanned**, and I was **unhappy** about it

   If planned, how many months did it take you to become pregnant? _____ months

5. How many miscarriages have you had? ☐ 0; ☐ 1; ☐ 2 If more than 2 please indicate how many _____

6. How many hours of **sleep** do you normally get in a **24 hour period**?   Approximately _____ hours

   How many hours do you normally **sleep at night**?   Approximately _____ hours

   On a scale of 1 to 10 how would you rate the **quality of your sleep**?   (Circle the number that represents your answer)

   Very poor 1 2 3 4 5 6 7 8 9 10 **Very Good**

7. Do you have any **long term** health problems/disorders?   ☐ Yes or ☐ No

   If yes, have these problems been worse during your pregnancy?   ☐ Yes or ☐ No

   If yes to either of the above, could you please briefly describe the problems

   _____

   _____

   _____

8. Have you experienced any **other** problems **during your pregnancy** that have required medical attention? ☐ Yes or ☐ No

   If yes, could you please briefly describe them

   _____

   _____

   _____

9. Marital status (please place a cross in the box that best represents your current status):

   ☐ Married;   ☐ Defacto;   ☐ Single;   ☐ Separated;   ☐ Widowed;   ☐ Divorced

   If you indicated a married or defacto relationship, what is the total time spent in this relationship? Years ___ Months ___

10. Do you identify with a particular ethnic group? ☐ Yes or ☐ No

    If so, which group? _____

    Do you speak English at home as your first language? ☐ Yes or ☐ No

    If no, what language do you primarily speak? _____

11. What is the **highest** level of education have you received?

    ☐ up to year 10 high school   ☐ 1 to 3 years tertiary education (e.g. TAFE)   ☐ more than 3 years uni education

    ☐ from year 11 to 12 high school   ☐ 1 to 3 years university education

12. What was your employment status **prior to becoming pregnant**?

    ☐ home duties   ☐ employed full time   ☐ student

    ☐ unemployed   ☐ employed part time

    If employed what was your occupation? _____

13. What is your **current** employment status:

    ☐ as above

    ☐ on maternity leave and planning to return to work

    ☐ planning to change or have changed occupation

    ☐ other (please describe)

    _____

    If changed what is your new occupation _____

14. **After** you have your baby, are you planning to: ☐ work full-time ☐ work part-time; ☐ look after your child full-time

15. What is the **current** combined income for your family?

    ☐ less than $14 999 per year   ☐ between $35 000 and $44 999 per year

    ☐ between $15 000 and $24 999 per year   ☐ between $45 000 and $54 999 per year

    ☐ between $25 000 and $34 999 per year   ☐ over $55 000 per year

16. In the last year have you experienced the loss of someone you consider to be a close family member or friend?

    ☐ Yes or ☐ No

    If yes, what relationship did you have with this person (e.g. mother) _____

17. Have **you** ever been diagnosed with

Anxiety ☐ Yes or ☐ No   Serious emotional illness ☐ Yes or ☐ No

Depression ☐ Yes or ☐ No   If yes to serious emotional illness, please describe it _____

18. Have **you** ever been prescribed

Antidepressants ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Antianxiety drugs ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Are you currently taking any other medication? ☐ Yes or ☐ No

If yes to any of the above, could you please provide the name of the medication/s and the length of time they were/ have been used

_____

_____

_____

19. Many women expect changes after they have their baby. These changes can be both positive and negative.

How much **positive change** do you think will occur in your life **after** you have your baby?

| There will be *no* positive change | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% There will be 100% positive change |

How much **negative change** do you think will occur in your life **after** you have your baby?

| There will be *no* negative change | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% There will be 100% negative change |

20. How do you think you will **cope** with a new baby?

| Extremely poorly | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Extremely Well |

If you **do not** have a partner please go to Question 24

21. How much do you anticipate **your partner will participate** in your infant's care (e.g. helping you)?

| No participation | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% Complete participation |

22. How much time do you anticipate **your partner will take full responsibility** for your infant's care?

| No time | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% All of the time |

23. How **satisfied** are you with your relationship with your partner?

| Completely dissatisfied | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% Completely satisfied |

Please feel free to comment on Q21-23 (e.g. what role you expect your partner to have in the childcare and household tasks)

_____

_____

_____

_____

_____

_____

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The following questions allow you to describe your own specific situation, *we are interested in what you have to say*, but answers to the questions on this page are not essential. After Question 25, space is provided for you to make any comments that you wish or to finish any answers that you needed more space for.

24. Generally speaking, how have you been feeling during the last three months?

_____

_____

_____

_____

_____

_____

_____

_____

25. Please describe how your life has changed (if it has) during the last three months.

_____

_____

_____

_____

_____

_____

_____

General comments

_____

_____

_____

_____

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_____

Please continue to the next questionnaire

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Appendix L. Control background questionnaire (*Changing Emotions*)

**Please follow the individual instructions printed at the beginning of each questionnaire.
Questions are printed <u>on both sides</u> of the page.**

Please answer all the questions by either **placing a cross in the box** or **answering in the space provided**. If you have any further comments or cannot fit your answer in the space provided please use the blank section of the page below Question 17.

Your age: _____ years   **Your Postcode:** _____

1. Marital status (please place a cross in the box that best represents your current status):

   ☐ Married; ☐ Defacto; ☐ Single; ☐ Separated; ☐ Widowed; ☐ Divorced

   If you indicated a married or defacto relationship, what is the total time spent in this relationship? Years ____Months ____

2. Do you identify with a particular ethnic group? ☐ Yes or ☐ No   If so, which group? _____
   Do you speak English at home as your first language? ☐ Yes or ☐ No

   If no, what language do you primarily speak? _____

3. What is the **highest** level of education have you received?

   ☐ up to year 10 high school   ☐ 1 to 3 years tertiary education (e.g. TAFE)   ☐ more than 3 years uni education

   ☐ from year 11 to 12 high school ☐ 1 to 3 years university education

4. What is your employment status?

   ☐ home duties   ☐ employed full time   ☐ student

   ☐ unemployed   ☐ employed part time

   If employed what is your occupation? _____

5. What is the **current** combined income for your family?

   ☐ less than $14 999 per year   ☐ between $35 000 and $44 999 per year

   ☐ between $15 000 and $24 999 per year   ☐ between $45 000 and $54 999 per year

   ☐ between $25 000 and $34 999 per year   ☐ over $55 000 per year

6. How many children do you have? ☐ 0; ☐ 1; ☐ 2; ☐ 3; ☐ 4; if more than 4 please indicate how many _____

   How many of your children are under 5 years old? _____

7. How many miscarriages have you had? ☐ 0; ☐ 1; ☐ 2   If more than 2 please indicate how many

   _____

8. How many hours of **sleep** do you normally get in a **24 hour period**?   Approximately _____ hours

   How many hours do you normally **sleep at night**?   Approximately _____ hours

   On a scale of 1 to 10 how would you rate the **quality of your sleep**?   (Circle the number that represents your answer)

Very poor	1	2	3	4	5	6	7	8	9	10	Very Good

9. Do you have any **long term** health problems/disorders? ☐ Yes or ☐ No

If yes, could you please briefly describe the problems

_____

_____

_____

10. **If you have children**, have any of them been diagnosed with any medical conditions/disorders? ☐ Yes or ☐ No

If yes, could you please tell us which child and describe the condition.

_____

_____

_____

11. Have **you** ever been diagnosed with

Anxiety ☐ Yes or ☐ No   Serious emotional illness ☐ Yes or ☐ No

Depression ☐ Yes or ☐ No   If yes to serious emotional illness, please describe it

_____

12. Have **you** ever been prescribed

Antidepressants ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Antianxiety drugs ☐ Yes or ☐ No   Are you taking them now? ☐ Yes or ☐ No

Are you currently taking any **other** medication? ☐ Yes or ☐ No

If yes to any of the above, could you please provide the name of the medication/s and the length of time they were/ have been used

_____

_____

_____

If you **do not** have a partner please go to Question 16.

13. How **satisfied** are you with your relationship with your partner?

| Completely dissatisfied | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | Completely satisfied |

14. If you have a child/ren, how much does **your partner participate** in your child/ren's care?

| No participation | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | Complete participation |
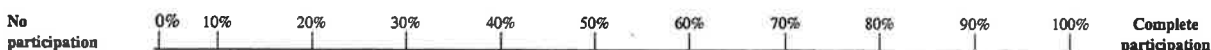
15. If you have a child/ren, how much is **your partner responsible** for your child/ren's care?

| No responsibility | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | Complete responsibility |
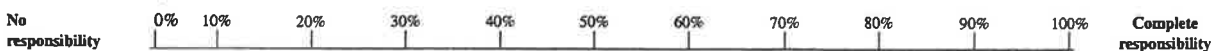
Please feel free to comment on Q13-15 (e.g. what role you expect your partner to have in the childcare and household tasks)

_____

_____

_____

_____

The following questions allow you to describe your own specific situation, *we are interested in what you have to say*, but answers to the questions on this page are not essential. After Question 17, space is provided for you to make any comments that you wish or to finish any answers that you needed more space for.

16. Generally speaking, how have you been feeling over the last three months?

_____

_____

_____

_____

_____

17. Please describe how your life has changed (if it has) over the last three months

_____

_____

_____

_____

_____

General comments

_____

_____

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_____

Please continue to the next questionnaire

Appendix M. Mood and Anxiety Symptom Questionnaire (MASQ)

MASQ

Below is a list of feelings, sensations, problems, and experiences that people sometimes have. Read each item and then mark the appropriate choice in the space next to that item. Use the choice that best described *how much* you have felt or experienced things this way *during the past week, including today*. Use this scale when answering:

1	2	3	4	5
not at all	a little bit	moderately	quite a bit	extremely

_____ 1. Felt cheerful

_____ 2. Felt afraid

_____ 3. Startled easily

_____ 4. Felt confused

_____ 5. Slept very well

_____ 6. Felt sad

_____ 7. Felt very alert

_____ 8. Felt discouraged

_____ 9. Felt nauseous

_____ 10. Felt like crying

_____ 11. Felt successful

_____ 12. Had diarrhoea

_____ 13. Felt worthless

_____ 14. Felt really happy

_____ 15. Felt nervous

_____ 16. Felt depressed

_____ 17. Felt irritable

_____ 18. Felt optimistic

_____ 19. Felt faint

_____ 20. Felt uneasy

_____ 21. Felt really bored

_____ 22. Felt hopeless

_____ 23. Felt like I was having a lot of fun

_____ 24. Blamed myself for a lot of things

_____ 25. Felt numbness or tingling in my body

_____ 26. Felt withdrawn from other people

_____ 27. Seemed to move quickly and easily

_____ 28. Was afraid I was going to lose control

_____ 29. Felt dissatisfied with everything

_____ 30. Looked forward to things with enjoyment

_____ 31. Had trouble remembering things

_____ 32. Felt like I didn't need much sleep

_____ 33. Felt like nothing was very enjoyable

_____ 34. Felt like something awful was going to happen

_____ 35. Felt like I had accomplished a lot

_____ 36. Felt like I had a lot of interesting things to do

_____ 37. Did not have much of an appetite

_____ 38. Felt like being with other people

_____ 39. Felt like it took an extra effort to get started

_____ 40. Felt like I had a lot to look forward to

_____ 41. Thoughts and ideas came to me very easily

_____ 42. Felt pessimistic about the future

_____ 43. Felt like I could do everything I needed to do

_____ 44. Felt like there wasn't anything interesting or fun to do

<div style="border:1px solid;">

MASQ (cont.)

1		2		3		4		5
not at all		a little bit		moderately		quite a bit		extremely

</div>

_____	45.	Had a pain in my chest
_____	46.	Felt really talkative
_____	47.	Felt like a failure
_____	48.	Had hot or cold spells
_____	49.	Was proud of myself
_____	50.	Felt very restless
_____	51.	Had trouble falling asleep
_____	52.	Felt dizzy or lightheaded
_____	53.	Felt unattractive
_____	54.	Felt very clearheaded
_____	55.	Was short of breath
_____	56.	Felt sluggish or tired
_____	57.	Hands were shaky
_____	58.	Felt really "up" or lively
_____	59.	Was unable to relax
_____	60.	Felt like being by myself
_____	61.	Felt like I was choking
_____	62.	Was able to laugh easily
_____	63.	Had an upset stomach
_____	64.	Felt inferior to others
_____	65.	Had a lump in my throat
_____	66.	Felt really slowed down
_____	67.	Had a very dry mouth
_____	68.	Felt confident about myself
_____	69.	Muscles twitched or trembled
_____	70.	Had trouble making decisions
_____	71.	Felt like I was going crazy
_____	72.	Felt like I had a lot of energy
_____	73.	Was afraid I was going to die
_____	74.	Was disappointed in myself
_____	75.	Heart was racing or pounding
_____	76.	Had trouble concentrating
_____	77.	Felt tense or "high-strung"
_____	78.	Felt hopeful about the future
_____	79.	Was trembling or shaking
_____	80.	Had trouble paying attention
_____	81.	Muscles were tense or sore
_____	82.	Felt keyed up, "on edge"
_____	83.	Had trouble staying asleep
_____	84.	Worried a lot about things
_____	85.	Had to urinate frequently
_____	86.	Felt really good about myself
_____	87.	Had trouble swallowing
_____	88.	Hands were cold or sweaty
_____	89.	Thought about death or suicide
_____	90.	Got tired or fatigued easily

Scoring

Note: All items positively keyed except those in brackets which are negatively keyed
MASQaa: items 3, 19, 25, 45, 48, 52, 55, 57, 61, 67, 69, 73, 75, 79, 85, 87, 88
MASQad: items 21, 26, 33, 39, 44, 53, 66, 89 (negatively keyed items 1, 14, 18, 23, 27, 30, 35, 36, 40, 49, 58, 72, 78, 86)
MASQgda: items 2, 9, 12, 15, 20, 59, 63, 65, 77, 81, 82
MASQgdd: items 6, 8, 10, 13, 16, 22, 24, 42, 47, 56, 64, 74
MASQmx: items 4, 17, 29, 31, 34, 37, 50, 51, 70, 76, 80, 83, 84, 90 (negatively keyed item 5)

Appendix N. Means (SDs) for women attending New Parent's Groups (*Changing Emotions*)

	Attended NPG			Did not attend NPG		
	AN	PN1	PN2	AN	PN1	PN2
EPDS	6.6 (3.9)	7.2 (4.6)	5.3 (3.6)	7.7 (4.3)	8.3 (4.6)	7.2 (4.6)
DASSd	3.4 (3.6)	4.7 (7.4)	3.7 (4.5)	5.5 (6.0)	6.0 (6.7)	5.4 (7.2)
MASQad	53.0 (13.4)	54.1 (14.7)	48.9 (11.5)	55.8 (12.7)	57.0 (15.4)	53.3 (14.8)
MASQgdd	19.7 (6.9)	21.1 (8.4)	18.7 (5.4)	20.8 (6.7)	22.0 (7.3)	20.0 (7.4)
STAIs	34.4 (11.6)	36.3 (12.0)	33.6 (10.3)	38.4 (10.5)	37.5 (10.7)	36.0 (10.8)
DASSa	4.0 (3.5)	3.3 (4.5)	2.3 (3.5)	6.0 (5.5)	4.1 (5.1)	3.1 (4.3)
MASQaa	26.7 (6.0)	20.8 (4.0)	20.1 (3.9)	29.4 (7.7)	22.5 (5.7)	20.8 (5.1)
MASQgda	19.3 (5.9)	17.5 (5.3)	16.5 (4.6)	20.5 (6.1)	18.9 (6.9)	16.5 (5.0)
DASSs	8.6 (5.9)	10.5 (8.7)	9.2 (7.1)	10.6 (8.0)	11.5 (7.8)	10.4 (9.4)
PSS	19.3 (6.6)	22.6 (7.1)	20.0 (7.1)	21.2 (5.8)	23.1 (5.8)	21.3 (8.0)