RISK FACTORS FOR POSTNATAL DEPRESSIVE SYMPTOMS: EXPLORING COGNITIVE VULNERABILITY AND ANTENATAL STRESS

KIRSTIE McKENZIE-McHARG

D. Clin. Psy. 2002
University College London

ProQuest Number: U642857

ProQuest U642857

TABLE OF CONTENTS

TABLES

FIGURES

Page

ABSTRACT

Postnatal depression has become widely recognised as a debilitating disorder which may affect women during the time following childbirth. There are both long and short-term negative consequences for the mother and child. This study examines the potential role of cognitive vulnerability and antenatal stress in the development of postnatal depressive symptoms. A sample of 119 first and second time mothers completed questionnaires at two time points - during their third trimester of pregnancy, and 6-8 weeks following the birth. Cognitive vulnerability was measured in terms of maladaptive schemas, and antenatal stress in terms of state anxiety and pregnancy anxiety; postnatal depressive symptoms were measured using the Edinburgh Postnatal Depression Scale. A main effect for the self-sacrifice schema was found, together with weak predictive effects of the interactions involving the unrelenting standards schema and both measures of antenatal stress. In addition, different patterns of predictive variables were found for first and second time mothers. The concept of direction of change of depressive symptoms was also explored. The methodological limitations of the study, suggestions for future research, and the clinical implications of the findings are discussed.

INTRODUCTION

Overview

The transition to motherhood has long been recognised as a major life event. The transition can necessitate changes in many areas of life including social interaction, peer group, financial situation and job and career expectations. At the time of such a major life change, it is not uncommon for women to experience emotional difficulties as they struggle to adapt to a new role in life. Although for many women the transition is straightforward, a significant minority experience postnatal depression, or depression in the postpartum period. The phenomenon of postnatal depression has been increasingly studied over the last several decades, but there is still a lack of consensus around issues such as its cause, those women most likely to succumb, the long term effects for the woman and her baby, and the best methods of treatment.

In addition to this transition, there is another life change when a woman becomes a mother for the second time. This has been less studied, but a number of researchers have pointed out that having a second child is not just 'more of the same' but rather involves a different set of roles and expectations altogether. A woman pregnant with her second child does not have the luxury of resting more, or having a few weeks of uninterrupted maternity leave before the birth of her child. The older child requires attention, and indeed a toddler feeling threatened by the imminent arrival of a sibling may demand more attention than usual. After the birth, women may feel overburdened by the practicalities of caring for two children, and may be expected to cope with less support than a first time mother, as friends and family will believe she will manage because she has 'done it all before'. In fact, women appear to have a

similar risk of postnatal depression after each pregnancy, regardless of whether it is the first or the second child. This is discussed more fully in the section on prevalence below.

Postnatal depression has become widely recognised as a debilitating disorder which may affect women during the time following childbirth. There are both long and short-term effects of postnatal depression on the mother and the newborn child, and as such, research concentrating on postnatal depression has grown during the last several years. This study aims to examine several potential risk factors for postnatal depression, and to do so within a population of first and second time mothers. Given their different circumstances, it may be possible that women experiencing postnatal depression following a first birth do so for reasons different from those experiencing it following a second birth.

The introduction is in three broad sections. The first examines the nature of postnatal depression, defining and examining it both as a concept and in terms of its effects on women and their babies. This section also includes a discussion of the prevalence of postnatal depression, and the way in which it is assessed, as well as briefly mentioning interventions. The second section examines those factors which have been identified as contributing to postnatal depression, including a more detailed discussion of those particular variables being studied in this research. Finally, the third section explains the rationale for this research study, and lists the specific hypotheses being examined.

The Nature of Postnatal Depression

'As I looked after my baby I was only aware that something was not quite right; there was no pleasure in my life, and I seemed to be permanently exhausted....I was a failure....I needed somewhere where someone would care for me and expect nothing in return; no such place existed for me - so I stayed where I was, desperately unhappy and lonely....I struggled with my loneliness, lack of confidence, and a growing fear that I was going crazy...how could I tell anyone about my loneliness, my inability to cope and to be a good wife and mother, my fear that I would never be well again, that this was the way my life would be until I died?'

(Dalton & Holton, 2001, p.103, quoting 'Sally')

This section examines the nature of postnatal depression, discussing the controversy surrounding its definition, and its assessment, presentation and prevalence. It will also describe the effects of postnatal depression on the women who experience it, and mention the longer term effects for their babies as well as interventions that are currently available.

Defining Postnatal Depression

The terms 'postnatal depression' and 'depression in the postpartum period' are used interchangeably in the literature. This research study will use the term 'postnatal depression' throughout to mean depression arising in the period up to one year following the birth of a child.

The symptoms of depression arising during this time do not generally appear to differ from depression at other times, although the mother may be more labile and tearful, and she has to cope with her symptoms at the same time as looking after a newborn child. In the short-term, the mother may experience overwhelming sadness and hopelessness, poor coping skills and an inability to form/maintain relationships, suicidal ideation or active planning and reduced interest in life (Mauthner, 1998). The main difference between the two groups may be that of severity of disorder, with non-postnatal depression being more severe (Whiffen, 1992). A new mother may also feel overwhelming guilt for feeling depressed at a time when she expected to be happy with her new baby, and may worry that she is not experiencing the love for her child which she anticipated (Elliott, 1989).

There is some controversy in the published literature about whether postnatal depression is a diagnostic entity separate to that of depression at other times. This is because it has consistently been found that the symptom profile of depression during the postnatal period is the same as at other times, and because the risk and causal factors identified are often the same as those identified for clinical depression. A number of researchers have examined this question in an attempt to clarify whether or not postnatal depression is in fact a separate diagnostic entity (Affonso, Lovett, Paul & Sheptak, 1990; Cooper & Murray, 1995; Whiffen, 1992; Whiffen & Gotlib, 1993). The Diagnostic and Statistical Manual (DSM-IV), used for classification of psychiatric illnesses, has not supported one view or the other, stating only that the term 'postpartum onset specifier' may be added to the diagnosis of depression if the onset of the episode was within four weeks of the birth of a child. This method misses many potential cases of postnatal depression, as the majority of women

develop symptoms within the first three months (rather than four weeks) after childbirth (e.g. James, 1998; Murray, Cox, Chapman & Jones, 1995).

The issue of postnatal depression being a separate entity to clinical depression has been examined by Whiffen (1992), who reviewed 24 community based studies examining the prevalence, symptomatology, course, duration, relapse and aetiology of postnatal depression. She concluded that 'some aspects of postpartum depression are consistent with the view that it is a distinct diagnosis' (p.504). She reported an increase in the rate of depression in the postpartum period, which suggests that childbirth may in itself predispose some women to develop depression. She also found that postnatal depression is generally milder, and reverses more quickly than general depression. However, she argues that women with a previous history of an affective disorder appear to be at greater risk for postnatal depression than women without this history, stating 'postpartum depression does not, for the most part, develop in women who were previously stable and emotionally hardy' (p.504). She also found that similar risk factors were implicated in the development of both postpartum and nonpostpartum depression. She concludes that the concept of a separate diagnosis of postpartum depression may be of limited use, and in 1993 conducted a study which found the main difference between the two groups to be that of severity of disorder (with nonpostpartum depression being more severe).

In contrast to Whiffen (1992), Cooper and Murray (1995) conducted a five year follow-up study following three groups of women - those for whom postnatal depression following an index birth was their first experience of depression (*de novo* group), those for whom it was a recurrence of a previous affective disorder (recurring

group), and a group who did not experience depression (control group). The grou's were recruited from a single hospital over a two year period and unlike Whiffen (1992), Cooper and Murray (1995) found almost equal numbers of postnatally depressed women who did and did not have a previous affective disorder history. These researchers found that for those women in the recurring group, rates of non-postnatal depression during the period from 18 months to 5 years after the index brtl were at 67%, compared with 38% for the *de novo* group, and 25% for the control group. Tellingly, women in the *de novo* group had a recurrence of postnatal depression following a subsequent child at a rate of 41%, compared with 18% for he previously affected group and 12% for the controls. Cooper and Murray (1995) argue that 'the population of women who develop non-psychotic depression after childbirth subsumes two distinct groups: those for whom the experience of havin{ a child constitutes a specific causative factor, and those for whom the birth is not a specific stressor' (p. 194). This well-designed study supports the argument for a separate understanding of postnatal depression.

Murray et al. (1995) continued this research by comparing groups of postnatally aid non-postnatally depressed women with a control group (non-pregnant, no births in the previous year, matched with experimental groups on age, marital status and number of children). They concluded that postnatal depression 'is more continge:1t on acute biopsychosocial stresses caused by the arrival of a new family member. Depression in women with older children is more closely related to longer term social adversity' (p.595). Finding two separate routes to explain the development of postnatal and non-postnatal depression in mothers is a clear argument for a specificity of diagnostic concept. Indeed, Affonso et al. (1990) designed a

standardised interview that clearly distinguished depressed pregnant and postnatal women from depressed women who were not childbearing, suggesting strongly that two separate groups exist.

Prevalence

Depression in the postpartum period is a common condition. It is generally accepted that it affects approximately 10-15% of new mothers within the first six weeks to six months following childbirth (for example, Cooper & Murray, 1998; Thorpe & Elliott, 1998) although some researchers have found rates as high as 20% (Paykel, Emms & Fletcher, 1980) and 39% (Barnett, Lockhart, Bernard , Manicavasagar & Dudley, 1993) and as low as 3.4% (Gotlib, Whiffen, Mount, Milne and Cordy, 1989; Zelkowitz & Milet, 1995). O'Hara and Swain (1996) conducted a meta-analysis of 59 studies (overall n=12,810) which indicated the prevalence rate of postnatal depression to be approximately 13%.

Women appear to have the same risk of developing postnatal depression after each pregnancy, providing they have not already experienced it following a previous pregnancy. A woman who develops postnatal depression after one pregnancy has a much higher risk of developing it again following subsequent pregnancies - between 64 and 68% (Dalton & Holton, 2001).

The current method of screening for postnatal depression is generally the use of the Edinburgh Postnatal Depression Scale (EPDS) developed by Cox, Holden and Sagovsky (1987). This is not a diagnostic tool, but a high score on the EPDS is generally considered to be an indication that depression may be present. This should then be confirmed via clinical interview. Many practitioners also use other measures such as the Beck Depression Inventory (Beck, Ward, Mendelson, Mock & Erbaugh, 1961) or the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), but the EPDS was designed to be used postnatally, and does not ask questions found more commonly on general depression scales which would be inappropriate for a new mother. These are generally biological in nature such as whether sleep is disturbed. There is some debate in the literature about the utility of the EPDS, but it remains the measure of choice at present (Lussier, David, Saucier & Borgeat, 1996; Pritchard & Harris, 1996). More details relating to its development and content are presented in the Method chapter.

Women's route to diagnosis of postnatal depression in the UK is variable. The vast majority of new mothers are visited regularly by a health visitor, who has the primary responsibility for being aware of her patient's state of mind following the birth of a child. However, the reality in many parts of the UK is that overworked health visitors have little time to chat, and any difficulties a new mother is experiencing may go unnoticed unless they are relatively severe. In some areas of the country (for example, Oxfordshire), the administration of the EPDS to all new mothers in their homes has been made mandatory. A woman scoring above the screening cut-off for

depression would then be referred to her GP or a counselling organisation for diagnosis and treatment if needed. This system is now being trialled in other parts of the UK - for example Painter (1995) reports the positive outcome of a pilot study with the EPDS in Kent.

In addition, midwives are playing a screening role in a number of areas of the UK. Tully, Garcia, Davidson & Marchant (2002) conducted a questionnaire survey of every maternity unit in England and Wales. They found that 94% of units ask women about current or previous psychiatric history during booking, 25% conduct formal screening for depression antenatally, and 57% undertake postnatal screening. Women identified to be at risk in this manner are then referred on to appropriate services. Nevertheless, routine administration of the EPDS during the postnatal period is not occurring in all areas of the country. Although some women present to their GP autonomously, being aware that something is wrong, others are unable to admit their difficulties and go untreated and without formal support (e.g. Whitton, Appleby & Warner, 1996a).

A number of authors explore women's responses to receiving a diagnosis of postnatal depression. Cox (1994) describes postnatal depression as 'a diagnostic term regarded by most women as useful, and for this reason alone in a 'user-oriented' service it could be included as a classification, which would then reflect actual usage; most women regard postnatal depression as 'different' from depression at other times' (p.5). However, feminist writer Paula Nicolson (1998) contests this view, saying that having a 'useful' term is not the same as taking women's explanations

seriously. She points out that a label may be comfortable in the short term, but do nothing about being supportive or providing a cure in the long term.

It is true that even after receiving a diagnosis of postnatal depression, a large number of women reject this label (for example, Whitton, Warner & Appleby, 1996b), preferring to consider themselves as simply experiencing a high level of life stress that will be a temporary state. This attitude is supported by findings such as those described earlier where postnatal depression generally resolves more quickly than non-postnatal depression.

Effects of Postnatal Depression

Although it is not within the scope of this study to gather data regarding the effects on children of women experiencing postnatal depression, it should be stated that there is a significant body of evidence suggesting that there may be long-term deleterious effects for a child with a mother who experiences postnatal depression. Wrate, Rooney, Thomas and Cox (1985) found that children of mothers who were depressed postnatally were more likely to have behaviour problems, and Coghill, Caplan, Alexander, Robson and Kumar (1986) found cognitive difficulties in a study of socioeconomically disadvantaged boys persisting when the children were 4 or 5 years old despite the mothers no longer being depressed.

These findings are supported by those of Sharp, Hay, Pawlby, Schmucker, Allen and Kumar (1995) in a similar population at age 3 years 10 months. A subsequent follow-up by Hay, Pawlby, Sharp, Asten, Mills and Kumar (2001) of this population found that the adverse effects in terms of the boys' cognitive ability and academic

performance were persisting at age 11 years. Although Kurstjens and Wolke (2001) found negligible effects of previous postnatal depression on children's cognitive development at age 6 years, 3 months, this was a retrospective study and relied on mother report to identify past episodes of depression since the children were born.

As well as these difficulties, other researchers have found evidence of poor emotional adjustment (Teti, Gelfand, Messinger & Isabella, 1995). One study in New Zealand (Mitchell, Thompson & Stewart, 1992) even found a higher rate of sudden infant death syndrome (SIDS) in infants of depressed mothers, although it is possible that characteristics of children who die from SIDS are also highly correlated with maternal depression.

Interventions

Interventions for postnatal depression is an area which falls outside the scope of the present study. The following section is therefore brief, giving an overview of the current position in terms of treatment for postnatal depression. It is also worth noting that 'the great majority of these depressions resolve spontaneously within three to six months' (Cooper, Murray & Stein, 1991).

Current interventions for postnatal depression fall into three main groups: prophylactic - i.e. aimed at preventing the occurrence of postnatal depression; interventions following the onset of a diagnosed postnatal depression; and a group which is more difficult to define, where interventions are aimed at women identified as being at high risk of developing postnatal depression. This includes interventions

such as health visitor interventions which aim to identify women scoring relatively high on the EPDS and to treat them before they reach the cut-off threshold. *Prophylactic* interventions are generally educational, practical and informative, including information about the birth, what to expect following birth, the risk of postnatal depression, the realities of it, and what can be done to help. They also aim to normalise postnatal depression to a certain extent, in order to ensure that women do not avoid treatment in the fear that they may lose their baby, or be viewed harshly for their 'failure'. These prophylactic treatments are generally included as a (very) small proportion of the routine antenatal preparation classes many women attend before their delivery, and hence are presented in the main by midwives (e.g. Tully et al., 2002).

Elliott, Leverton, Sanjack, Turner, Cowmeadow, Hopkins and Bushnell (2000) found that a preventative intervention succeeded in reducing the incidence of postnatal depression in first time mothers, but not in second time mothers. Women presenting antenatally were identified as 'more vulnerable' on the Leverton Questionnaire or Crown Crisp Experiential Index and were then allocated either to a preventative intervention group or a control group (who received routine care). Women were assessed for postnatal depression 3 months postnatally using the EPDS. These researchers found that for the first time mothers invited to the group, only 19% were either borderline or diagnosed with postnatal depression as compared with 39% of those not invited, which was a significant difference. For the second time mothers, no significant difference was found.

Interventions following the onset of postnatal depression usually take the form of medication or therapy, or a mixture of both. Two small randomised controlled trials (total n=81) have investigated the short-term effectiveness of brief psychological counselling compared with routine care (Holden, Sagovsky & Cox, 1989; Wickberg & Hwang, 1996). Both found a significant improvement in women receiving counselling over those in a group receiving routine care.

A further study (n=87) randomised women to receive either fluoxetine or placebo, plus either one or six sessions of counselling (Appleby, Warner, Whitton & Faragher, 1997). Fluoxetine was found to be superior in treatment to placebo, and six sessions were superior to one session of counselling. There was no added benefit in terms of combining the fluoxetine and six sessions of counselling. One further study (n=207) randomised women to receive either routine care, or one of non-directive counselling, cognitive behavioural therapy, or psychodynamic psychotherapy. At 18 weeks, women in the three treatment groups had all improved significantly more than those receiving routine care. This difference had disappeared at 9 and 18 months, with the routine care group improving in line with the others. The benefit of this difference appears to be that women recover more quickly, and the impact on their infant is less - this study found that behavioural problems were fewer in the infants of mothers in the treatment groups at 18 months.

Roth and Fonagy (1996) reviewed the efficacy of available treatments for general depression, concluding that 'the superiority of psychotherapeutic treatment over pharmacological treatment is small and unreliable across studies, and is confounded by the lack of control over the nature of the medical treatments offered' (p.84).

There is even less definitive information available regarding the efficacy of treatments for postnatal depression specifically.

Interventions aimed at high risk women are usually found in the form of health visitor interventions. Health visitors attend new mothers, and aim to screen women for postnatal depressive symptomatology for early intervention. These women are then visited more intensively, and more support is offered, in an attempt to prevent the first signs of depression developing into a diagnosable condition (e.g. Gerrard Holden, Elliott, McKenzie & Cox, 1993; Painter, 1995). This model is based on humanistic counselling, and may also involve referral for further therapy.

Factors Contributing to Postnatal Depression

This section describes the current understanding of the aetiology of postnatal depression, including those general and antenatal factors which contribute to the risk of experiencing postnatal depression as well as the smaller number of postnatal factors. In addition, this section discusses in more detail those factors which are the focus of this research study - specifically, cognitive vulnerability, parity and antenatal stress.

Aetiology

A large number of factors have been identified during the past twenty years or so by a number of researchers, and women themselves have also identified a range of factors which they consider to be extremely important in the development of

postnatal depression. These include specific perinatal factors, individual circumstances factors, socio-economic factors and a small number of postnatal factors. Each of these areas is discussed below.

The picture presented by research examining risk factors for postnatal depression is confusing. A vast array of psychosocial factors have been implicated in the development of postnatal depression at different times, but there is no single factor, or cluster of factors, that has consistently been identified as predicting the development of postnatal depression.

Specific perinatal factors which have been identified include: unplanned pregnancy, not breastfeeding (Warner, Appleby, Whitton & Faragher, 1996) and obstetric complications (e.g. O'Hara & Zekoski, 1989). Individual circumstances factors include: a poor marital relationship (e.g. Mauthner, 1998, O'Hara & Swain, 1996; Schweitzer, Logan & Strassberg, 1991); a genetic predisposition (e.g. Reich & Winokur, 1970); mother's personality characteristics (e.g. Hopkins, Marcus & Campbell, 1984); family/social support (e.g. Kraus & Redman, 1986); age, parity, and biological factors (e.g. O'Hara & Zekoski, 1989); life events (e.g. O'Hara & Swain, 1996; Paykel et al., 1980) and previous psychiatric history (O'Neill, Murphy & Greene, 1990). Socio-economic factors include such situations as unemployment in the household (e.g. Warner et al, 1996).

Postnatal factors have been identified, in the main, by the women themselves. Small, Brown, Lumley and Astbury (1994) asked women an open-ended question about their own beliefs around contributing factors to the development of postnatal depression. A number of factors were striking for being independently generated by

around half of the women in their sample (n=45 depressed women) and for being considered a 'primary factor' by most of these. Feeling unsupported was mentioned most often and was considered the most important contributory factor. In addition, being isolated, exhaustion, and physical health factors were considered extremely important by around 45% of the sample.

As an additional postnatal factor, there is now recognition of a positive correlation between postnatal depression and a difficult infant temperament. It is not clearly understood exactly how these two factors impact upon one another, but a number of studies have examined this. For example, Hopkins, Campbell and Marcus (1987) found that infant-related stressors (defined as neonatal complications and maternal perception of infant temperament) successfully distinguished two groups of women into depressed and nondepressed during the postnatal period. This supported an earlier study by Blumberg (1980) who had found that neonatal complications were a significant predictor of postnatal depression. Murray, Stanley, Hooper and King (1996) found that high infant irritability and poor motor scores predicted the onset of maternal depression by 8 weeks postpartum. However, as early as 1979, Bates, Freeland and Lounsbury recognised that a difficult infant temperament may well be a problem of parent perception, and not necessarily that of child constitution, suggesting that depressed mothers may perceive their infants to be more difficult than they actually are. As a result, it is difficult to understand whether postnatal depression may lead to the perception of a difficult infant temperament, or whether infant temperament is indeed a causal factor of postnatal depression.

Mills, Finchilescu and Lea (1995) state that 'no single causative factor has been isolated, but current thinking suggests that there is an interaction between biological factors, psychodynamic issues, cognitive patterns and situational stress' (p.99). Small et al. (1994) find that 'the evidence remains contradictory' (p.89). In addition, several of the identified factors may be better conceptualised as protective, rather than risk, factors. There is some evidence that women who have good social support and/or a good marital relationship are less likely to develop postnatal depression, even in the presence of a number of other risk factors (e.g. Cohen & Wills, 1985; Collins, Dunkel-Schetter, Lobel & Scrimshaw, 1993; Ritter, Hobfoll, Cameron, Lavin & Husizer, 2000). This is important, as these are areas where an intervention could be targeted in an attempt to lower the incidence of postnatal depression.

Several researchers have also been examining the effect that 'internal' factors have on the development of postnatal depression such as unhelpful attitudes or core beliefs which result in cognitive vulnerability (Abramson, Seligman & Teasdale, 1978; O'Hara, Neunaber & Zekoski, 1984). Rini, Dunkel-Schetter, Wadhwa and Sandman (1999) examined the effect of personal resources (specifically self-esteem, optimism and mastery - defined as generalised beliefs about oneself, one's future and one's perceived ability to control important outcomes) stating that 'such beliefs have been shown to promote adaptation and resilience in non-pregnant women by influencing processes such as stress appraisals, health-related behaviors, coping behaviors, and physiological and emotional responses to stressors' (p.334). They found that this held true for pregnant women, with those with stronger self-esteem, higher mastery and greater optimism reporting lower perceived stress. Concepts of optimism and pessimism have also been examined by Carver and Gaines (1987).

The effect of several further cognitive factors on the development of postnatal depression has also been investigated. O'Hara, Rehm and Campbell (1982) examined the role of a number of variables in the formation of postnatal depression and found that attributional style was a significant predictor. Warner et al. (1996) found that negative or maladaptive attitudes to the self and to motherhood were associated with postnatal depression (and this association was much stronger in the context of unplanned pregnancy). In contrast, Barnett and Gotlib (1988) had previously found little evidence of a cognitive vulnerability to depression.

Beck's cognitive model of depression

There are a number of theories to explain the reason individuals become depressed in the general population. One of the most widely accepted of these is Beck's (1967) model of depression, later expanded by Beck, Rush, Shaw and Emery (1979). The importance of Beck's theory to the understanding of postnatal depression is that although many researchers accept that postnatal depression is a separate entity to that of clinical depression, it is nevertheless widely believed that the formation of depression during the postnatal period occurs in the same way as in clinical depression (e.g. Whitton et al., 1996b).

This model suggests that for some people, early experiences result in the formation of certain dysfunctional assumptions or attitudes (also known as 'core beliefs' or 'schemas') that then inform the way in which that individual perceives the world. For example, some individuals may have a dysfunctional attitude such as 'I'm a failure' based on their childhood experiences. When a stressful, or critical incident

occurs (such as childbirth), individuals such as these may find their dysfunctional

assumptions are triggered, and they begin to experience negative automatic thoughts

such as 'I can't do this' or 'Everyone else is better than me'. These thoughts can

lead in turn to depression.

Once an individual is depressed, five different areas of their lives may be affected:

behaviour; motivation; affect; somatic symptoms; and cognition. Due to this

depletion, the depressed individual has fewer resources available to manage the

symptoms of depression, and the negative automatic thoughts become more

persistent, and harder to change. Hence the depressed person remains depressed,

locked in a cycle of negative thoughts, in turn confirmed by the symptoms of

depression, in turn thought about negatively. Although all individuals have the

possibility of entering this negative cycle, those with a higher propensity for doing so

have *high cognitive vulnerability* to depression. This process is illustrated in Figure

1 on the next page.

(Early) Experience

▼

Formation of dysfunctional assumptions (core beliefs/schemas)

▼

Critical incident(s)

▼

Assumptions activated

▼

Negative automatic thoughts

▼

Symptoms of depression

Behavioural   Somatic

Motivational   Cognitive

Affective
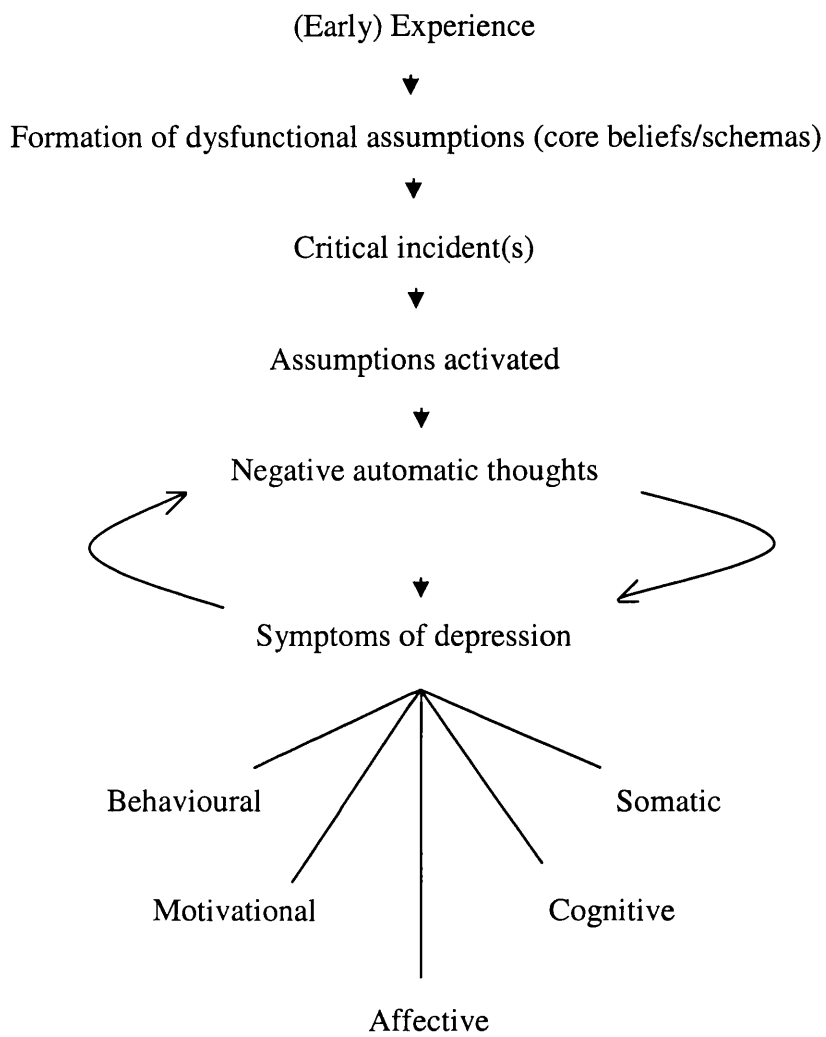
Figure 1: Beck's cognitive model of depression, from Fennell (1999)

Beck (1976) when discussing depression, writes:

'The thought content of depressed patients centres on a significant loss. The

patient perceives that he has lost something he considers essential to his

happiness or tranquillity; he anticipates negative outcomes from any

important undertaking; and he regards himself as deficient in the attributes

necessary for achieving important goals. This theme may be formulated in

terms of the cognitive triad: a negative conception of the self, a negative

interpretation of life experiences, and a nihilistic view of the future' (p.84).

Grazioli and Terry (2000) predicted that cognitive vulnerability (defined as

dysfunctional attitudes and internal causal attributions) in conjunction with high

postpartum stress would predict high levels of postnatal depressive symptoms and

emotional distress. They compared Beck's (1976) cognitive model of depression

with the reformulated learned helplessness model (Abramson et al., 1978) as

predictive models for postnatal depression. They found 'no support for the diathesis-

stress component of the reformulated learned helplessness model of depression;

however there was some support for the diathesis-stress component of Beck's

cognitive theory' (p.329). These findings were in line with Cutrona (1983) who had

found that attributional style was not a predictor of postnatal depression, operating

within the reformulated learned helplessness model. Abela and D'Alessandro (2002)

also tested Beck's (1976) diathesis-stress model and concluded that 'individuals with

dysfunctional attitudes who experienced a negative … outcome exhibited increases

in depressed mood because they developed negative views of the future' (p.122).

In Grazioli and Terry's (2000) study, the supporting evidence for Beck's (1976) model was that the negative effects of antenatally assessed dysfunctional attitudes on postpartum depressive symptoms were more marked at high levels of stress - that is, the combination of high levels of postnatal stress, and antenatal dysfunctional attitudes, was more likely to result in postnatal depressive symptomatology. Dysfunctional attitudes about performance evaluation were found to be particularly important. They concluded that 'a concern about performance evaluation is congruent with a major source of stress during the early postpartum period, and hence it is the attitudinal type most likely to interact with stress in this context' (p.341). This study is one of the very few which has combined an exploration of the predictive value of both cognitive vulnerability and stress for postnatal depressive symptomatology. Another study by Barnett and Gotlib (1988b) examines the same factors, but looks at their predictive value for general depression and general psychological distress.

In 1990, Jeff Young published his account of a *schema focused* theory of depression. Young's model of depression was elaborated from Beck's model and involved a somewhat expanded theoretical base. The importance of Young's work is that he points out that although his group of patients with personality disorders did not fit Beck's assumptions of patient characteristics essential for successful therapy, some of Young's patients did nevertheless improve when they received therapy based on Young's (1990) new model. Therefore, this implies that Beck's original (1976) model does not tell the whole story as far as depression is concerned. It may be that Young's (1990, 1999) schema-focused model incorporates a necessary change to Beck's (1976) model.

Young's (1999) model of depression, like Beck et al.'s (1979) model, has a primary

focus on automatic thoughts, and the assumptions underlying cognitive distortions.

The schema focused model of depression has a primary emphasis on 'early

maladaptive schemas', which are defined as 'extremely stable and enduring themes

that develop during childhood, are elaborated throughout an individual's lifetime,

and are dysfunctional to a significant degree' (p.9). Early maladaptive schemas are

more resistant to change than Beck's underlying assumptions because they are

unconditional beliefs - e.g. 'I am unlovable and nothing I can do will ever change

that'. Beck's belief was that underlying assumptions and cognitive distortions could

be addressed because they were conditional statements e.g. 'If I am always nice to

people, they will love me' - statements such as these offer the possibility of

successful change to an individual, whereas early maladaptive schemas do not.

There is ambiguity in the literature about the difference between schemas and

dysfunctional attitudes. The terms are often used interchangeably, and both Beck

and Young use the term 'schema' to refer to a rigid, unchanging belief structure that

is formed early in childhood. The main difference appear to be that Young's (1999)

schemas are not informed by dysfunctional attitudes, which are potentially

changeable. Beck's (1979) schemas are informed by dysfunctional assumptions or

attitudes that are conditional statements, and therefore more open to challenge and

change.

Young (1999) goes on to describe other characteristics of early maladaptive schemas:

they are self-perpetuating, with individuals distorting new data that does not conform

with their belief; they are dysfunctional 'in some significant and recurring manner';

they are usually activated by events in the environment which appear to 'fit' with the

schema - e.g. when a person with an 'unrelenting standards' schema is given a task

which is in fact impossible to fulfil, and will be observed attempting to complete it,

the schema is activated. Schemas are usually associated with a high level of affect;

and they are the result of a combination of early factors as shown in the diagram on

the next page.

Child's innate temperament

e.g. Passive rather than resilient

↑ ↓

Dysfunctional experiences with parents, peers, siblings

e.g. 'Why didn't you get an A instead of a B in reading?'

↑ ↓

Regular event during childhood

e.g. Average school performance when superior is demanded

↑ ↓

Development of an Early Maladaptive Schema

e.g. Failure Schema

↑ ↓

Event relevant to a particular schema occurs in adulthood

e.g. A caesarean section is needed because the mother is exhausted

↑ ↓

Schema triggered

e.g. Depression and/or anxiety

Figure 2: Young's model of depression using the 'failure' schema as an example. Adapted from Young (1999, p.6).

The next three sections will describe those risk factors of interest in the present

study, commencing with cognitive vulnerability (operationalised as schemas), and

then discussing parity and antenatal stress (operationalised as pregnancy and state

anxiety) in more detail.

Schemas

Four of Young's (1999) eighteen schemas appear likely to be unhelpful to a new

mother who is experiencing a highly stressful period in her life as she attempts to

adjust to the addition of a new family member. To date, there is no published

literature examining the effects of specific schemas on the longer term development

of postnatal depression.

The four schemas are: <u>failure</u> (as demonstrated within Figure 2, the belief that one is

incapable of performing as well as one's peers in areas such as career, school, or

parenting); <u>dependence/incompetence</u> (the belief that one is not capable of handling

day to day responsibilities competently and independently); <u>unrelenting standards</u>

(whatever one does is not good enough and/or there is excessive emphasis on values

such as status, wealth and power at the expense of other values such as social

interaction, health or happiness); and <u>self-sacrifice</u> (the excessive sacrifice of one's

own needs in order to help others).

It is possible that women holding one or more of these beliefs about themselves

would find the experience of new motherhood more difficult to manage. The idea

that these particular schemas are more likely to be important in the subsequent

experience of postnatal depression than others is supported by previous research. As already described, Grazioli and Terry (2000) conducted a study which found that the combination of dysfunctional attitudes and high stress was a potent contributor to the later formation of postnatal depression. They specifically concluded that a dysfunctional attitude around performance evaluation would be most likely to contribute in this way.

The 'performance evaluation' component of their research into dysfunctional attitudes was comprised of questions which centred around the ideas of failure and evaluation. These concepts are echoed in the failure, dependence/incompetence and unrelenting standards schemas described above. The unrelenting standards schema is clearly one in which performance evaluation is constant - 'I must be the best at most of what I do; I can't accept second best' is one of the statements used to evaluate this schema. Dependence/incompetence is measured by statements such as 'most other people are more capable than I am in areas of work and achievement' and failure includes items such as 'I am humiliated by my failures and inadequacies in the work sphere (or at home)'.

The potential importance of the dependence/incompetence schema was also supported by Barnett and Gotlib's (1988) research; they found that interpersonal dependency was 'an enduring abnormality in the functioning of remitted depressives' (p.264). Although their research suggests it to be a consequence of depression rather than a cause, it may be that a later obvious dependency appears as a consequence of a pre-existing dependence/incompetence belief.

In addition to examining the role of performance evaluation, Grazioli and Terry (2000) also examined the effects of having a dysfunctional attitude concerning 'approval by others'. Although there was only a modest correlation between those possessing this dysfunctional attitude and postnatal depressive symptoms, their findings suggest that this kind of dysfunctional attitude may contribute to the formation of postnatal depression. The self-sacrifice schema appeared to map most closely onto this type of dysfunctional attitude. The self sacrifice schema, also described above, is measured by statements such as 'I am a good person because I think of others more than of myself' and 'other people see me as doing too much for others and not enough for myself'.

Parity

O'Hara and Zekoski (1989) have examined the prevalence of postnatal depression in relation to different levels of parity (the number of children previously borne) within the context of a comprehensive review of the postnatal depression literature up until that date. They cite three studies as finding higher rates of postnatal depression associated with higher parity (citing Jarrahi-Zadeh, Kane, Van de Castle, Lachenbruch & Ewing, 1969; Playfair & Gowers, 1981; and Tod, 1964) and three which found the opposite (Bridge, Little, Hayworth, Dewhurst & Priest, 1985; Gordon, 1961; Martin, 1977).

Playfair and Gowers (1981) found that there was a statistically significant difference in rates of postnatal depression between women who had experienced postnatal depression following previous births, compared with those who had not, with those

29

women experiencing previous postnatal depression being more likely to experience it following a subsequent birth. However, parity itself did not seem to have an overall effect - the important factor was whether or not the woman had experienced postnatal depression after any previous birth. Tod (1964) reports a more straightforward finding; 'comparison of parity revealed a preponderance of third pregnancies within the depressed group. Primigravidae seem relatively immune from psychological disturbance in the puerperium' (p.1264). Jarrahi-Zadeh et al. (1969) found that women having their second or greater pregnancy (multiparous group) were significantly more depressed during both the antenatal and postnatal period, 'foggier' during the postnatal period, and experienced more mood change during the postnatal period than did primiparous women.

On examining those studies reporting lower rates of postnatal depression with increasing parity, Bridge et al. (1985) found that although there was no association at six weeks postpartum, there was a significant relationship between parity and postnatal depression at six months postpartum; primiparous women were more likely to be depressed at this later time than multiparous women. They hypothesised that postnatal depression 'presents at a later stage for primiparous than for multiparous women, which may explain why studies which focus only on the puerperium find no association between parity and postnatal depression' (p.330). Gordon (1961) also found a relationship between increasing parity and reduced postnatal depression. However, Martin (1977) actually reported 'a significantly lower incidence of puerperal symptoms in primiparae' (p.242) which supports the idea that increasing parity is associated with increasing depression, and not the reverse as was reported by O'Hara and Zekoski (1989).

There are a number of possible explanations for these varying findings. The first is that parity really has no effect, and the differences found between studies are purely a result of chance. For example, O'Hara and Swain (1996) found that parity had no effect in a meta-analysis (total n = 12,810). The second is that parity does have an effect on the development of postnatal depression and that previous studies have not consistently found this due to a number of methodological reasons such as small sample sizes, or a failure to analyse data in an appropriate manner.

In addition to the potential effect of parity on the development of postnatal depression, a number of researchers have examined the effect of parity on response to treatment (for example, Jacobson, Kaij & Nilsson, 1965; Kaij, Jacobson & Nilsson, 1967; Pitt, 1968). More recent was the study described in the section above on interventions, by Elliott et al. (2000) who found that a preventative intervention made a significant difference to first time mothers invited to the group, but not to second time mothers. These findings all combine to suggest that parity may be an important factor both in terms of the development of postnatal depression and in terms of individual response to treatment.

With the exception of these few papers, most researchers have not specifically examined the effects of parity on the risk of subsequent depression or response to treatment. Most have chosen either to recruit a sample of wholly first time mothers (e.g. Hopkins et al., 1987) in order to remove the potentially confounding effects of parity or, while recruiting women having second and further children, either having small total sample sizes or very small numbers of women in each group, particularly

those who have had the highest number of children (e.g. Zelkowitz & Milet, 1995). As a result, the potential importance of parity is not yet clearly understood.

Stress

Rini et al. (1999) noted the importance of considering the effects of antenatal psychosocial stress on subsequent birth outcomes. Their study underscores the importance of the impact of stress or critical incidents and they found that high stress in the antenatal period (operationalised as state anxiety and pregnancy-related anxiety) correlated highly with poor birth outcomes such as lower infant birth weights and shorter gestations. This supports previous research findings that high antenatal stress is associated with poorer outcomes (Dunkel-Schetter, 1998; Paarlberg, Vingerhoets, Passchier, Dekker & Van Geijn, 1995).

Other researchers have also examined the effects of stress. Ritter et al. (2000) conducted a study with 191 pregnant women, and found that antenatal stress was associated with higher antenatal depression, which in turn was correlated with higher postnatal depression. In this case, stress was operationalised as stressful life events, measured by the frequency of occurrence of a preconceived list of 50 general and pregnancy-specific life events over the past year. This study also considered the effects of self-esteem and social support, and found that these two factors did not contribute to any stress-buffering effects over and above their direct effects on postnatal depression. This study also found lower stress, in combination with good social support and a higher income, to be predictive of decreasing depression over the three time points in question (2nd and 3rd trimesters and 7-9 weeks postnatally).

Terry (1991) examined the inter-relationship between stress, coping style and eventual adaptation to parenthood. She found that the level of subjective stress (i.e. the new parents' perception of their own levels of stress) emerged as a negative predictor of contemporaneous and delayed measures of adaptation - i.e. the current level of subjective stress predicted not only current adaptation, but also future adaptation.

Cohen and Wills (1985) examined the evidence for a buffering model whereby social support protected individuals from the effects of stressful events. They found some support for this model which assumes as a given that stressful life events lead to adverse outcomes. Although this research was not in postnatal women, it supports the concept that stress can have a longer-term negative effect on individuals in the general population, particularly in the areas of mental health (e.g. anxiety and depression) and physical ill-health.

Finally, the research by Grazioli and Terry (2000), as mentioned previously, found that the negative effects of dysfunctional attitudes in terms of the formation of postnatal depression were most severe in the presence of high parental stress. This finding supported the diathesis-stress component of Beck's (1976) model of depression and confirmed the importance of considering the effects of stress when investigating the formation of postnatal depression.

Rationale and Aims of the Present Study

The importance of cognitive vulnerability has been explored previously in this chapter. There is no published research examining the role of Young's (1999) specific schemas in the formation of postnatal depression. Young's (1999) research is still very recent, and as a result, schemas have not yet been investigated widely. The concept of schemas as stable, enduring, dysfunctional and resistant beliefs which could contribute to the development of postnatal depression is one which is important to explore further, especially given the research examining the role of cognitive factors on the development of postnatal depression (e.g. Warner et al., 1996; Whitton et al., 1996a).

Antenatal stress has also been implicated in the development of postnatal depression by a number of researchers (e.g. Barnett & Gotlib, 1988; Rini et al., 1999) as described above. Both Beck's (1976) and Young's (1990) models of depression include a diathesis-stress component, as does the reformulated learned helplessness model of Abramson et al. (1978). This has been examined more recently by Grazioli and Terry (2000). It appears likely that the presence of extra-ordinary levels of stress for an individual may well be a necessary trigger for negative cognitions. The stress lowers an individual's resources, triggering negative automatic thoughts in persons who would normally cope quite well. For those individuals who have high cognitive vulnerability to depression as well as experiencing high levels of stress, the effects may be even greater.

The evidence for and against the importance of parity in the development of postnatal depression remains unclear. The one review paper (O'Hara & Zekoski, 1989) outlines six papers, four of which provide evidence for and two against higher parity being related to higher levels of depression. Although some researchers do include women who already have children, their numbers are small and they have not specifically set out to examine parity as an independent variable. If parity does contribute to postnatal depression, it is possible that different mechanisms could be important for the two groups.

The implications of considering cognitive vulnerability and antenatal stress as primary predictive factors opens up the possibility that first and second time mothers may experience different routes to the development of subsequent postnatal depression. It is possible that the roles of antenatal stress and cognitive vulnerability are different for the two groups. It is difficult to predict exactly how they might differ - first time mothers are experiencing a new, and therefore highly anxiety-provoking and stressful event, but also have no evidence with which they can rebut feelings such as 'I won't be able to cope'. This suggests that first time mothers might be likely to experience both high antenatal stress and high cognitive vulnerability. Second time mothers, on the other hand, may also be at risk of both factors but for different reasons (which implies a possible difference in the importance of each variable). They have already experienced pregnancy and birth once and therefore may experience a lower degree of antenatal stress. However, they may have concerns about managing with two children - a worry that is both a source of antenatal stress, and may be increased by possession of a maladaptive schema. In

order to examine the possibility that first and second time mothers become depressed through different routes, both groups will be recruited into the present study.

Following on from the current research evidence, the present study will investigate the roles of cognitive vulnerability and antenatal stress. In addition, it will explore whether there may be different routes to developing postnatal depressive symptoms for first and second time mothers. The present study builds on that of Grazioli and Terry (2000) in that it will examine the relative importance of cognitive vulnerability and antenatal stress in the development of subsequent postnatal depression.

Grazioli and Terry (2000) identify a number of shortcomings with their research, and the present study attempts to address most of these. As they point out, their sample was relatively small, with a total sample of 57 women participating at both time points. Their sample was also homogenous in terms of social class (mainly middle class), parity (all first time mothers) and marital status (all were married or in a relationship). The present study aims to recruit a larger, more heterogeneous sample in terms of the above variables.

Grazioli and Terry (2000) also gathered contemporaneous measures of stress and postnatal depressive symptomatology meaning 'that the research cannot be regarded as a true longitudinal design' (p.344). This is an important design issue, as it is difficult to claim predictive value for a variable which is measured at the same time as the outcome. The present study will instead utilise the measures of antenatal psychosocial stress used by Rini et al. (1999) comprising pregnancy anxiety and state anxiety during the third trimester of pregnancy. Rini et al. (1999) state that 'state

anxiety ... has been the most commonly studied affective state in pregnancy and is associated, albeit weakly, with birth outcomes in some studies ... In addition, a contextually tied form of anxiety, pregnancy-related anxiety, has been developed in our research and is conceptualised as a woman's fears about her baby's health, her own health, and labour and delivery.... Evidence suggests it predicts shortened gestation' (p.334). In this context, high levels of state and/or pregnancy anxiety during the antenatal period could be seen as an index of the level of antenatal stress being experienced by a pregnant woman. As a result these two measures will be used in the present study as indicators of levels of antenatal stress.

In order to assess cognitive vulnerability, Grazioli and Terry (2000) utilised a measure of two dysfunctional attitudes - 'need for approval' and 'performance evaluation'. These dysfunctional attitudes come from the theories of Beck (1967, 1976) which have been explored in more detail above. The present study instead looks at four schemas - 'failure', 'dependence/incompetence', 'unrelenting standards' and 'self-sacrifice' - based on Young's (1990, 1999) theories. The difference between these two is that the schemas are rigid, unchanging beliefs about oneself. The dysfunctional attitudes tend to be 'if...then...' statements such as 'if I do things for other people, then I'm a good person'. As a result, the dysfunctional attitudes are considered to be less unyielding and have more potential for spontaneous change. Schemas are examined in the present study because they have not been assessed in postnatal depression research previously, and their examination appears important given the body of research into cognitive factors in recent years.

Finally, Grazioli and Terry (2000) used the Edinburgh Postnatal Depression Scale, which is a screening measure used to identify women most likely to be at risk of postnatal depression. They employed this scale as a continuous measure of depressive symptomatology rather than as a tool to give them a categorical diagnostic measure of depression. This means that rather than identifying women with a diagnosis of postnatal depression, they were looking at a change in depressive symptoms over time from the antenatal to the postnatal period. Although a change in depressive symptomatology is of interest, it does mean that some of the women identified as worsening from Time 1 to Time 2 may still only record a low to moderate score on the outcome measure at Time 2. The present study will replicate this method as the prevalence of postnatal depression at 10-15% would mean recruiting approximately 1200 women in order to find 120 with diagnosed depression postnatally, and this is outside the scope of the present research. However, the present study will also aim to examine more closely the direction of change in depressive symptoms for women from Time 1 to Time 2.

Hypotheses

Three main hypotheses will be addressed in this research:

1) Women possessing higher cognitive vulnerability (operationalised in terms of specific maladaptive schemas) will be at increased risk of postnatal depression

2) Women experiencing higher levels of antenatal stress (operationalised as state anxiety and pregnancy anxiety) will be at increased risk of postnatal depression

3) There will be an interaction between cognitive vulnerability and antenatal stress such that women high on both factors have an additional degree of risk.

In addition, the study will investigate whether the pattern of predictors for postnatal depression is the same or different for first and second time mothers.

METHOD

This chapter will detail the design of the study and how the participants were recruited, in addition to the inclusion and exclusion criteria. It will also describe the measures used in the research.

Design and sample size

This was a prospective longitudinal study; data on risk factors were collected from pregnant women antenatally during their third trimester (Time 1) and outcome data were collected at 6-8 weeks postnatally (Time 2). The intended sample size was 120, which allowed for the examination of up to eight independent variables at the 0.05 confidence level with 80% power to detect a medium effect size (Cohen & Cohen, 1983). In order to allow for a 15% attrition rate between Time 1 and Time 2, 142 women were initially recruited into the study. The final sample size was 119 women completing questionnaires at both Times 1 and 2.

Ethics Approval

An application for ethical approval for the present study was made to the Whittington Hospital Local Research Ethics Committee. The committee initially had some minor queries and changes were made to the protocol as a result. The final application was approved, and a copy of the approval letter is attached (Appendix 1). The ethics committee approved the content and design of the present study as well as the

wording of the patient information leaflet (Appendix 2) and the consent form

(Appendix 3).

Recruitment

Women were recruited from 29 weeks gestation onwards antenatally (i.e. all women

were in their third trimester of pregnancy). All women attending a routine antenatal

clinic appointment were approached personally by myself while they were in the

waiting room. The antenatal clinics were located in a large London teaching

hospital and in several community-based health care centres (comprising GP clinics

and community centres). Every woman arriving for an appointment was presented

with a written list of the entry criteria for the study and a brief explanation. These

criteria are shown below, together with an explanation of their importance.

Inclusion Criteria

1) **18 years of age or over**. The ethics committee were unwilling to allow younger

women to participate in the present study.

2) **Pregnant with either first or second child**. The effects of parity on postnatal

depression are not yet fully understood. Women having third or higher order babies

were excluded from the study as a larger sample size would have been required to

examine the possible effects.

3) **Having a singleton pregnancy**. It is likely that the stresses of having two or

more babies are significantly different from those experienced by mothers of

singleton babies, and that this could have an important effect on the rate of postnatal depression.

4) **Able to read and understand the patient information leaflet, consent form, and questionnaires in English.** Unfortunately, because the study was an unfunded doctoral research project, it was not possible to pay for translation of information into other languages.

Exclusion criteria

1) **A history of any psychotic illness.** Individuals who have experienced any psychiatric illness including psychosis (such as bipolar disorder or schizophrenia) may be more likely to suffer from puerperal psychosis than postnatal depression. Two women with obsessive-compulsive disorder participated, as did several women with diagnosed phobias.

2) **For second time mothers, the first child must be five years of age or younger at the estimated date of delivery (EDD) of the second child.** This may reduce difficulties in interpreting the data when looking at the levels of stress experienced by their mothers. It is likely that having a much older child and a baby results in different stresses from those experienced with a younger child and a baby.

Women were asked to indicate whether or not they fit the eligibility criteria. Non-eligible women were thanked and any questions they had were answered. If a woman was eligible, the study was explained in more detail, and she was then left alone to read an information leaflet.

Women indicating that they would be willing to join the study kept their information

leaflet which contained information about the study, contact details for myself, and

details of my supervisors and the local ethics committee approval for the research.

Participants could choose to given written consent at that time, or to return following

their appointment with their doctor. In fact, all women willing to participate gave

written consent immediately. After written consent was received, a note was made

of their hospital record number to assist in later follow-up. Following this, each

woman was given the questionnaires described below to complete and return to the

researcher before leaving the clinic. A very small number of women left the clinic

without completing their questionnaires due to time pressures and were not included

in the final sample. The flowchart on the next page shows the numbers of women

involved at each stage of the recruitment process.

All women attending for a routine
appointment were approached ⟶ Non-eligible
n=523   *n=322 (61.6%)*

Eligible ⟶ Not willing to join
n=201 (38.4%)   n=55 (27.4%)

Willing to join ⟶ Did not complete
n=146   (72.6%)   questionnaires
                                   n=4 (2.7%)

Completed questionnaires
n=142   (97.3%) ⟶   *Dropouts*
Sample at Time 1: *n=142*   *n=23 (16.2%)*

Final Sample at Time 2:
n=119 (83.8%)
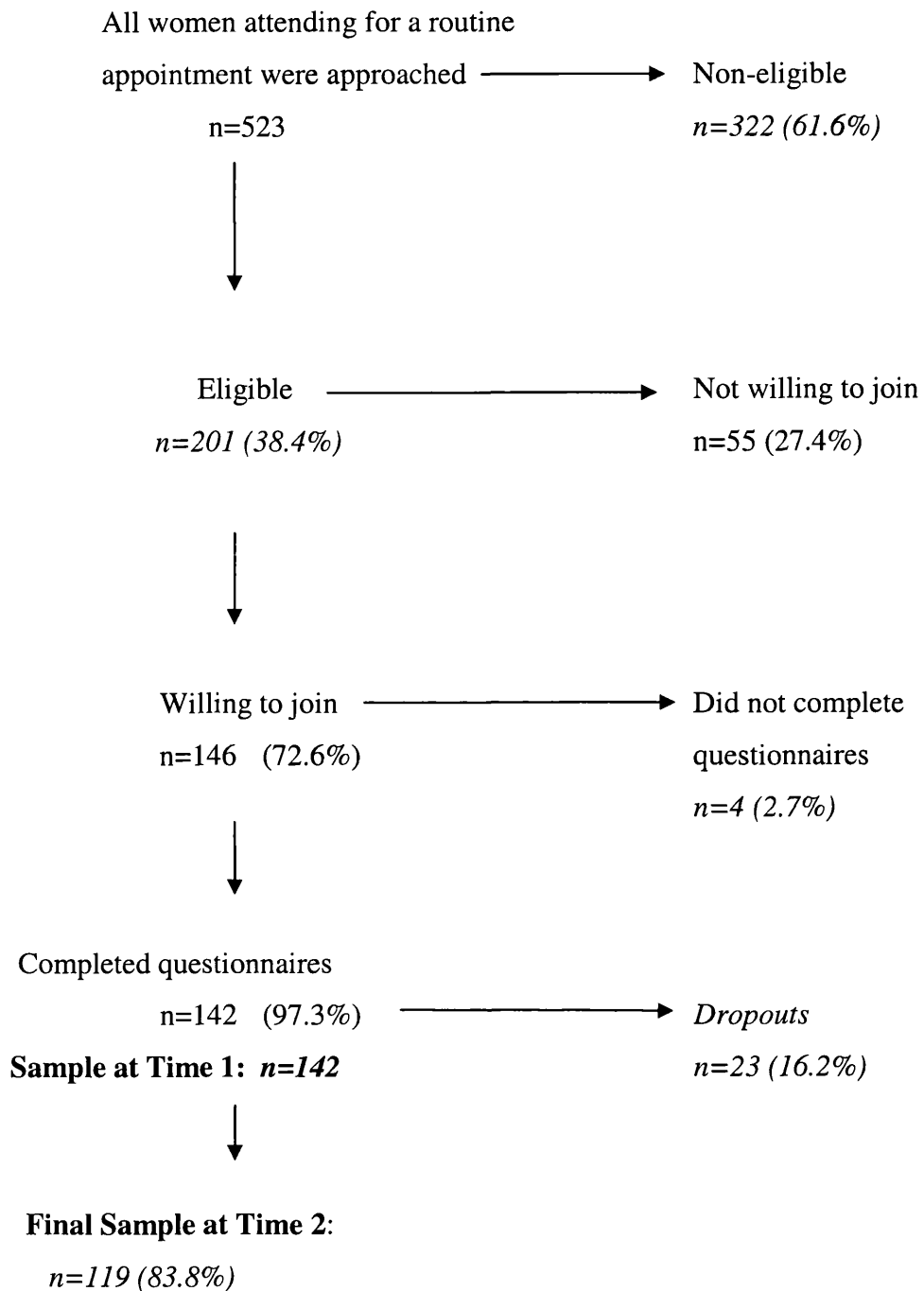
Figure 3: Numbers of women at each stage of the recruitment process

Eligible women declining to join the study gave reasons such as 'not enough time' and 'too much on my mind'. It also proved more difficult to recruit women pregnant with their second child, as a number of these brought their first child with them to the antenatal clinic. Many of these women were distracted by their first child, but most did join the study, completing their questionnaires while I looked after their first child.

Women were next contacted by post 6-8 weeks after they gave birth as there is evidence of high rates of postnatal depression at this time (e.g. Watson, Elliott, Rugg & Brough, 1984). All the participants had been asked to indicate if they had plans to move house within the three months following birth. A significant minority indicated that they did (14.1%), and gave a contact telephone number or address with a friend or family member. These contacts were used to trace women planning a move. A stamped, addressed envelope was included at this time, and a postal reminder was sent to those who failed to respond within 2 weeks. A second reminder was sent if no response had been received after a further two weeks. The participants were told of the follow-up letters at the time of recruitment so that they could consent to them from the outset.

In addition, before being contacted, the hospital record number was used to check the actual date of birth (as opposed to the estimated date) and that the baby had been born with no significant problems. This was to avoid contacting any woman in the event of a stillbirth, miscarriage or major neonatal or maternal problems. All women in the sample delivered live babies, and very few had any significant health problems. A small number of babies were admitted to the neonatal intensive care

unit, and one woman was herself admitted to intensive care. These mothers were approached 2-4 weeks later than the rest of the sample, when a full recovery had taken place and they had been discharged home.

Measures

Measures were administered to the women at two time points. Following a summary list of the questionnaires administered at each time point, each questionnaire will be discussed in more detail.

Time point 1 (third trimester of pregnancy)

At this time point, questionnaires assessing general demographic and background information, and measuring identified risk factors for postnatal depression, as well as additional factors considered to be potentially contributory to the formation of postnatal depression were given. They comprised a battery of the following:

Demographics/Background Info - age, education, income, previous medical /
psychiatric history

Social support   -   Emotional Support Questionnaire (ESQ)

Marital relationship   -   Quality of Marriage Index (QMI)

Antenatal stress   -   Spielberger's State Anxiety Questionnaire
(STAI)

  -   Pregnancy-Related Anxiety Scale (PRAS)

Depressive symptomatology   -   Edinburgh Postnatal Depression Scale (EPDS)

Cognitive vulnerability - Young Schema Questionnaire (YSQ), short

form, four schemas only

Women were given these questionnaires by the researcher during an antenatal clinic, in the manner described above, and asked to complete and return them before leaving the clinic.

Time point 2 (6-8 weeks after birth)

At this time point, brief questionnaires were sent to measure postnatal levels of depressive symptomatology and infant temperament, and information was gathered about the birth.

Perinatal difficulties - questions asking about obstetric and

pregnancy complications and level of

perceived antenatal stress

Postnatal depressive symptoms - Edinburgh Postnatal Depression Scale

Infant temperament - Bates' Infant Temperament Scale, short form

Demographic and Background Information (Appendix 4)

At Time 1, women were asked to indicate their age, marital status, ethnicity, and household income (this was used as an index of socio-economic status). In addition, questions about psychiatric history were asked; women indicated whether they had ever been treated for any mental illness other than depression, and whether they had

ever experienced depression. For those who had, information was gathered on whether or not their depression had been during the postnatal period (no more than one year following giving birth). For those women who had any previous psychiatric history other than depression, only women with a previous history including psychosis were excluded from the study, as described in the 'exclusion criteria' section above.

In addition to this information, women were asked postnatally the date of birth and gender of their new baby. All the above data are presented in the Results chapter.

Emotional Support Questionnaire (ESQ: Zemore & Shepel, 1989)

Weissman and Bothwell developed a self report version of social adjustment in 1976, based on their previous Social Adjustment Scale (now known as the SAS-SR). Zemore and Shepel (1989) adapted a shortened questionnaire of emotional support from the self report questionnaire comprising three questions which give a quantitative measure of the emotional support available to women in their day-to-day lives (Appendix 5). The questions ask: 1) Have you been able to talk about your feelings and problems with at least one friend during the last month?; 2) Have you been able to talk about your feelings and problems with at least one of your relatives in the last month?; and 3) Have you been able to talk about your feelings and problems with your spouse or partner in the last month? Women who do not have a spouse or partner omit the last question.

Responses are scored on a scale from 1 to 5, ranging from (1) 'I could always talk freely about my feelings' to (5) 'I was never able to talk about my feelings'. Scores were reversed so that a higher score was indicative of a greater level of support. A single score for an individual's level of emotional support was obtained by averaging across the two or three responses.

Quality of Marriage Index (QMI: Norton, 1983)

This questionnaire aims to assess an individual's satisfaction with their current dyadic relationship (Appendix 6). The questionnaire has six items and respondents are asked to rate their level of agreement or disagreement with the first five statements on a scale from 1 to 7, with 1 representing 'disagree very strongly' through to 7 representing 'agree very strongly'. For the final item, respondents are asked to rate their degree of happiness in their relationship on a nine point scale where 1 indicates 'very unhappy', 5 indicates 'as happy as most people are in relationships' and 9 indicates 'perfectly happy'. Norton (1983) states 'each item in the QMI probably could be used in its own right for single-item prediction. Together, however, the six items provide a more reliable measure than any single item' (p.148).

A single score is achieved by summing the total responses to all questions. The range of possible scores is from 6 to 44, with higher scores representing a higher degree of happiness and contentment in the relationship. This measure of marital happiness is much briefer than a number of other similar measures (e.g. Dyadic Adjustment Scale (Spanier, 1976) which has 32 items). It has good reliability and

validity and correlates highly with other well-established measures of marital adjustment (Calahan, 1997; Heyman, Sayers & Bellack, 1994).

Pregnancy Related Anxiety Scale (PRAS: Rini et al., 1999)

The PRAS is designed to measure anxiety specific to aspects of pregnancy and birth (Appendix 7). This measure was based on that initially developed by Wadhwa, Sandman, Porto, Dunkel-Schetter and Garite (1993), and expands their initial measure.

The scale comprises ten questions assessing the frequency with which respondents worry (or are concerned) about their health, their baby's health, labour, delivery and caring for a baby. Responses are on a four point scale from 1, representing 'never' or 'not at all', to 4, representing 'a lot of the time' or 'very much'. A single score is calculated by reversing scores where appropriate and establishing the mean of responses to all items such that a higher score indicates higher anxiety. Rini et al. (1999) report that the internal consistency of the scale is acceptable (Cronbach's alpha = 0.78).

Spielberger's State Anxiety Questionnaire (STAI: Spielberger, 1983)

State anxiety was measured using the State Anxiety Scale from Spielberger's (1983) State-Trait Anxiety Inventory (Appendix 8). The measure comprises twenty items asking individuals to indicate on a weighted four point scale how they feel 'right now' and 'at this moment'. The responses range from 1 'not at all' to 4 'very much

so'. A total score for the measure is calculated by reversing scores where appropriate and summing all responses, resulting in a final score within the range of 20-80.

Where an individual failed to respond to all questions, scores were calculated as suggested in Spielberger (1983) - this involves determining the mean weighted score for the items with a response, multiplying the value by 20 , and rounding the product to the next whole number. This is only possible where fewer than three items were omitted. No participant omitted more than two items. The internal reliability for the scale is alpha = 0.90.

Edinburgh Postnatal Depression Scale (EPDS: Cox, Holden & Sagovsky, 1987)

The EPDS is a screening tool, used to identify women who are likely to be experiencing high levels of postnatal depressive symptomatology. Women identified thus are then referred for clinical interview and diagnosis. Cox et al. (1987) had a number of stated aims in its development, including: to create a self-report scale for measuring depression; that the scale should be appropriate to use following childbirth; that it should be an appropriate measure for use on a community sample; to give practical help to primary care workers in the identification of postnatal depression; to be brief; and to have satisfactory reliability and validity.

The EPDS comprises 10 items to be answered on a four point scale, scored from 0 to 3. The range of possible scores is 0-30. A total score is calculated by reversing scores where appropriate and summing the responses to all questions. A cut-off of 12/13 is considered to be indicative of the need for further investigation.

Since that time the EPDS has been extremely widely used, particularly since Harris, Huckle, Thomas, Johns and Fung (1989) conducted a study comparing the ability of the Beck Depression Inventory (BDI) and the EPDS to identify women with major depressive symptomatology. These researchers identified 15% of a sample of 147 women as suffering from major depression at 6-8 weeks postpartum using DSM-III criteria via a psychiatric interview. For the same sample, the EPDS had a sensitivity of 95% and a specificity of 93%. The BDI had a sensitivity of 68% and specificity of 88%. Murray and Carothers (1990) went on to validate the EPDS in a community sample, arguing that this had not yet been completed in a truly random sample. They found, for a threshold of 12.5 (that used in this research) a sensitivity of 81.1% for major depression and 52% for minor depression, with a specificity of 95.7%. It has also been validated in non-English speaking communities (for example, Clifford, Day & Cox, 1997).

The EPDS was selected in preference to the BDI partly for the above reasons. In addition, a study by Lussier et al. (1996) found that although both these scales identified very similar numbers of women at a number of different postnatal time points, the scales were in fact selecting different women. They argued that the EPDS was selecting women who were admitting to fear, sadness, anxiety and tearfulness, while the BDI was selecting women admitting to guilt and coping difficulties.

Lussier et al. (1996) pointed out that the EPDS asked questions covering the last week rather than only one day. The EPDS was described as 'less rigid' and 'more nuanced' (p.89) which meant that women did not feel the need to add explanatory statements to each of their answers, as they were doing while completing the BDI.

In summary, the EPDS was selected as the instrument of choice in the present study for the following reasons: the instrument is brief, comprising only ten questions; it has a high reported specificity and sensitivity; it has good face validity, excluding questions of a somatic nature which are inappropriate for a postnatal population; it covers a week rather than a day in its questioning; and it is considered a less rigid instrument which is well received by women.

Young Schema Questionnaire (YSQ: Young, 1990)

The original YSQ comprises 205 items, designed to measure the existence of 16 schemas. The four schemas being considered in the present study are: failure; dependence/incompetence; unrelenting standards; and self-sacrifice. A short form of the questionnaire was published by Young in 1999, and this comprises only five questions per schema. The short form (YSQ-S1) comprises 75 items, representing 5 items across 15 schemas. Each participant was presented with 20 items, representing 5 items across the four schemas of interest (Appendix 10).

Each item consisted of a single statement to which the participant was asked to respond on a six point scale ranging from 1 - 'completely untrue of me' through 6 - 'describes me perfectly'. In line with the suggested scoring system, any statement endorsed with a 5 or 6 was considered to be held as a firm belief by the respondent and scored as '1'. Therefore the range for each schema was from 0 to 5. A small number of research groups have examined the YSQ in some detail in order to establish its reliability and validity.

Schmidt, Joiner, Young and Telch (1995) validated the YSQ in five independent

samples (total n=1564) and found that the primary sub-scales possessed adequate

test-retest reliability and internal consistency (see Table 1 below). Using factor

analysis in sample 1 they found 17 factors (including 15 of Young's original 16

proposed scales) and in sample 2 found 13 factors which also mapped well onto

Young's proposed schemas. They also found the YSQ to possess convergent and

discriminant validity with regard to measures of psychological distress, self-esteem,

cognitive vulnerability to depression and personality disorder symptoms.

Table 1: Psychometric properties of the Young Schema Questionnaire for the four
schemas examined in this research

	Test-retest reliability	Cronbach's alpha
Dependence/incompetence	.50	.91
Failure	.74	.94
Self-sacrifice	.74	.91
Unrelenting standards	.68	.92

Schmidt et al.'s paper was followed by research by Lee, Taylor and Dunn in 1999.

These researchers recruited 433 psychiatric inpatients and outpatients and found that

16 factors, 15 of which mapped closely onto the initial factors proposed by Young in

1990, emerged as primary factors. They conclude that 'the YSQ has good internal

consistency and … its primary factor structure is stable across clinical samples'

(p.450).

Two groups of researchers have investigated the long and short form versions of the

YSQ to establish whether they are comparable. Waller, Meyer and Ohanian (2001)

found the long and short forms of the YSQ to have comparable levels of internal

consistency, forms reliability and discriminant validity and that 'their levels of

clinical utility were broadly comparable' (p.145). Their research was conducted

using a clinical group of 60 women with bulimia and 60 controls.

In the same year, Stopa, Thorne, Waters and Preston (2001) published a paper

examining whether the long and short forms of the YSQ produced comparable scores

in a heterogeneous group of psychiatric outpatients (n=69). In line with Waller et al.

(2001) they found the two versions to have similar levels of internal consistency,

forms reliability and concurrent validity. They also concluded that 'the short version

of the YSQ is a useful assessment tool, which can be used with reasonable

confidence by practising clinicians and researchers' (p.271). However, Shah and

Waller (2000) report that as it is a relatively new measure, there are no published

norms for a depressed group.

Obstetric Information (Appendix 11)

Following the birth, information was gathered about the mode of delivery - women

could indicate that delivery was vaginal with or without tearing/episiotomy or an

elective (planned) or emergency caesarean section operation. They were also given

space to answer two open-ended questions: 'were there any complications during the

birth?'; and 'were there any complications during the pregnancy?'.

As the interest lay in the women's own perceptions of complications, any response

written here (other than 'no') was scored as an event. As a result, positive responses

ranged from 'some back pain' to a woman who had experienced a collapsed lung and

been hospitalised in intensive care for 4 days. Women received scores from 0 - 'no

complications', through 1 - birth complications only, 2 - pregnancy complications

only, to 3 - 'birth and pregnancy complications'. This information was gathered

because some research has shown the mode of delivery to be associated with

postnatal depression, as have birth/pregnancy complications (O'Hara and Zekoski,

1989).

Bates' Infant Temperament Scale (BITS: Bates, Freeland & Lounsbury, 1979)

The Bates' Infant Temperament Scale (BITS) was originally known as the Infant

Characteristics Questionnaire. It comprises 24 items rated on a 7 point scale with 1

representing an optimal temperament trait and 7 the most difficult temperament trait.

A factor analysis (Bates et al., 1979) revealed four main factors representing fussy-

difficult, unadaptable, dull, and unpredictable. Internal consistency and test-retest

reliability were adequate (range 0.39 - 0.79 and 0.47 - 0.70 respectively for the four

factors).

This research study used a short form of the BITS, comprising 7 items (Appendix

12). Each item comprises a single question about an aspect of the infant's

temperament to which mothers are asked to respond on a 7 point scale. This

replicates the measure used by Grazioli and Terry (2000) and was obtained direct

from the authors. They state that Bates et al. (1979) 'reported evidence in support of

the internal consistency, test-retest reliability and convergent validity of the scale'

(p.335). Bates (2002, private communication) confirmed that this measure

comprised an adequate sub-sample of the longer original form.

RESULTS

This chapter first presents the descriptive statistics for the sample, along with the correlations for the major variables of interest. It then shows the results of the analyses performed in order to address the three hypotheses and one exploratory research question detailed in the introduction. The first of these sections examines the hypotheses that women with higher cognitive vulnerability or higher antenatal stress are more at risk of postnatal depressive symptoms. The next section examines the possible interaction between cognitive vulnerability and antenatal stress. This is followed by an exploration of the idea that first and second time mothers will have different predictive factors. Finally, the idea of direction of change of depressive symptoms is examined.

Participants

There were 119 women who completed questionnaires at both Time 1 (third trimester of pregnancy) and Time 2 (6-8 weeks after the birth). These women comprise the sample in the following analyses. Table 2 presents the sample size (n), mean, standard deviation and range for each of the demographic, background and outcome measures. Participants had a mean age of 32.82 years. They were predominantly White (80%) and middle-class (average household income in the range £30-35,000). First time mothers made up 60.5% of the sample, with second time mothers comprising the remainder. Most (91.6%) of the sample were in a permanent relationship, with 83.2% of the total sample either married or living as married. At least one episode of depression had previously been experienced by

11.1% of the sample, with just under half of these (n=6) occurring after a previous

pregnancy.

Table 2. Demographic, Background and Outcome Measures

Outcome Measure	n	Mean	SD	Range
Maternal age (years)	119	32.82	4.99	18 - 43
Age of firstborn (months)	47	31.49	12.22	14 - 60
Income	114	6.30[a]	2.44	1- 8
ESQ[b]	119	4.33	0.82	1.5 - 5
Quality of Marriage Index	109	38.24	6.57	10 - 44
Pregnancy Related Anxiety Scale	118	1.91	0.46	1 - 3.2
State Anxiety Scale	119	37.08	10.95	20 - 72
Young Schema Questionnaire:				
- Failure	118	0.10	0.44	0 - 3
- Dependence/Incompetence	118	0.29	0.66	0 - 4
- Unrelenting Standards	118	1.75	1.52	0 - 5
- Self-Sacrifice	118	1.06	1.43	0 - 5
BITS[c]	118	3.59	0.85	1.1 - 5.3
EPDS[d], Time 1	119	7.26	4.90	0 - 23
EPDS, Time 2	119	7.82	4.36	0 - 22

a: A figure of 6.30 represents an income of between £30-35,000. b: Emotional Support
Questionnaire. c: Bates' Infant Temperament Scale. d: Edinburgh Postnatal Depression Scale.

Women in the study were, on the whole, very happy in their marriages and had a

good level of emotional support. They had a moderate level of state anxiety and

pregnancy anxiety at Time 1. The mean for infant temperament shows that in

general mothers rated their babies to have temperaments in the 'average' range (on a

scale from difficult to easy). Mean depressive scores at Times 1 and 2 were very

similar for the group as a whole, with the mean figure representing low depressive

symptomatology. All variables were checked for skewness and kurtosis. There were

a number of variables with non-normal distributions: these included income,

emotional support, quality of marriage, the schemas and both measures of depressive

symptoms. Following log and inverse transformations, only the measures of

depressive symptoms were normalised. However, as the remainder of these variables

were used only as predictive independent variables rather than dependent variables,

this skew was considered to be negligible.

It should also be noted that for two of the four schemas, there were very low numbers

of women who endorsed any statements at all. Either none or only one statement

(out of the potential five) for the failure schema was endorsed by 95.1% of women,

and none or only one statement for the dependence/incompetence schema by 94.7%.

As can be seen from Table 2, the mean score for each of these schemas was therefore

very low. As a result, it was decided to drop these two schemas from further

analyses. In order to put this decision into context, the frequency of responses to the

schema questions are presented in Table 3. It is still possible that these schemas are

important predictors of postnatal depressive symptoms, but a sample of women

endorsing these statements at a higher frequency would need to be recruited

specifically in order to test this hypothesis.

Table 3.   No. of women endorsing number of statements per schema

Variable	0	1	2	3	4	5
Failure	130	5	3	2	0	0
Dependence/						
Incompetence	107	26	5	1	1	0
Unrelenting standards	37	35	23	22	14	9
Self-sacrifice	68	32	18	7	7	8

Demographic and background variables were examined for those participants who joined the study at Time 1 but did not return their questionnaire at Time 2, postnatally (dropouts). T-tests were conducted to identify possible differences between the two groups, and those women failing to return their second questionnaire were found to be significantly younger (t = -2.51, p = 0.013) and to have lower household incomes (t = -4.32, p < 0.001). There were no significant differences found between those women returning their second questionnaire and those who did not on any other demographic or background measure.

Prevalence of Postnatal Depression

At Time 1, 20 women (16.8%) were found to have been likely to be experiencing at least mild depression, using the cut-off of 13 on the Edinburgh Postnatal Depression Scale. At Time 2, this number decreased to 18 (15.1%). Of these 18 women at Time 2, only seven were the same women as those who scored 13 or above at Time 1; that is, 11 were new 'cases' arising postnatally. These 11 women represent 9.2% of the sample, which is in line with the incidence of postnatal depression suggested by a

number of researchers (e.g. Cooper & Murray, 1998; Thorpe & Elliott, 1998). It is also not uncommon to find that the rate of depression is slightly higher during pregnancy than following the birth (Carver & Gaines, 1987).

When looking at prevalence data among first and second time mothers, it was found that at Time 1, first time mothers represented 65% of those scoring above 13 and at Time 2, first time mothers represented 61% of those scoring 13 or higher (which is proportionate at both times to the 60% of the sample made up by first time mothers).

Overview of Data Analysis

A hierarchical series of stepwise regression analyses were performed and are presented in the sections below. The first regression analysis examined the main effects of cognitive vulnerability (examining both the self-sacrifice schema and the unrelenting standards schema) and the main effects of antenatal stress (pregnancy anxiety and state anxiety) on the development of postnatal depressive symptoms. Subsequently, one further hierarchical regression analysis examined the interaction effects between the two schemas and the two measures of anxiety. In all cases, probability of F to enter a variable was 0.05, and probability of F to remove a variable was 0.1 unless otherwise stated.

In stepwise regression, the equation commences empty, and independent variables (IVs) are added one at a time if they meet statistical criteria. However, if at any step they no longer contribute significantly to the regression equation, they may be deleted. This contrasts with forward selection, where the equation begins empty and

IVs are entered one at a time provided they meet statistical criteria. However, once a variable has been entered, it remains in the equation. Backward deletion begins with all the independent variables entered in the equation, and they are removed one at a time if they do not contribute significantly to the regression equation. Following the recommendation of Tabachnick and Fidell (1996), a stepwise procedure was used.

Differences between first and second time mothers were also of interest. A t-test established whether first and second time mothers differed on the main continuous variables. Following this, the regression analyses were repeated, initially for the first time mothers, and then for the second time mothers, in order to establish whether or not the pattern of predictor variables differed for the two groups.

Finally, it was examined whether any of the independent variables were predictive of the direction of change of depressive symptoms from Time 1 to Time 2, using a categorical approach. This is of particular clinical interest. A multinomial logistic regression was conducted with the data set split into those who improved, those who stayed the same, and those who worsened between the two time points.

Bivariate correlations among the variables are shown in Table 4.

Table 4. Bivariate correlations among continuous variables.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Maternal age [a]	1.00										
2. Income [a]	0.28**	1.00									
3. Emotional support [a]	0.05	0.16	1.00								
4. Quality of marriage [a]	-0.06	0.08	0.49**	1.00							
5. Pregnancy related anxiety [a]	0.13	0.12	-0.20*	-0.04	1.00						
6. State anxiety [a]	0.15	-0.13	-0.41**	-0.43**	0.53**	1.00					
7. Unrelenting standards schema [a]	0.11	0.04	-0.04	0.13	0.10	0.17	1.00				
8. Self sacrifice schema [a]	-0.08	-0.18	-0.14	0.01	-0.01	-0.01	0.32**	1.00			
9. Infant temperament [b]	-0.04	-0.04	-0.18	0.05	0.19*	0.13	-0.06	-0.06	1.00		
10. Depressive symptoms [a]	0.10	-0.21*	-0.33**	-0.38**	0.43**	0.72**	0.07	-0.05	0.16	1.00	
11. Depressive symptoms [b]	-0.08	-0.16	-0.24**	-0.17	0.23*	0.38**	0.04	0.14	0.27**	0.42**	1.00

* $p < 0.05$, ** $p < 0.01$. a: variable measured at time 1. b: variable measured at time 2.

64

As would be expected, measures of similar constructs are positively correlated. Thus, the two measures of antenatal stress are positively correlated with each other, as are the two measures of cognitive vulnerability and the two measures of support (emotional support and marital quality). In addition, both measures of antenatal stress correlate negatively with emotional support as does state anxiety with marital quality. They also both correlate positively with depressive symptoms at Times 1 and 2. In terms of support measures, both are negatively correlated with depressive symptoms at Time 1, and emotional support with depressive symptoms at Time 2. Depressive symptoms at Times 1 and 2 are moderately correlated. Depressive symptoms at Time 1 are negatively correlated with income and at Time 2 are positively correlated with infant temperament.

Main effects of cognitive vulnerability and antenatal stress

In all regression analyses, the following variables were entered first, in order to control for their effects: depressive symptoms at time 1, maternal age, income, marital quality, emotional support and infant temperament. Variables were entered in a stepwise regression model, rather than employing forward selection or backward deletion.

A single hierarchical regression analysis was performed to establish whether or not there were any main effects of cognitive vulnerability (unrelenting standards and self-sacrifice schemas) or antenatal stress (pregnancy anxiety and state anxiety) on postnatal depressive symptoms. The dependent variable was EPDS score at time 2. An alternative would have been to use the EPDS change score (i.e. Time 2 score - Time 1 score) as the dependent variable, but the same effect was gained by entering

depressive symptoms at Time 1 first into the regression. It was not possible to use reliable change scores as there are no published test-retest reliability data available for the EPDS.

All variables were entered stepwise in the following models within the regression analysis: model 1, depressive symptoms at time 1; model 2, adding in age and income; model 3, adding in quality of marriage and emotional support; model 4, adding in infant temperament; model 5, adding in state anxiety and pregnancy anxiety; model 6, adding in unrelenting standards schema and self-sacrifice schema. The variables were entered in this order and manner for conceptual reasons.

Entering depressive symptoms at Time 1 as model 1 ensured that this highly predictive variable was controlled for from the beginning. Models 2, 3 and 4 contained those variables which were known to be important from previous literature, but were not the focus of interest of the present study. Entering these first means that any variance explained by the main variables of interest (cognitive vulnerability and/or antenatal stress) would be after (and in addition to) the variance already explained by those variables of less interest. Model 2 contained the demographic variables. Model 3 contained both measures of support as they were conceptually similar, and correlated moderately. Model 4 contained infant temperament alone as this was the only variable gathered postnatally. Model 5 added both measures of antenatal stress. Again, this was felt to be theoretically appropriate, as both were measures of a single construct of interest, and they correlated moderately. Model 6 contained both schemas for the same reasons. The final regression equation included depressive symptoms at Time 1, infant

temperament and the self-sacrifice schema. The results of this analysis are presented in Table 5 below.

Table 5. Hierarchical multiple regression analysis of postnatal depressive symptoms on cognitive vulnerability and antenatal stress

Variable	R^2	R^2change	F for R^2change	Overall F value	Sig. of F change (p)
Depressive symptoms,					
Time 1	0.222	0.222	28.758	28.758	0.000 ***
Infant temperament	0.252	0.031	4.108	16.875	0.045 *
Self-sacrifice	0.287	0.035	4.881	13.314	0.029 *

* $p < 0.05$, *** $p < 0.001$. Dependent variable: EPDS, Time 2. n=119

As would be expected, depressive symptoms at time 1 were highly predictive of depressive symptoms at Time 2, accounting for 22.2% of unique variance. Infant temperament was additionally found to be predictive of postnatal depressive symptomatology. In addition, a main effect of self-sacrifice was found, explaining 3.5% of unique variance over and above the variance explained by depressive symptoms at Time 1 and infant temperament. There was no evidence that possession of the unrelenting standards schema was independently predictive of future postnatal depressive symptoms and no evidence that state anxiety or pregnancy anxiety were important. Using a stepwise regression meant that these variables were removed from the equation.

Interaction effects of cognitive vulnerability and antenatal stress

In order to test the possible interaction between cognitive vulnerability and antenatal stress, the original schema and anxiety variables were converted to Z scores, as suggested by Aiken and West (1991). They were then multiplied together and the product was used as a new interaction variable - for example, state anxiety and self-sacrifice were multiplied together to form a state anxiety x self-sacrifice interaction variable.

One hierarchical regression analysis was then conducted which tested all of the possible four interactions. The dependent variable remained depressive symptoms at Time 2. The independent variables were entered stepwise in the following models within the regression analysis: model 1, depressive symptomatology at Time 1, income, maternal age, quality of marriage, emotional support and infant temperament; model 2, adding in the four individual terms making up the four interaction terms (i.e. state anxiety, pregnancy anxiety, self-sacrifice and unrelenting standards); model 3, adding in the four interaction terms (e.g. state anxiety x self-sacrifice).

Depressive symptoms at time 1 and infant temperament were retained within the analysis as predictive of postnatal depressive symptomatology. In addition, self-sacrifice was again significant as a main effect. There were no significant interaction effects. The regression was repeated with relaxed entry criteria such that the probability of F to enter a variable was 0.2 and probability of F to remove a variable was 0.25 in order to explore which variables appeared most important in this analysis (although not achieving significance at $p = 0.05$). Maternal age was retained within

the model (R^2 change = 0.020, F(1,98) = 2.648, p = 0.107). Two interaction effects were also retained in this analysis. Pregnancy anxiety x unrelenting standards interaction (β = -0.101, p = 0.010) accounted for an additional 1.3% of the variance of the dependent variable (R^2 change = 0.013, F(1,96) = 1.833, p = 0.179). State anxiety x unrelenting standards interaction (β = -0.089, p = 0.024) accounted for 3.7% of the variance (R^2 change = 0.037, F(1,95) = 5.266, p = 0.024).

Parity

There were 72 first time mothers, and 47 second time mothers in the final sample. In order to determine whether or not the pattern of results is different for first and second time mothers, a number of analyses were conducted. Table 6 shows the results of a t-test comparing first and second time mothers on the full range of continuous variables.

Table 6. T-test comparing first and second time mothers on continuous variables

Variable	First time mothers: Mean (SD)		Second time mothers: Mean (SD)		t (2-tailed)	Sig.
Maternal age	32.42	(4.88)	33.45	(5.13)	-1.10[a]	0.27
ESQ[b]	4.35	(0.73)	4.30	(0.94)	0.35	0.73
Quality of Marriage Index	39.44	(5.98)	36.40	(7.06)	2.42	0.02 *
PRAS[c]	1.96	(0.43)	1.85	(0.49)	1.33	0.19
State Anxiety Scale	36.76	(10.05)	37.55	(12.30)	-0.39	0.70
YSQ[d]: Unrelenting standards	1.63	(1.47)	1.91	(1.60)	-0.99	0.33
YSQ[d]: Self-sacrifice schema	0.97	(1.46)	1.19	(1.39)	-0.81	0.42
Bates' Infant Temperament	3.64	(0.90)	3.53	(0.77)	0.68	0.50
EPDS[e], Time 1	7.60[f]	(5.06)	7.55	(5.17)	0.79	0.43
EPDS[e], Time 2	7.85	(4.70)	7.77	(3.85)	-0.47	0.96

* $p < 0.05$. a: Levene's test showed equality of variance for all variables. b: Emotional Support Questionnaire. c: Pregnancy Related Anxiety Scale. d: Young Schema Questionnaire. e: Edinburgh Postnatal Depression Scale. f: Means are of original variables, but transformed variables were used in the t-test. Degrees of freedom = 117 (maternal age, emotional support, state anxiety, EPDS time 2), 116 (pregnancy anxiety, both schemas, infant temperament), 115 (EPDS time 1) and 107 (quality of marriage).

As can be seen, there is a significant difference between first and second time mothers in terms of their reported quality of marriage; first time mothers are significantly happier with the quality of their marriage than second time mothers. No other differences were found between the two groups.

Following this, two regression analyses were conducted, one for the group of first time mothers (n=72) and then for the second time mothers (n=47). The dependent variable remained as EPDS score at Time 2. The independent variables were entered in the following models into a stepwise regression analysis: model 1, depressive

symptoms time 1; model 2, adding in maternal age and income; model 3, adding in

emotional support and quality of marriage; model 4, adding in infant temperament;

model 5, adding in state anxiety and pregnancy anxiety; model 6, adding in

unrelenting standards schema and self-sacrifice schema. The following variables

were retained in the final regression equation for first time mothers: depressive

symptoms at Time 1; infant temperament; and pregnancy anxiety. The results of this

analysis are presented in Table 7 below.

Table 7. Hierarchical multiple regression of depressive symptoms, time 2, for first
time mothers.

Variable	R^2	R^2change	F value	Sig. F change (p)
Depressive symptoms, Time 1	0.264	0.264	21.492	0.000 ***
Infant temperament	0.349	0.085	7.689	0.007 **
Pregnancy anxiety	0.394	0.046	4.369	0.041 *

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Dependent variable: EPDS, time 2. n=72

In addition to the main effects for depressive symptoms at time 1 and infant

temperament, Table 7 shows a main effect for pregnancy anxiety in the group of first

time mothers. This was not seen for the total sample. However, the main effect of

cognitive vulnerability (self-sacrifice schema) seen for the total sample has

disappeared in the first time mothers group.

This analysis was repeated for the second time mothers. Variables were entered in

the same order, into the same models. Only depressive symptoms at time 1 and

income were retained in the final regression equation for this group. The results are shown in Table 8 below.

Table 8. Hierarchical multiple regression of depressive symptoms, time 2, for second time mothers.

Variable	R^2	R^2change	F value	Sig. F change (p)
Depressive symptoms, Time 1	0.158	0.158	7.326	0.010 **
Income	0.236	0.116	6.082	0.018 *
Unrelenting standards (a)	0.334	0.059	3.301	0.077

* $p < 0.05$, ** $p = 0.01$. Dependent variable: EPDS, time 2. n=47. a: probability of F to enter = 0.2, probability of F to remove = 0.25

When the above regression was adjusted so that the probability of F to enter a variable was 0.2 and probability of F to remove a variable was 0.25, unrelenting standards emerged with a weak main effect, predictive of postnatal depression in the second time mothers group only (R^2 change = 0.059, F(1,37) = 3.301, p = 0.077), explaining 5.9% of the total variance. When the probability of F was relaxed in the same way for the first time mothers group, there were no changes in outcome. Tabachnick and Fidell (1996) recommend a liberal interpretation of entry criteria for independent variables into the model, in order that important variables are not summarily excluded.

Change in direction of depressive symptoms from Time 1 to Time 2

This was assessed via a multinomial logistic regression. The data set was split into three groups, comprising those who improved, those who stayed the same, and those who worsened. An improvement or worsening was defined as a change of at least one half a standard deviation in the appropriate direction, which translated as three points on the Edinburgh Postnatal Depression Scale.

Although this is a relatively small change in real terms, there was a large group of women with a very low score on the EPDS at Time 1, and selecting a larger change (e.g. one standard deviation) would require them to move six points. This means that any woman scoring 5 or less at Time 1 could not, by definition, improve enough to be included in the 'improvers' group at Time 2. Changing the cut-off to 3 points increased the number of potential improvers from 27 to 44. In addition, there is no published test-retest reliability data available for the EPDS, meaning that a measure of reliable change could not be established.

The results of the logistic regression are presented in Table 9. All the independent variables previously considered were included in the analysis, with the exception of depressive symptoms at Time 1, which could not be included as this variable formed part of the outcome variable (i.e. direction of change is depressive score at Time 2 minus depressive score at Time 1). The aim was to establish whether any variables were predictive of an individual's eventual clinical outcome (i.e. improvement, no change, worsening).

Table 9. Multinomial logistic regression comparing those who improved, did not change and worsened in depressive symptomatology from Time 1 to Time 2.

Groups better/ same/worse	β	Wald	p-value
better vs worse			
Maternal age	-0.062	0.548	0.459
Income	0.160	0.996	0.318
Emotional support	0.462	0.553	0.457
Quality of marriage	0.049	0.479	0.489
Pregnancy anxiety	1.755	2.839	0.092
State anxiety	-0.127	5.782	0.016*
Unrelenting standards	-0.097	0.140	0.708
Self-sacrifice	0.663	5.600	0.018 *
Infant temperament	0.731	2.903	0.088
same vs worse			
Maternal age	0.007	0.012	0.913
Income	-0.075	0.329	0.566
Emotional support	-0.790	2.385	0.123
Quality of marriage	-0.058	0.983	0.322
Pregnancy anxiety	-0.192	0.065	0.799
State anxiety	0.013	0.126	0.723
Unrelenting standards	0.224	1.232	0.267
Self-sacrifice	-0.442	5.553	0.018 *
Infant temperament	-0.386	1.595	0.207
same vs better			
Maternal age	-0.054	0.736	0.391
Income	0.085	0.435	0.509
Emotional support	-0.328	0.492	0.483
Quality of marriage	-0.088	0.027	0.870
Pregnancy anxiety	1.563	3.111	0.078
State anxiety	-0.114	6.094	0.014 *
Unrelenting standards	0.127	0.332	0.564
Self-sacrifice	0.221	0.750	0.386
Infant temperament	0.345	0.890	0.345

* $p < 0.05$.

As Table 9 shows, both state anxiety and the self-sacrifice schema independently predict membership of the 'better' vs 'worse' groups. Additionally, state anxiety independently predicts membership of the 'same' vs 'better' groups, whereas self-sacrifice differentiates between membership of the 'same' vs 'worse' groups. The means of the two variables of interest, and of depressive symptoms at Times 1 and 2, are presented in Table 10 so that the direction and size of the change can be seen across the three groups.

Table 10. Self sacrifice, state anxiety, EPDS Time 1 and EPDS Time 2 means for women in the three groups.

Variable	Better (n = 24)		Same (n = 61)		Worse (n = 34)	
	Mean	SD	Mean	SD	Mean	SD
EPDS, Time 1	11.87	5.54	6.92	3.41	4.62	4.51
EPDS, Time 2	5.92	3.63	6.75	3.39	11.06	4.74
Self-sacrifice	0.79	0.83	0.90	1.40	1.53	1.73
State anxiety	44.58	11.86	36.48	9.13	32.85	10.91

Table 10 shows that self-sacrifice increases (i.e. a stronger maladaptive schema is present) with membership of the group of women who worsened from Time 1 to Time 2. State anxiety decreases with worsening at Time 2. The group of most interest in the present study is the 'worse' group; these are the women who are most likely to experience significant disruption to their lives due to increased postnatal depressive symptomatology. It is striking that the self-sacrifice schema appears to independently predict which women are most likely to belong to the 'worse' group at Time 2. It is also worth noting that the 'worse' group have a final mean score of

11.06 on the EPDS at Time 2. This is very close to the cut-off of 12/13 commonly used to identify women considered likely to be experiencing postnatal depression. These results will be further discussed in the subsequent chapter.

DISCUSSION

Overview

The present study had a number of aims: to examine the respective roles of cognitive vulnerability and antenatal stress, and how they might interact in the development of postnatal depressive symptomatology; and to determine whether the pattern of independent variables predicting depressive symptomatology was different when comparing first and second time mothers. It was hypothesised that higher cognitive vulnerability and/or higher antenatal stress would predict postnatal depressive symptomatology. It was predicted that interactions between the two factors would explain variance in the dependent variable over and above the separate main effects. Finally it was postulated that the pattern of predictive variables would differ for first and second time mothers, and this was posed as an exploratory question. The concept of direction of change was also explored, comparing those women who improved, stayed the same, and worsened in terms of depressive symptomatology from Time 1 (antenatally) to Time 2 (postnatally).

There was support for several of these hypotheses. The self-sacrifice schema (but not the unrelenting standards schema) was found to be predictive of postnatal depressive symptomatology, but no predictive value for either measure of antenatal stress was seen. There were no significant findings in terms of interactions between the measures of cognitive vulnerability and antenatal stress, although the combinations of pregnancy anxiety and unrelenting standards and of state anxiety and unrelenting standards did emerge as weakly predictive of depressive symptoms at Time 2. Different patterns of predictive variables did emerge for groups of first

and second time mothers. For first time mothers, pregnancy anxiety and infant temperament were important. For second time mothers, a lower income was found to be predictive of Time 2 depressive symptoms and the unrelenting standards schema was found to be weakly predictive. Depressive symptoms at Time 1 were important for both groups of women. In terms of direction of change, self-sacrifice and state anxiety were found to be predictive of which group a woman might be in at Time 2 (i.e. better, no change, worse).

All of these findings will be examined in more detail in this chapter. The chapter initially discusses the findings related to cognitive vulnerability and antenatal stress. This is followed by a section discussing the different findings as related to first and second time mothers. A subsequent section explores the issue of direction of change in depressive symptoms from Time 1 to Time 2, and those variables which appear to be important in predicting this. The chapter concludes with a discussion of methodological considerations, suggestions for future research, and clinical implications.

Cognitive Vulnerability and Antenatal Stress

Cognitive vulnerability was operationalised in terms of four maladaptive schemas (Young, 1999). Due to the very low numbers of women endorsing more than one statement for two of the four schemas, the failure and dependence/incompetence schemas were dropped from all analyses. As a result, cognitive vulnerability was considered only in terms of an unrelenting standards schema and a self-sacrifice schema. The unrelenting standards schema centres around a self-belief that whatever an individual does is never good enough. The sense is one of endless striving to

attain an unreachable personal goal. In contrast, those possessing a self-sacrifice schema feel that they can only earn love and approval from others through subsuming their own wishes and needs in order to serve others.

Antenatal stress was operationalised as two constructs: pregnancy anxiety and state anxiety. The pregnancy anxiety measure examines women's anxiety specific to aspects of pregnancy and birth such as worries about the health of their baby, their ability to look after a newborn and difficulties or fear about the labour or delivery. State anxiety measures how anxious an individual is feeling at the exact moment they are completing the questionnaire and asks respondents to endorse on a scale whether they feel calm, excited, jittery, nervous and so on, and hence is a measure of an individual's response to stress.

Of these four factors, only the self-sacrifice schema emerged as important in terms of an independent variable predicting depressive symptomatology at Time 2. Self-sacrifice and depressive symptoms at Time 1 together accounted for just under 25% of the total variance at Time 2. Infant temperament and maternal age also emerged as independent predictive factors. In addition, the combined effects of cognitive vulnerability and antenatal stress were examined, and both combinations involving the unrelenting standards schema showed weak predictive power. These findings are only partially supportive of the hypotheses that both higher cognitive vulnerability and antenatal stress would independently predict postnatal depressive symptoms, and that joint effects of cognitive vulnerability and antenatal stress would be additionally predictive of postnatal depressive symptoms. The possible reasons for these findings will now be considered.

Only the self-sacrifice schema was found to be independently predictive of postnatal depressive symptoms. Possession of a self-sacrifice schema suggests that an individual gains a sense of self worth through helping other people. They may spend inordinate amounts of time ensuring the needs of others are met, but fail to do so for themselves. It seems understandable that individuals holding this belief may find it very difficult to cope with an endlessly needy infant for whom they can never 'do everything'. The finding in the present study does not correspond to Grazioli and Terry's (2000) findings with their 'need for approval' dysfunctional attitude, which had no significant predictive value in their study. Individuals holding a 'need for approval' dysfunctional attitude appear to derive a sense of self-worth from others approving of them. They go out of their way to behave in a way that others will approve, even when this goes against their own natural instincts. Although the self-sacrifice schema was included in the present study because it appeared to map most closely onto the 'need for approval' dysfunctional attitude, it is likely that they are not measuring the same construct. This may explain the different findings.

The finding that self-sacrifice and unrelenting standards showed different predictive patterns can be examined in terms of two models. Young (1999) places the self-sacrifice schema within the 'other-directedness' domain, defined as 'an excessive focus on the desires, feelings, and responses of others, at the expense of one's own needs - in order to gain love and approval, maintain one's sense of connection, or avoid retaliation' (p.14). The unrelenting standards schema is presented within an 'overvigilance and inhibition' domain, defined as 'excessive emphasis on suppressing one's spontaneous feelings, impulses and choices or on meeting rigid, internalized rules and expectations about performance and ethical behavior - often at the expense of happiness, self-expression, relaxation, close relationships, or health'

(p.15). Alternatively, Schmidt et al. (1995) suggested that both these schemas together comprise a single higher order factor known as 'exaggerated standards' described as including themes of self-deprivation and perfectionism. With these two models, an argument could be made either that both schemas would be associated with depressive symptoms in the same way, or that they would have different associations with depressive symptoms postnatally. The finding that only self-sacrifice was important as an independent predictive variable lends some support to Young's (1999) schema domains rather than the higher order factors described by Schmidt et al. (1995).

The present study found that the self-sacrifice schema was not involved in combination with antenatal stress to predict depressive symptoms. However, the findings for the unrelenting standards schema are similar to those found by Grazioli and Terry for their 'performance evaluation' dysfunctional attitude, in that although there appeared to be no significant effect of the schema alone, there was a weak joint effect of this schema/dysfunctional attitude and stress. It may be that the unrelenting standards schema does share a closer conceptual similarity with the 'performance evaluation' dysfunctional attitude. The unrelenting standards schema in combination with each of the measures of antenatal stress appeared weakly predictive of Time 2 depressive symptoms. This is consistent with Grazioli and Terry's (2000) research who found that 'with the exception of one interaction, the significant interactions all involved dysfunctional attitudes relating to performance evaluation' (p.341). They suggest that the acquisition of a new role (such as motherhood) includes a concern about performance evaluation and hence a preoccupation with these kind of beliefs may be a major source of stress in itself. As

a result, this particular dysfunctional attitude may be the one most likely to interact in a meaningful way with measures of stress.

The unrelenting standards schema taps into a similar belief around the need for perfection, and hence the importance of the interaction between antenatal stress and unrelenting standards is clear when viewed in these terms. However, the present study does differ from that of Grazioli and Terry (2000) in that their findings refer to an interaction between cognitive vulnerability and a measure of postnatal (parental) stress. They examined aspects of new parenthood that women may have found stressful, such as 'lack of time with adults'. Questions such as these could actually be measuring stressful life circumstances rather than a woman's response to them (i.e. cognitive vulnerability), and the implications of measuring stress via life events rather than anxiety is discussed later in this chapter.

It is possible that a woman who is already anxious about her performance as a parent, in combination with a 'performance evaluation' dysfunctional attitude, may well find it very difficult if she feels she is constantly being assessed on her performance as a new mother. For the present study, anxiety was measured antenatally and concentrated on concerns around pregnancy as well as general anxiety. It may be clearer to conceptualise the findings of this study as measuring the importance of a woman's anxiety about her future performance, and a need to 'get it right'. For women who are anxious antenatally, and who then set themselves impossible targets of performance around care for a newborn postnatally, it appears that an interaction between unrelenting standards and antenatal stress may become a predictive factor for postnatal depressive symptomatology.

Although Grazioli and Terry (2000) recruited only first time mothers, and hence were arguing that the new role of motherhood may play an important part in this interaction, it could also be seen as important for second time mothers - although motherhood is a new role for the first time mothers, becoming the mother of a second child is also a new role, requiring some adaptations that have not been undergone previously. Abrams (2001) makes this point in a book relating her own experience of having two children, which also includes information gathered from other mothers, healthcare professionals and child experts. She states 'having a second child has changed me as a woman and as a mother; it has changed my relationship with my first child, and with my husband; it has affected my health, my social life and my work. The mother-of-two me is not better or worse, but she is most decidedly *different*' (p.7)

Although the present study has findings which are not wholly consistent with those of Grazioli and Terry (2000), previous research findings in relation to cognitive vulnerability and postnatal depressive symptoms have also been mixed. For instance, Grazioli and Terry (2000) did not find significant individual effects for either their 'need for approval' or 'performance evaluation' dysfunctional attitudes, but did find the interaction between performance evaluation and parental stress to be important. Gillis and Lanning (1989) found an effect of dysfunctional attitudes in predicting depression (in the general population rather than postnatally), but the dysfunctional attitudes were not important in combination with stress. Gotlib, Whiffen, Wallace and Mount (1991) did not find individual or combined effects of dysfunctional attitudes. There is clearly some ambiguity in the literature.

In terms of antenatal stress, no individual effects were seen for the whole sample. This is not supportive of the prediction made within the present study and there may be a number of reasons for this finding. Antenatal stress in the present study was operationalised in terms of two measures of anxiety, as suggested by Rini et al. (1999). Higher pregnancy anxiety and state anxiety were considered to be an index of antenatal stress based on the idea that women experiencing stressors would have high anxiety levels. However, there are other methods of operationalising stress, and the use of different methods might have led to different results. A larger number of studies have utilised significant life events as a measure of stress. For example, Playfair and Gowers (1981) found that 'the most important factor associated with postnatal depression was external stress occurring after the birth' (p.205) when questions were asked in terms of significant life events such as ill health, financial and housing difficulties. Ritter et al. (2000) measured stressful life events at two antenatal time points - within the second and third trimesters - and found stress (measured as 50 general and pregnancy life events) to be significantly associated with postnatal depression.

However, Lobel, Dunkel-Schetter and Scrimshaw (1992) point out that a multidimensional measure of stress (in their case comprising state anxiety, life event distress and perceived chronic stress) was predictive of poor birth outcomes. They argue for an approach which incorporates a number of different measures of stress, and hence the measures suggested by Rini et al. (1999) were adopted in the present study. They were also adopted due to the difficulty of interpreting the life events measures. As every individual reacts differently to the same stressor (for example, some women take moving house in their stride while others find it extremely difficult), it is difficult to be sure exactly how stressful any given event is for any

given woman. It was decided that it would be of more interest to measure how anxious each woman felt, as it was likely that those with a high number of life events would have higher levels of anxiety.

In the present study, state anxiety was utilised as a measure of an individual's reaction to environmental stress. It should also be noted that individuals may have high state anxiety due to a reaction to an environmental stressor, but may also be high trait anxiety individuals. Nevertheless, given the lack of significant findings in the present study involving the independent effects of antenatal stress on postnatal depressive symptoms, it may be that the previous findings in the literature are specific to measurement of life events stress, and that state anxiety and pregnancy anxiety are measuring a construct different from those being measured with life events. However, a number of researchers found anxiety to be predictive of postnatal depression. For example, Tod (1964) found that anxiety was present for every woman with postnatal depression he identified in his sample (20/700). Meares, Grimwade and Wood (1976) found an increase in the severity of anxiety symptoms corresponding to an increase in severity of postnatal depression.

The lack of significant independent findings for state anxiety may be due to a number of reasons. For instance, measuring state anxiety rather than trait anxiety meant that women were being asked to respond regarding their levels of anxiety at that exact moment. However, a measure of trait anxiety would have given a measure of their more general levels of anxiety. Other studies have found anxiety to be important, when using measures that were more generalised than state anxiety (e.g. Tod, 1964, utilised a clinical interview). In addition, any potential effects of state

anxiety were almost certainly masked by the effects of depressive symptoms at Time 1, which were highly correlated with state anxiety.

Parity

Very few researchers have specifically included an examination of the potential role of parity in the development of postnatal depression, and previous findings are inconclusive, as was described in the Introduction. In the current study, first and second time mothers were not significantly different on any of the main predictor variables with the exception of reported quality of marriage; second time mothers reported being significantly less happy with their relationship than first time mothers, although it should be noted that the actual reported difference was very small. First and second time mothers also did not differ in their levels of reported postnatal depressive symptomatology.

The role of parity as an independent predictor of postnatal depression was not considered within the present study; it was considered that given the ambiguous findings to date in the literature, a much larger sample of first and second time mothers would be needed to establish more definitively whether or not parity itself could predict postnatal depressive symptoms. However, the study did aim to explore whether different patterns of predictive variables might account for postnatal depressive symptoms in the two groups. For first time mothers, depressive symptoms at Time 1, infant temperament and pregnancy anxiety emerged as being predictive of Time 2 depressive symptomatology. For second time mothers, depressive symptoms at Time 1 and income were seen to be predictive and an unrelenting standards schema emerged as weakly predictive.

It is interesting to note that infant temperament appears important in predicting

depression for first time mothers, but not for second time mothers. It may be that

having a difficult baby as the first child is harder to manage for an inexperienced

mother. Second time mothers may deal with a difficult infant more easily because

they do not use infant temperament as a measure of their own competence as a

parent. Their prior experience means that they already know they can manage with a

newborn baby. It could also be argued that a second time mother with a difficult

baby is more able to cope simply because she has some experience with dealing with

babies in all their moods, and hence is less likely to be overwhelmed by what she

may perceive as a difficult phase, but not an intractable personality type.

However, understanding this finding is fraught with difficulties. As described in the

introduction, it is unclear 'which came first' - the difficult infant temperament, or the

depressed mother. It has been argued that children of depressed mothers become less

responsive, more gaze avoidant, more distressed during interactions with mothers

(Field, Morrow & Adelstein, 1993) and have more difficulty regulating their

emotions (Zahn-Waxler, Cummings, Iannotti & Radke-Yarrow, 1984). It has also

been argued that infants with a difficult temperament are much more difficult to

manage, and that they 'cause' their mothers to become depressed as a result (Murray

et al., 1996). Finally, Rickard, Forehand, Wells, Griest and McMahon (1981) found

that 'depressed mothers appeared more predisposed to perceive their children's

behavior as more negative than objectively warranted...it is unclear whether

depressed mothers' negative perceptions of their children represent reality distortions

or whether depressed mothers are reporting accurately that their children are

maladjusted' (cited by Teti & Gelfand, 1997, p.141). Nevertheless, finding that there

is a difference between first and second time mothers suggests that it is something about having had a previous child which gives women the confidence or ability to cope with a difficult infant better following a second pregnancy.

It does not appear surprising that pregnancy anxiety should be more important in predicting postnatal depressive symptoms for first time mothers than for second time mothers. Pregnancy is a novel state for first time mothers, and is certainly recognised as a major life transition, affecting an individual's physical and mental health (Dunkel-Schetter & Lobel, 1998). It is likely that a woman in a novel situation will find the experience of pregnancy (and the 'threat' of childbirth to come) more anxiety-provoking than a woman who has had the experience before. Second time mothers have not only had the experience of a prior pregnancy, but they have also previously had experience of attending hospital for antenatal visits and meeting medical and midwifery staff, which is likely to reduce their anxiety about such visits during a second pregnancy. As Abrams (2001) puts it: 'Pregnancy and childbirth are usually less dramatic second time round. The medical risks go down and … everyone has a better idea of what's in store' (p.34). This was confirmed by a statement from one of the women taking part in this research: 'This is my second child and the birth and postnatal period have both been 100% easier… I know what to expect - both with the baby/lifestyle and expectations of my partner. I am thoroughly enjoying this one!'. The finding that pregnancy anxiety was predictive for first time mothers only may also be partly due to the way pregnancy anxiety was measured; two of the ten items on this questionnaire concentrate on worries a second time mother is much less likely to endorse highly, such as 'I am concerned (worried) about taking care of a new baby'.

For second time mothers, income emerged as a predictive variable for postnatal depressive symptoms, suggesting that women with a lower household income were more likely to become depressed. This finding can be understood within the context of an expanding family, where financial outlay has just increased significantly. It is interesting that this is only predictive for second time mothers, but it may be that women with two children find that returning to work is difficult due to child care responsibilities. It is not uncommon that the cost of two children in full-time nursery care costs between £200 (rural areas) and £500 (inner London) per week (Petrou, 2002). Child care costs of this magnitude mean that a woman (or her partner!) must be earning more than £860 (net) in rural areas or £2,150 (net) in inner London areas monthly in order to justify her return to work. In addition to this, 'the *logistics* of childcare become even more daunting than they were with one' (Abrams, 2001, p.171). The change from a two income to one income family, with the addition of a new family member, is obviously a big financial strain for any family and may well contribute to the development of postnatal depressive symptoms for some women. This finding is also supported by O'Hara and Swain (1996) who found income to be a significant predictor of postnatal depression in a meta-analysis of several studies (total n = 12,810).

The unrelenting standards schema emerged as a weak predictor of Time 2 depressive symptomatology for second time mothers only. This is particularly interesting given the strong main effect of the self-sacrifice schema for the whole sample. Possession of an unrelenting standards schema in this context suggests that the woman feels the need to organise her life perfectly, and to cope as well following the birth of a second child as she did after the first one. Abrams (2001) quotes Bettelheim (1987) as stating 'perfectionism is not within the grasp of ordinary beings. Efforts to maintain

it typically interfere with that lenient response to the imperfections of others, including those of one's child, that alone make good human relations possible' (p.198). This appears to suggest that unrelenting standards - or perfectionism - is impossible to achieve, and the struggle to achieve it may well lead to poorer relationships with others, including one's own child.

Direction of change

The concept of direction of change was explored in order to establish whether any of the variables of interest could predict the direction of change in a woman's depressive symptoms from Time 1 to Time 2. Only two independent variables predicted an individual woman's membership of three main groups - those who improved from Time 1 to Time 2, those who did not change, and those who worsened across the same time period in terms of postnatal depressive symptomatology. These two variables are state anxiety and the self-sacrifice schema. The self-sacrifice schema means showed a clear picture of an increasing schema strength being predictive of a more negative outcome - i.e. those women with the lowest levels of self-sacrifice schema ended up in the 'better' group, through to those with the highest levels of self-sacrifice schema ending up in the 'worse' group. The means for state anxiety show an opposite story. Women in the 'worse' group had the lowest state anxiety scores at Time 1, and vice versa for the 'better' group.

The finding that those women with the highest levels of self-sacrifice schema were more likely to belong to the group of individuals who worsened from Time 1 to Time 2 appears to provide additional evidence for the important potential role of this schema. The finding concerning state anxiety is less easy to understand. There was

a strong correlation between depressive symptoms at Time 1 and state anxiety (0.72, p<0.01). It appears likely that the main effect of state anxiety was masked by depressive symptoms at Time 1 throughout the analyses. The effect of depressive symptoms at Time 1 were controlled for in every analysis. This variable was not individually examined when exploring direction of change as the outcome measure itself was the difference between depressive symptoms at Times 1 and 2. With the absence of depressive symptoms at Time 1 in the analysis, the individual effects of state anxiety immediately became obvious.

The 'better' group also had much higher levels of state anxiety than those who did not change or got worse. It may be that the group who 'got better' were particularly anxious antenatally, but this condition changed following the birth. If this were the case, it may be that these individuals were also high in trait anxiety, and measuring trait anxiety as well could have resulted in finding that it too was predictive of which group a woman ended in. It could be that trait anxiety itself is independently predictive of postnatal depressive symptoms in a way that state anxiety does not appear to be. It may also be possible that this finding represents regression to the mean, particularly in the case of those who improved over time. It is interesting to note that the group who improved over time showed a smaller mean change in depression than those who worsened from Time 1 to Time 2. This suggests that the group who improved were regressing to the mean, and the group who worsened were showing a genuine change in symptoms, as their scores changed to a degree which in fact involved them moving towards and then further away from the mean. The final depressive symptoms mean of the group who worsened was 11.06, which is close to the cut-off of 12/13 usually used to indicate a real risk of depression. It would be important to establish whether or not this finding is replicated in future studies.

Methodological considerations

Although this study did have a number of strengths, particularly in terms of recruiting first and second time mothers, and having a longitudinal design, there were nevertheless a number of methodological issues which should be highlighted. These issues are presented in three sections - sample, measures and design.

Sample

The sample used in the present study, although large enough to give a confidence level of 0.05 to find a moderate effect size with 80% power, was reasonably homogeneous, and hence it is difficult to know how generalisable these findings are to the wider population. The sample was predominantly White and middle-class. Recruiting women from different ethnic backgrounds was made more difficult due to a lack of funding allowing translation of the patient information leaflet, consent form and questionnaires into other languages. Approximately one-quarter of those women who were approached in the antenatal clinic would have been eligible to join the study but were excluded due to their lack of fluency in English. Many of these women were also members of a group earning a great deal less than those participating in the research. Giving these women access to the present study would have resulted in a far more heterogeneous and representative sample.

Another issue concerning the sample is that of parity. It was more difficult to recruit second time mothers who had a small child with them in the antenatal clinic. This, together with the fact that fewer second time mothers attend regularly for antenatal appointments, resulted in a smaller sample of second time mothers. However, the response rates at Time 2 were not different from those of first time mothers. Given

the findings on the differing pattern of predictive variables for first and second time mothers, it would be of interest to repeat this study with a larger sample of second time mothers in order to increase statistical power. It is possible that the unrelenting standards schema, which was only found to be weakly predictive of Time 2 depressive symptomatology, may well prove to be more predictive than is currently evident from the findings in the present study if a larger sample were available to examine.

Measures

Choosing appropriate measures is a task which requires consideration of many aspects. They must be appropriate for the population being recruited. They must be as reliable and valid as possible. They should be brief so as to avoid respondent fatigue. They should avoid overlapping with other measures which creates redundancy. Finally, they should be easy to understand, from the points of view of the respondents, the researcher, and others involved in the research. Few measures manage to fulfil all these criteria. This section will examine the strengths and shortcomings of several of the measures used in this study and consider the implications for the results.

When considering the construct of cognitive vulnerability, four schemas were initially deemed to be of interest. This is discussed in the introduction. The Young Schema Questionnaire, used to assess these schemas, is quite new, and hence the reliability and validity data are sparse. On a positive note, the measure is very brief, and the participants did not generally object to answering the questions. However, two of the four schemas (failure and dependence/incompetence) had to be dropped

from all analyses as almost none of the women taking part in the study could be said to possess either schema. It was remotely possible that this was a problem with the measure itself, in that it was not tapping the kind of beliefs which fit into 'failure' and 'dependence/incompetence'. However, it is most likely that women in the present study simply had very few beliefs of this nature, and hence it was impossible to include these schemas of interest.

There are broader issues to be considered in the measurement of schemas. The present study used a self-report measure which asks individuals to endorse statements asking questions about their beliefs and responses to themselves and others. It is possible that individuals may be affected to some degree by their emotional state on the day they complete the questionnaire. Although schemas should be less vulnerable to this issue, as they are unchanging, rigid belief structures, it is still possible that an individual experiencing a difficult time may in fact decide to indicate that they are not a good person, even though they generally believe that they are.

The operationalisation of schemas as a measure of cognitive vulnerability is one which needs to be generally interpreted with caution. Schemas are believed to represent the unconscious beliefs of an individual. However, the data rely on the responses of individuals to identify how strongly that individual holds a given set of (unconscious) beliefs. The question must be raised as to whether individuals are able to report with any accuracy on the beliefs that they hold unconsciously. In addition to this point, there is the fact that several of the questions are worded in such a way that they require sophisticated thinking; for example, to measure the self-sacrifice schema, individuals are asked to agree or disagree with the statement 'I am a good

person because I think of others more than of myself'. Respondents must be able to recognise that, not only do they believe they are 'a good person' but that they believe this is so *because* they think of others more than of themselves. This is a fairly sophisticated cognitive concept, and it is likely that not all individuals are aware enough of their own beliefs to be able to endorse the statement accurately.

The two measures of stress were chosen for a number of reasons. Grazioli and Terry (2000) point out that their measure of stress was gathered postnatally (this was a measure of parental stress) and hence 'the research cannot be regarded as a true longitudinal design' (p.344). In an attempt to overcome this problem, and from a wish to examine specifically the contribution of antenatal stress rather than postnatal forms of stress to subsequent depressive symptomatology, the two measures of state anxiety and pregnancy anxiety used by Rini et al. (1999) were adopted (see previous sections for a fuller discussion). The two measures did correlate moderately at 0.53, but this figure nevertheless suggests that although they are measuring similar constructs, they are not identical. Although the two measures were entered together as a single model within the regression analyses, it is possible that a combined variable may have given more information in terms of a single measure of antenatal stress, rather than as two separate measures of antenatal anxiety. It is also the case that there is a tension between assessing antenatal stress via life events or via a measure of anxiety, and this has already been more fully discussed previously in the chapter.

In retrospect, it may have been useful to include a contemporaneous, postnatal, measure of stress as well as those measuring stress antenatally. Although the question of interest within this study was of the effect of antenatal stress on postnatal

depressive symptomatology, it would nevertheless be of interest to compare these results with those found during the postnatal period. Grazioli and Terry (2000) found parental postnatal stress to be individually predictive of postnatal depressive symptoms, whereas the present study did not find the same to be true for antenatal stress. It would be of interest to examine the differences between the predictive value of antenatal and postnatal stress within the same population to establish whether there are different processes at work.

Another issue of measurement was that of operationalising the construct of antenatal stress. The present study included state anxiety and pregnancy anxiety as measures of antenatal stress. However, there is a large literature which includes measuring stress in terms of life events. This method of measuring stress has traditionally been seen as problematic, as the method of gathering information either relies on respondents spontaneously remembering and listing all their sources of stress over the period of time in which the researcher is interested, or presenting respondents with an exhaustive list of potential stressors and asking them to endorse any which apply. This second method has the problem that although an individual may have experienced a high number of potential stressors, their effect on the individual was negligible, and this is not recognised by the measure. Although a significant life event is very likely to have an impact on a woman's level of antenatal stress (for example, the death of a parent, or moving house), it was considered likely that the effects of this would be measured adequately within the state anxiety construct.

The use of the Edinburgh Postnatal Depression Scale also needs to be considered. The reasons for choosing this measure were elaborated in the methods chapter, but the EPDS does have a shortcoming in that Brouwers, van Baar and Pop (2001)

confirmed the existence of an anxiety subscale within the measure. This may partly

explain the finding that state anxiety and depressive symptoms were highly

correlated at Time 1, when they were measured contemporaneously. However,

Brouwers et al. (2001) found that the anxiety subscale did not correlate any more

highly with other anxiety measures than did the entire EPDS. They concluded that

anxiety and depression symptoms are best measured with the total EPDS rather than

the subscales.

Design

The issue of including a contemporaneous measure of stress postnatally is a design

issue as well as one of measurement. Although including more measures postnatally

could have been useful, it was felt to be important to try and maintain a balance

between gathering information of interest, and ensuring a high response rate from the

sample. New mothers are already overtaxed, and a shorter questionnaire was

therefore the priority. Nevertheless, including one more measure may have been of

use.

The preferred option in terms of contacting the mothers would have been to recruit

women in their first trimester of pregnancy, and then conduct follow-ups during their

second and third trimesters as well as postnatally, concluding with a follow-up

around six months after the birth. This was not possible due to the time constraints

of the present study. Had this been possible, it would have allowed more confidence

in interpreting results such as finding that the group who improved over time actually

had the highest depressive symptoms score at Time 1. This group appears to include

a large number of individuals who were also particularly high in antenatal state

anxiety (which is highly correlated with depressive symptoms at Time 1), and speculations have been made that this group were unusual at the time they were first seen. Results such as this could be interpreted within a broader context if time and resources had allowed for more data points.

It may also have been useful to gather information from a different source regarding some of the measures. For instance, partners and husbands could have indicated their perceptions of infant temperament, which may have decreased the difficulties with interpretation due to the potentially confounding effect of maternal depressive symptoms. A second source of information would have allowed comparisons to be made between maternal and paternal ratings of infant temperament and maternal mood.

Suggestions for future research

There are a number of implications of the present study for future research into postnatal depression. A replication of this study in a larger sample would enable a closer examination of those interactions which did not reach, but showed a trend towards, statistical significance. In addition, it would be interesting to consider the role of parity as an independent predictor of postnatal depressive symptoms, which was outside the scope of this study to examine more closely. It would also be of interest to examine a range of Young's schemas to determine whether any others are predictive of depressive symptoms in the postnatal period in the same way as self-sacrifice appears to be.

Repeating this research with a larger sample would also allow examination of the more uncommon schemas, in order to establish whether they do in fact hold any predictive value. For example, the dependence/incompetence and failure schemas may be important in the development of postnatal depressive symptomatology, as was suggested by Grazioli and Terry's (2000) research. However, both these schemas appear to be fairly uncommon within the general population, meaning that a much larger sample would be required in order to find enough women with these beliefs. In addition, it could be that a sample of women holding these beliefs are unusual in other ways as well, and research into these two groups would be of interest.

There has been limited research generally in terms of the potential role of cognitive vulnerability in the development of postnatal depressive symptomatology. Given the findings of a number of researchers, which have been previously discussed, it appears that there is enough evidence to support the idea that cognitive vulnerability has some role to play in the development of postnatal depression. Understanding the ways in which different types of cognitive vulnerability are important now appears to be critical. It would also be of great interest to examine methods of assessing cognitive vulnerability, the likely effects on an individual woman, and any means which may prevent the development of postnatal depression in women with higher cognitive vulnerability.

The role of the interaction between cognitive vulnerability and stress is still not fully understood. Further research exploring this link would be valuable in determining the mechanism by which stress and negative self-cognitions of all types are important in the development of postnatal depressive symptoms. This should include

an examination of the relative importance of antenatal and postnatal stress, given the differing findings that have been reported.

Further research which measured antenatal stress both by means of stressful life events and anxiety would be of interest, given the differing findings which have been reported in the literature. It would be of interest to know whether they are in fact tapping into the same or different constructs, and if different, their differential effect on the development of postnatal depressive symptoms.

Finally, it would be of interest to establish whether or not the results of the present study can be utilised in terms of prevention of postnatal depressive symptoms. The clinical implications are considered in the section below - research auditing any change in clinical practice as a result of the findings of the present study and of those studies following on from this research would be essential.

Clinical implications

In terms of clinical management, there are a number of practical applications of this research. For first time mothers particularly, pregnancy anxiety appeared to play a significant role in the development of later depressive symptomatology. Either incorporating anxiety management classes into the existing antenatal classes (which are attended by a high proportion of expectant first time mothers) or running specific classes in the topic for those identified to be at risk (for example, those with a higher endorsement of the self-sacrifice schema) may well be of use in reducing the incidence in postnatal depression in this group.

If future research replicates and confirms the potential importance of the self-sacrifice schema, it may be helpful to 'screen' women during the antenatal period. Young's shortened form allows this schema to be measured with only five questions, allowing women at higher risk to be identified quickly. These 'at risk' women could then be targeted for interventions, and this may have an impact in lowering the incidence of postnatal depressive symptomatology, or in reducing the severity of it. However, a number of researchers have concluded that designing an antenatal screening questionnaire with enough predictive power to be clinically useful would be an extremely difficult task (Appleby, Gregoire, Platz, Prince & Kumar, 1994; Cooper, Murray, Hooper & West, 1996; Elliott et al., 2000). In addition, Elliott (1989) points out that there is no reason preventative interventions could not be incorporated within the current antenatal class system, and hence there is no need to identify 'at risk' individuals in order to channel them into a restricted access system.

Current interventions for prevention of postnatal depression are mainly focused on providing information about the risks and realities of postnatal depression, and attempting to normalise it as a fairly common problem that is experienced by women of all types. There is not generally a focus on identifying women with cognitive vulnerability. However, when such women are identified, as in the Elliot et al. (2000) study, results showed a decrease in the incidence of postnatal depression (albeit only in first time mothers), following assignment to a preventative intervention group. This suggests that focused interventions may well have value in the prevention of postnatal depression in certain groups of women.

The present study, while it must be interpreted with caution, does appear to have implications for the way in which we understand the period during pregnancy as a

time of preparation for motherhood. It is clear that some women do have very real concerns about their ability to manage as new mothers, and that this may be exacerbated in some women who have particular beliefs, and therefore a particular cognitive vulnerability. It may also have implications for the way in which we understand the development of postnatal depressive symptoms for first and second time mothers. There does appear to be some evidence that these two groups of women have a different perinatal experience and hence have different risks and responses. It is hoped that further research replicating and building on this study will add to the total of our current knowledge regarding postnatal depression.

References

Abela J.R.Z. & D'Alessandro D.U. Beck's cognitive theory of depression: a test of the diathesis-stress and causal mediation components. *British Journal of Clinical Psychology, 41(2),* 111-128.

Abrams R. (2001). *Three shoes, one sock & no hairbrush: everything you need to know about having your second child.* London: Cassell & Co.

Abramson L.Y., Seligman M.E.P. & Teasdale J.D. (1978). Learned helplessness in humans: critique and reformulation. *Journal of Abnormal Psychology, 87,* 49-74

Affonso D.D., Lovett S., Paul S.M. & Sheptak S. (1990). A standardized interview that differentiates pregnancy and postpartum symptoms from perinatal clinical depression. *BIRTH, 17,* 121-130.

Aiken L.S. & West S.G. (1991). *Multiple regression: testing and interpreting interactions.* Newbury Park: Sage.

American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).* Fourth Edition. Washington: American Psychiatric Association.

Appleby L., Gregoire A., Platz C., Prince M. & Kumar R. (1994). Screening women for high risk of postnatal depression. *Journal of Psychosomatic Research, 38,* 539-545.

Appleby L. , Warner R., Whitton A. & Faragher B. (1997). A controlled study of fluoxetine and cognitive-behavioural counselling in the treatment of postnatal depression. *British Medical Journal, 314,* 932-936.

Barnett P.A. & Gotlib I.H. (1988a). Psychosocial functioning and depression: distinguishing among antecedents, concomitants, and consequences. *Psychological Bulletin, 104(1),* 97-126.

Barnett P.A. & Gotlib I.H. (1988b). Dysfunctional attitudes and psychosocial stress: the differential prediction of future psychological symptomatology. *Motivation and Emotion, 12(3),* 251-270.

Barnett B., Lockhart K., Bernard D., Manicavasagar V. & Dudley M. (1993). Mood disorders among mothers of infants admitted to a mothercraft hospital. *Journal of Paediatric and Child Health, 29,* 270-275.

Bates J.E., Freeland C.A.B. & Lounsbury M.L. (1979). Measures of infant difficultness. *Child Development, 50,* 794-803.

Beck A.T. (1967). *Depression: Clinical, experimental, and theoretical aspects.* New York: Harper and Row.

Beck A.T. (1976, 1991). *Cognitive Therapy and the Emotional Disorders.* London: Penguin Books Ltd.

Beck A.T., Epstein N., Harrison R.P. & Emery G. (1983). *Development of the Sociotrophy-Autonomy Scale: A measure of personality factors in psychopathology.* Unpublished manuscript, University of Pennsylvania.

Beck A.T., Rush A.J., Shaw B.F. & Emery G. (1979). *Cognitive Therapy of Depression.* New York: Guilford Press.

Beck A.T, Ward C.H., Mendelson M., Mock J.E. & Erbaugh J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4,* 561-571.

Bettelheim B. (1987). *A Good Enough Parent.* London: Thames and Hudson.

Blumberg N.L. (1980). Effects of neonatal risk, maternal attitude, and cognitive style on early postpartum adjustment. *Journal of Abnormal Psychology, 89,* 139-150.

Bridge L.R., Little B.C., Hayworth J., Dewhurst J. & Priest R.G. (1985). Psychometric predictors of post-natal depressed mood. *Journal of Psychosomatic Research, 29,* 325-331

Brouwers E.P.M., van Baar A.L. & Pop V.J.M. (2001). Does the Edinburgh Postnatal Depression Scale measure anxiety? *Journal of Psychosomatic Research, 51(5),* 659-663.

Calahan C.A. (1997). Internal consistency, reliability and concurrent validity of the Kansas Marital Satisfaction Scale and the Quality of Marriage Index. *Psychological Reports, 80,* 49-50.

Carver C.S. & Gaines J.G. (1987). Optimism, pessimism, and postpartum depression. *Cognitive Therapy and Research, 11,* 449-462.

Clifford C., Day A. & Cox, J. (1997). Developing the use of the EPDS in a Punjabi-speaking community. *British Journal of Midwifery, 5(10),* 616-619.

Coghill S.R., Caplan H.L., Alexander H., Robson K.R. & Kumar, R. (1986). Impact of maternal postnatal depression on cognitive development of young children. *British Medical Journal, 292,* 1165-1167.

Cohen J. & Cohen P. (1983). *Applied multiple regression/correlation analysis for the behavioural sciences.* New Jersey: Lawrence Erlbaum Associates.

Cohen S. & Wills T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98,* 310-357

Collins N.L., Dunkel-Schetter C., Lobel M. & Scrimshaw S.C.M. (1993). Social support in pregnancy: psychosocial correlates of birth outcomes and postpartum depression. *Journal of Personality and Social Psychology, 65,* 1243-1258.

Cooper P.J. & Murray L. (1995). Course and recurrence of postnatal depression: evidence for the specificity of the diagnostic concept. *British Journal of Psychiatry, 166,* 191-195.

Cooper P.J. & Murray L. (1998). Postnatal depression. *British Medical Journal, 316*, 1884-1886.

Cooper P.J., Murray L., Hooper R. & West A. (1996). The development and validation of a predictive index for postpartum depression. *Psychological Medicine, 26*, 627-634.

Cooper P.J., Murray L. & Stein A. (1991). Postnatal depression. In: Seva, A. (ed.). *European Handbook of Psychiatry and Mental Health*. Barcelona: Anthropos.

Cox J.L. (1994). Introduction and classification dilemmas. In: *Perinatal Psychiatry: use and misuse of the Edinburgh Postnatal Depression Scale*. London: Gaskell/Royal College of Psychiatrists.

Cox J.L., Holden J.M. & Sagovsky R. (1987). Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry, 150*, 782-786.

Cutrona C.E. (1983). Causal attributions and perinatal depression. *Journal of Abnormal Psychology*, 92(2), *161*-172.

Dalton K. & Holton W.M. (2001). *Depression after Childbirth: how to recognise, treat, and prevent postnatal depression*. Fourth edition. Oxford: Oxford University Press.

Dunkel-Schetter C. (1998). Maternal stress and preterm delivery. *Prenatal and Neonatal Medicine, 3*, 39-42.

Dunkel-Schetter C. & Lobel M. (1998). Pregnancy and childbirth. In: Blechman E.A. & Brownell K.D. (Eds). *Behavioral medicine and women: a comprehensive handbook*, (pp 475-482). New York: The Guilford Press.

Elliott S.A. (1989). Psychological strategies in the prevention and treatment of postnatal depression. *Bailliere's Clinical Obstetrics and Gynaecology, 3(4)*, 879-903

Elliott S.A., Leverton T.J., Sanjack M., Turner H., Cowmeadow P., Hopkins J. & Bushnell D. (2000). Promoting mental health after childbirth: a controlled trial of primary prevention of postnatal depression. *British Journal of Clinical Psychology, 39(3)*, 223-242.

Fennell, M.J.V. (1999). Depression. In: Hawton K., Salkovskis P.M., Kirk J. & Clark D.M. (eds.). *Cognitive Behaviour Therapy for Psychiatric Problems: A Practical Guide*. Oxford Medical Publications. Oxford: Oxford University Press.

Field T., Morrow C. & Adelstein D. (1993). Depressed mothers' perceptions of infant behavior. *Infant Behavior and Development, 16*, 99-108.

Gerrard J., Holden J.M., Elliott S.A., McKenzie P. & Cox J.L. (1993). A trainer's perspective of an innovative programme teaching health visitors about the detection, treatment and prevention of postnatal depression. *Journal of Advanced Nursing, 18*, 1825-1832.

Gillis J.S. & Lanning K. (1989). Cognitive mediation of responses to life stress. *Behavioral Medicine, 15,* 18-22.

Gordon R.E. (1961). *Prevention of postpartum emotional difficulties.* Ann Arbor, Michigan: University Microfilms Inc. (PhD dissertation)

Gotlib I.H., Whiffen V.E., Mount J.H., Milne K. & Cordy N.I. (1989). Prevalence rates and demographic characteristics associated with depression in pregnancy and the postpartum. *Journal of Consulting and Clinical Psychology, 57,* 269-274.

Gotlib I.H., Whiffen V.E., Wallace P.M. & Mount J.H. (1991). Prospective investigation of postpartum depression: factors involved in onset and recovery. *Journal of Abnormal Psychology, 100,* 122-132.

Grazioli R. & Terry D.J. (2000). The role of cognitive vulnerability and stress in the prediction of postpartum depressive symptomatology. *British Journal of Clinical Psychology, 39(4),* 329-348.

Harris B., Huckle P., Thomas R., Johns S. & Fung H. (1989). The use of rating scales to identify post-natal depression. *British Journal of Psychiatry, 154,* 813-817.

Hay D.F., Pawlby S., Sharp D., Asten P., Mills., A. & Kumar R. (2001). Intellectual problems shown by 11-year-old children whose mothers had postnatal depression. *Journal of Child Psychology and Psychiatry, 42(7),* 871-889.

Heyman R.E., Sayers S.L. & Bellack A.S. (1994). Global mental satisfaction versus mental adjustment: an empirical comparison of three measures. *Journal of Family Psychology, 8,* 432-446.

Holden J.M., Sagovsky R. & Cox J.L. (1989). Counselling in a general practice setting: controlled study of health visitor intervention in treatment of postnatal depression. *British Medical Journal, 298,* 223-226.

Hopkins J., Marcus M. & Campbell S. (1984). Postpartum depression: a critical review. *Psychological Bulletin, 95,* 498-515.

Hopkins J., Campbell S. & Marcus M. (1987). Role of infant-related stressors in postpartum depression. *Journal of Abnormal Psychology, 96(3),* 237-241.

Jacobson L., Kaij L. & Nilsson A. (1965). Postpartum mental disorders in an unselected sample: frequency of symptoms and predisposing factors. *British Medical Journal, 1,* 1640-1643.

James K. (1998). *The depressed mother: A practical guide to treatment and support.* London: Cassell.

Jarrahi-Zadeh A., Kane F.J.Jr., Van de Castle R.C., Lachenbruch P.A. & Ewing J.A. (1969). Emotional and cognitive changes in pregnancy and early puerperium. *British Journal of Psychiatry, 115,* 797-805

Kaij, L., Jacobson L. & Nilsson A. (1967). Post-partum mental disorder in an unselected sample. The influence of parity. *Journal of Psychosomatic Research, 10,* 317-325.

Kraus M.A. & Redman E.S. Postpartum depression: an interactional view. *Journal of Marital and Family Therapy, 12(1),* 62-74.

Kurstjens S. & Wolke D. (2001). Effects of maternal depression on cognitive development of children over the first 7 years of life. *Journal of Child Psychology and Psychiatry, 42(5),* 623-636.

Lee C.W., Taylor G. & Dunn J. (1999). Factor structure of the Schema Questionnaire in a large clinical sample. *Cognitive Therapy and Research, 23(4),* 441-451.

Lobel M., Dunkel-Schetter C. & Scrimshaw S.C.M. (1992). Prenatal maternal stress and prematurity: a prospective study of socioeconomically disadvantaged women. *Health Psychology, 11,* 32-40.

Lussier V., David H., Saucier J-F & Borgeat M.D. (1996). Self-rating assessment of postnatal depression: a comparison of the Beck Depression Inventory and the Edinburgh Postnatal depression Scale. *Pre- and Perinatal Psychology Journal, 11(2),* 81-91.

Martin M.E. (1977). A maternity hospital study of psychiatric illness associated with childbirth. *Irish Journal of Medical Science, 146,* 239-244

Mauthner N.S. (1998). Re-assessing the importance and role of the marital relationship in postnatal depression: methodological and theoretical implications. *Journal of Reproductive and Infant Psychology, 16,* 157-175

Meares R., Grimwade J. & Wood C. (1976). A possible relationship between anxiety in pregnancy and puerperal depression. *Journal of Psychosomatic Research, 20,* 605-610.

Mills E.P., Finchilescu G. & Lea S.J. (1995). Postnatal depression - an examination of psychosocial factors. *South African Medical Journal, 85(2),* 99-105.

Mitchell E.A., Thompson J.M.D., & Stewart A.W. (1992). Postnatal depression and SIDS: a prospective study. *Journal of Paediatrics and Child Health, 28 (suppl. 1),* S13-S16.

Murray L. & Carothers A.D. (1990). The validation of the Edinburgh Postnatal Depression Scale on a community sample. *British Journal of Psychiatry, 157,* 288-290.

Murray D., Cox J.L., Chapman G. & Jones P. (1995). Childbirth: life event or start of a long-term difficulty? Further data from the Stoke-on-Trent controlled study of postnatal depression. *British Journal of Psychiatry, 166,* 595-600.

Murray L., Stanley C., Hooper R., & King F. (1996). The role of infant factors in postnatal depression and mother-infant interactions. *Developmental Medicine & Child Neurology, 38(2),* 109-119.

Nicolson P. (1998). *Post-Natal Depression: Psychology, Science and the Transition to Motherhood.* London: Routledge.

Norton R. (1983). Measuring marital quality: a critical look at the dependent variable. *Journal of Marriage and the Family, 45(Feb),* 141-151.

O'Hara M.W., Neunaber D.J. & Zekoski E.M. (1984). Prospective study of postpartum depression: prevalence, course and predictive factors. *Journal of Abnormal Psychology, 93(2),* 158-171.

O'Hara M.W., Rehm L.P. & Campbell S.B. (1982). Predicting depressive symptomatology: cognitive behavioural models and postpartum depression. *Journal of Abnormal Psychology, 91,* 457-461.

O'Hara M.W. & Swain A.M. (1996). Rates and risk of postpartum depression - a meta-analysis. *International Review of Psychiatry, 8,* 37-54.

O'Hara M.W. & Zekoski E.M. (1989). Postpartum depression: a comprehensive review. In: Kumar and Brockington (eds). *Motherhood and Mental Illness.* New York: Academic Press Ltd.

O'Neill T., Murphy P. & Greene V.T. (1990). Postnatal depression - aetiological factors. *Irish Medical Journal, 83(1),* 17-18

Paarlberg K.M., Vingerhoets A.J.J.M., Passchier J., Dekker G.A. & Van Geijn H.P. (1995). Psychosocial factors and pregnancy outcome: a review with emphasis on methodological issues. *Journal of Psychosomatic Research, 39,* 563-596.

Painter A. (1995). Health visitor identification of postnatal depression. *Health Visitor, 68(4),* 138-140.

Paykel E.S., Emms E.M., & Fletcher J. (1980). Life events and social support in puerperal depression. *British Journal of Psychiatry, 136,* 339-346.

Petrou S. (2002). National Perinatal Epidemiology Unit, University of Oxford. Private communication.

Pitt B. (1968). Psychiatric illness during childbirth. *British Journal of Psychiatry, Special No. 9,* 409-415.

Playfair H.R. & Gowers J.I. (1981). Depression following childbirth - a search for predictive signs. *Journal of the Royal College of General Practitioners, 31,* 201-208.

Pritchard D.B. & Harris B. (1996). Aspects of perinatal psychiatric illness. *British Journal of Psychiatry, 169,* 555-562.

Reich T. & Winokur G. (1970). Postpartum psychoses in patients with manic-depressive disease. *Journal of Nervous Diseases,* 151, 60-68.

Rickard K.M., Forehand R., Wells K.C., Griest D.L. & McMahon R.J. (1981). Factors in the referral of children for behavioral treatment: a comparison of mothers of clinic-referred deviant, clinic referred non-deviant and non-clinic children. *Behaviour Research and Therapy, 19,* 201-205.

Rini C.K., Dunkel-Schetter C. & Wadhwa P.D. (1999). Psychological adaptation and birth outcomes: the role of personal resources, stress, and sociocultural context in pregnancy. *Health Psychology, 18(4),* 333-345.

Ritter C., Hobfoll S.E., Cameron R.P., Lavin J. & Hulsizer M.R. (2000). Stress, psychosocial resources, and depressive symptomatology during pregnancy in low-income, inner-city women. *Health Psychology, 19(6),* 576-585.

Roth A. & Fonagy P. (1996). *What Works for Whom?: A Critical Review of Psychotherapy Research.* The Guilford Press: London.

Schmidt N.B., Joiner T.E, Young J.E. & Telch M.J. (1995). The Schema Questionnaire: investigation of psychometric properties and the hierarchical structure of a measure of maladaptive schemas. *Cognitive Therapy and Research, 19,* 295-321.

Schweitzer R.D., Logan G.P. & Strassberg D. (1991). The relationship between marital intimacy and postnatal depression. *Australian Journal of Marriage & Family, 13(1),* 19-23.

Sharp D., Hay D., Pawlby S., Schmucher G., Allen H., & Kumar R. (1995). The impact of postnatal depression on boys' intellectual development. *Journal of Child Psychology and Psychiatry, 36,* 1315-1317.

Small R., Brown S., Lumley J. & Astbury J. (1994). Missing voices: what women say and do about depression after childbirth. *Journal of Reproductive and Infant Psychology, 12,* 89-103.

Spanier G. (1976). Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family, 38(Feb),* 57-62.

Spielberger C.D. (1983). *Manual for the State-Trait Anxiety Inventory.* California: Consulting Psychologists Press.

Stopa L., Thorne P., Waters A. & Preston J. (2001). Are the long and short forms of the Young Schema Questionnaire comparable and how well does each version predict psychopathology scores?. *Journal of Cognitive Psychotherapy, 15(3),* 253-272.

Tabachnick B.G. & Fidell L.S. (1996). *Using Multivariate Statistics.* New York: Harper Collins.

Terry D. (1991). Stress, coping and adaptation to new parenthood. *Journal of Social and Personal Relationships, 8*, 527-547.

Teti D.M. & Gelfand D.M. (1997). Maternal cognitions as mediators of child outcomes in the context of postpartum depression. In: Murray L. & Cooper P.J. (eds), *Postpartum Depression and Child Development* (pp 136-164). London: The Guilford Press.

Teti D.M., Gelfand C.M., Messinger D.S., & Isabella R. (1995). Maternal depression and the quality of early attachment: an examination of infants, pre-schoolers and their mothers. *Developmental Psychology, 31*, 364-376

Thorpe K. & Elliott S.A. (1998). The well-being of mothers. In: Niven, C.A. and Walker, A. (eds). *Current Issues in Infancy and Parenthood: The Psychology of Reproduction 3*. Oxford: Butterworth Heineman.

Tod E.D.M. (1964). Puerperal depression: a prospective epidemiological study. *Lancet, ii*, 1264-1266

Tully L. A., Garcia J., Davidson L.L. & Marchant S. (2002). What role do midwives have in depression screening?: a survey of maternity units in England and Wales. *Submitted for publication.*

Wadhwa P.D., Sandman C.A., Porto M., Dunkel-Schetter C. & Garite T.J. (1993). The association between prenatal stress and infant birthweights and gestational age at birth: a prospective investigation. *American Journal of Obstetrics and Gynecology, 169*, 858-865.

Waller G.D., Meyer C. & Ohanian V. (2001). Psychometric properties of the long and short versions of the Young Schema Questionnaire: core beliefs among bulimic and comparison women. *Cognitive Therapy and Research, 25(2)*, 137-147.

Warner R., Appleby L., Whitton A. & Faragher B. (1996). Demographic and obstetric risk factors for postnatal psychiatric morbidity. *British Journal of Psychiatry, 168*, 607-611.

Watson J.P., Elliott S.A., Rugg A.J. & Brough D.I. (1984). Psychiatric disorder in pregnancy and the first postnatal year. *British Journal of Psychiatry, 144*, 453-462.

Weissman M.M. & Bothwell S. (1976). Assessment of social adjustment by patient self-report. *Archives of General Psychiatry, 33*, 1111-1115.

Whiffen V.E. (1992). Is postpartum diagnosis a distinct diagnosis? *Clinical Psychology Review, 12*, 485-508

Whiffen V.E. & Gotlib I.H. (1993). Comparison of postpartum and nonpostpartum depression: clinical presentation, psychiatric history, and psychosocial functioning. *Journal of Consulting and Clinical Psychology, 61(3)*, 485-494

Whitton A., Appleby L. & Warner R. (1996a). Maternal thinking and the treatment of postnatal depression. *International Review of Psychiatry, 8*, 73-78.

Whitton A., Warner R. & Appleby L. (1996b). The pathway to care in post-natal depression: women's attitudes to post-natal depression and its treatment. *British Journal of General Practice, 46*, 427-428.

Wickberg B. & Hwang C.P. (1996). Counselling of postnatal depression: a controlled study on a population based Swedish sample. *Journal of Affective Disorders, 39*, 209-216.

Wrate R.M., Rooney A.C., Thomas P.F. & Cox J.L. (1985). Postnatal depression and child development: a three year follow-up study. *British Journal of Psychiatry, 146*, 622-627.

Young J. E. (1990, 1999). *Cognitive therapy for personality disorders: a schema-focused approach.* Third edition. Florida: Professional Resource Press.

Zahn-Waxler C., Cummings E.M., Ianotti R.J. & Radke-Yarrow M. (1984). Altruism, aggression and social interactions in young children with a manic-depressive parent. *Child Development, 55,* 112-122.

Zelkowitz P. & Milet T.H. (1995). Screening for post-partum depression in a community sample. *Canadian Journal of Psychiatry, 40(2),* 80-86

Zemore R. & Shepel L.F. (1989). Effects of breast cancer and mastectomy on emotional support and adjustment. *Social Science and Medicine, 28,* 19-27.

Zigmond A.S & Snaith R.P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica, 67*, 361-370.

Appendix 1:

Local Research Ethics Committee Approval Letter

22nd June 2001

Dr Kirstie McKenzie-McHarg
44 Courtney Court
Courtney Road
London
N7 7BH

Dear Dr McKenzie-McHarg

Our Ref No: 2001/06

In any correspondence regarding the study please quote the above Ethics Committee reference number.

Title: Understanding the development of postnatal depression

I refer to your submission of the above project to the Local Research and Ethics Committee. I am pleased to inform you that the above named project has been **approved.**

Approval is for two years from the date of this letter. Extension of this period will be dependent on the submission of a brief synopsis of the project together with an estimation of the time required for its ultimate completion.

The Ethics Committee will require an annual report on the progress of the study, and a copy of the completed study together with any consequent publication. In addition, the Committee must be informed, by the completion of the relevant form, of any untoward or adverse events that occur during the course of the study. The person who provided independent review of the original protocol should also be sent information regarding adverse events.

The Ethics Committee must be informed of, and approve, any proposed amendment to your initial application that has a bearing on the treatment or investigation of patients or volunteers.

A copy of the patient consent form and information sheet must be lodged in the clinical notes.

I am sure that every effort is already made to preserve the confidentiality of any patient information used in this study. Please ensure that the team of investigators are aware that everyone who has access to patient information appreciates the importance of maintaining confidentiality particularly in respect of the use of computers and the statutory regulations laid down in the Data Protection Act 1984

An
NHS
Trust

UCL
MEDICAL
SCHOOL

In terms of the managerial and financial implications associated with the study, where these relate to additional costs for the Trust, Mr Rob Hurd (Management Accountant, Finance Department, Whittington Hospital), will be in contact with you to discuss the Trust's schedule of charges for research projects. **Approval of these issues must be obtained from your general manager before the study commences.**

Yours sincerely

Mr John Farrell
Chairman - Local Research and Ethics Committee

Appendix 2:

Patient Information Leaflet

Patient Information Leaflet

Understanding the development of postnatal depression

Background

This leaflet is to tell you about a research study, and to invite you to join it. The study is called 'Understanding the Development of Postnatal Depression' and aims to gather information from around 150 pregnant women.

Postnatal depression affects 10-15% of all women after they have had a baby. It might only last a short time, or it can have longer effects on the mother or on her baby. These effects could be difficulties with bonding between the mother and her child, feelings of hopelessness and depression in the mother, and worries about looking after her baby.

For some of the children who have a postnatally depressed mother, social development is slower. Therefore, it is very important to understand what may put a mother at increased risk of postnatal depression, so that women can be identified and helped as early as possible.

This is to invite you to consider joining the study so we can gain a better understanding of the effect of different factors on postnatal depression. The specific factors being examined in this study are social support, the marital or partner relationship (if you are in a relationship), stress and beliefs about yourself.

Who can join?

Any pregnant woman can join, providing :

♦ You are 18 years old or over
♦ You are having your first or second baby (not third or more)

♦ You are not having a multiple birth (twins, triplets, etc)
♦ You have never had a psychiatric (mental) illness requiring treatment *except depression*
♦ If you already have a child, that the child will be four years of age or less when your second baby is due

What would I have to do?

If you would be willing to join the study, you will be given some questionnaires to complete, before you leave the hospital today.

Six weeks after your baby is born, you will be sent some more questionnaires. The questionnaires today will cover subjects like how you are feeling, your support from your partner, family and friends and some personal questions like your address and date of birth. After the birth, the questionnaires will again ask how you are feeling, and include questions about your delivery and what sort of a personality your

baby has (and your other child if you have one). Most of the questionnaires are quite short, and the one after your delivery will be only about 20 questions long, because we know you will be busy!

If you don't return the postnatal questionnaires, you will receive 2 written reminders and a telephone call if necessary. This is because if is very important to get as much information from everyone as possible. All the information you give in this study will be kept confidential, including from your doctor, except in the rare case that there are concerns for your safety or the safety of others.

You do not have to join the study. If you decide not to join, it will not affect your medical care in any way. If you do decide to join, you will be asked to sign a consent form. You are free to leave the study at any time, without giving a reason.

Who is running the study?

The study is being run by Kirstie McKenzie-McHarg, who is completing her clinical psychology doctorate at University College London (UCL). The results of the study will be written into a thesis and will also be submitted to a journal for publication.

All information gathered will remain confidential in accordance with the new Data Protection Act 1998. All identifying information such as names and addresses will be destroyed as soon as the postnatal questionnaire is returned.

The study is being supervised by Dr Sandra Elliott, University of Greenwich, and by Dr Nancy Pistrang, UCL. Miss Gaye Henson is the consultant obstetrician involved at the Whittington Hospital. The study has been approved by CREED, the local research ethics committee.

Thank you for taking the time to read this. If you have any questions, please feel free to ask.

Contact Details

Kirstie McKenzie-McHarg
Sub-Department of Clinical Health Psychology
University College London
Gower Street
London WC1E 6BT

Email: kirstie@mckenzie-mcharg.freeserve.co.uk

116

Appendix 3:

Consent Form

Understanding the Development of Postnatal Depression

Consent Form

I have seen the information leaflet relating to this study   Yes / No

I have asked all the questions I have about this study   Yes / No

All my questions have been answered satisfactorily   Yes / No

I spoke to Kirstie McKenzie-McHarg about the study   Yes / No

I understand that I can leave the study at any time,
      without giving a reason   Yes / No

I understand that I do not have to take part in the study,
      and this will not compromise my medical care in any way   Yes / No

I agree that my GP can be told I have joined the study   Yes / No

I agree that my consultant can be told I have joined the study   Yes / No

I consent to join this study   Yes / No

Signed: _____ Date: _____

Name in BLOCK LETTERS: _____

Signature of investigator: _____Date: _____

Name of investigator: Kirstie McKenzie-McHarg

118

Appendix 4:

Demographic Information

1) Name: _____

2) Address:_____

_____

_____ Postcode: _____ Telephone (with code):_____

3) Date of birth: /   /   (dd/mm/yy)

4) Estimated date of delivery (EDD):   /   /   (dd/mm/yy)

5) **2nd time mothers only:**

   Sex of first child: Male / Female   Child's date of birth: /   /

   First child's age **when baby is due**: _____ yrs _____ mths

6) Relationship status: Single / In a relationship / Living as married / Married /
   (please circle ONE only)   Separated / Divorced / Widowed

7) Ethnicity: White / Black-Caribbean / Black-African / Indian /
   (please circle ONE only)   Pakistani / Bangladeshi / Chinese / Other (please specify)

8) Have you ever been treated for any psychological or psychiatric problem *other
   than depression?* ('Treated' is with medicine or professional counselling (e.g. GP, counsellor,
   psychologist, psychiatrist) or by hospitalisation)   Yes / No

9) Have you ever been treated *for depression?*   Yes / No

10) If yes, how many times? _____ (How many different episodes led to treatment?)
    When? (month/year) _____ Treated by whom? _____
    (If you have been treated more than once, please describe your latest episode)

11) **2nd time mothers:** Was any episode of the depression following childbirth?
    Yes / No

12) Please circle your household income ('household' is you and your partner, if applicable):
    Less than £10,000 / £10,000 - 15,000 / £15,000 - 20,000 / £20,000 - 25,000 /
    £25,000 - 30,000 / £30,000 - 35,000 / £35,000 - 40,000 / More than £40,000

13) GP's name: Dr _____

14) GP's address: _____

_____

_____ Postcode: _____

**If you are planning to move house between now and when your baby is 3
months old, please tick this box** ☐ **and write an address below where I can
contact you after the birth of your baby (e.g. relative or friend's address)**

_____

_____

Appendix 5:

Emotional Support Questionnaire

Emotional Support Questionnaire

1)   Have you been able to talk about your feelings and problems with at least one friend during the last month?

     1.   I could always talk freely about my feelings
     2.   I usually could talk about my feelings
     3.   About half the time I felt able to talk about my feelings
     4.   I usually was not able to talk about my feelings
     5.   I was never able to talk about my feelings

2)   Have you been able to talk about your feelings and problems with at least one of your relatives in the last month?

     1.   I could always talk freely about my feelings
     2.   I usually could talk about my feelings
     3.   About half the time I felt able to talk about my feelings
     4.   I usually was not able to talk about my feelings
     5.   I was never able to talk about my feelings

3)   Have you been able to talk about your feelings and problems with your spouse or partner in the last month?

     1.   I could always talk freely about my feelings
     2.   I usually could talk about my feelings
     3.   About half the time I felt able to talk about my feelings
     4.   I usually was not able to talk about my feelings
     5.   I was never able to talk about my feelings

Appendix 6:

Quality of Marriage Index

Quality of Marriage Index

This questionnaire asks about attitudes within relationships. Try to answer each question as honestly as possible. Do not spend too much time on any one question. Give each question a moment's thought and then answer it.

Answer all questions with your partner in mind. Please answer the questions separately from your partner. Your partner should not see or help with the answers.

Please circle the score which best describes how you feel.

1)   We have a good relationship

1	2	3	4	5	6	7
Disagree very strongly	Disagree strongly	Disagree	Neither agree nor disagree	Agree	Agree strongly	Agree very strongly

2)   My relationship with my partner is very stable

1	2	3	4	5	6	7
Disagree very strongly	Disagree strongly	Disagree	Neither agree nor disagree	Agree	Agree strongly	Agree very strongly

3)   Our relationship is strong

1	2	3	4	5	6	7
Disagree very strongly	Disagree strongly	Disagree	Neither agree nor disagree	Agree	Agree strongly	Agree very strongly

4)   My relationship with my partner makes me happy

1	2	3	4	5	6	7
Disagree very strongly	Disagree strongly	Disagree	Neither agree nor disagree	Agree	Agree strongly	Agree very strongly

5)   I really feel part of a team with my partner

1	2	3	4	5	6	7

Disagree very strongly	Disagree strongly	Disagree	Neither agree nor disagree	Agree	Agree strongly	Agree very strongly

6)   On the scale below, indicate the point which best describes the degree of happiness, everything considered, in your relationship. The middle point, "happy" represents the degree of happiness which most people get from relationships. The scale gradually increases on the right side for those few who experience extreme joy in their relationship and decreases on the left side for those who are extremely unhappy.

1	2	3	4	5	6	7	8	9

Very Unhappy				Happy				Perfectly happy

Appendix 7:

Pregnancy Related Anxiety Scale

Pregnancy-Related Anxiety Scale

For each question, please write the number that that best describes how you feel:

1 - Not at all or never   3 - Moderately or most of the time
2 - Somewhat or sometimes   4 - Very much or almost all of the time

1) I am confident of having a normal childbirth   _____

2) I think my labour and delivery will go normally   _____

3) I have a lot of fear regarding the health of my baby   _____

4) I am worried that the baby could be abnormal   _____

5) I am afraid that I will be harmed during delivery   _____

6) I am concerned (worried) about how the baby is growing and developing inside

   me   _____

7) I am concerned (worried) about losing the baby   _____

8) I am concerned (worried) about having a hard or difficult labour and delivery

                        _____

9) I am concerned (worried) about taking care of a new baby   _____

10) I am concerned (worried) about developing medical problems during my
    pregnancy   _____

Appendix 8:

Spielberger State Anxiety Questionnaire

Spielberger State Anxiety Questionnaire

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number to the right of the statement that indicates how you feel right now, *that is,* at this moment. *There are no right or wrong answers. Do not spend too much time on any one statement, but give the answer which seems to describe your present feelings best.*

		Not at all	Somewhat	Moderately	Very much
1)	I feel calm	1	2	3	4
2)	I feel secure	1	2	3	4
3)	I am tense	1	2	3	4
4)	I feel strained	1	2	3	4
5)	I feel at ease	1	2	3	4
6)	I feel upset	1	2	3	4
7)	I am presently worrying over possible misfortunes	1	2	3	4
8)	I feel satisfied	1	2	3	4
9)	I feel frightened	1	2	3	4
10)	I feel comfortable	1	2	3	4
11)	I feel self-confident	1	2	3	4
12)	I feel nervous	1	2	3	4
13)	I am jittery	1	2	3	4
14)	I feel indecisive	1	2	3	4
15)	I am relaxed	1	2	3	4
16)	I feel content	1	2	3	4
17)	I am worried	1	2	3	4
18)	I feel confused	1	2	3	4
19)	I feel steady	1	2	3	4
20)	I feel pleasant	1	2	3	4

Appendix 9:

Edinburgh Postnatal Depression Scale

Edinburgh Postnatal Depression Scale

Please <u>underline</u> 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, most of the time*   *No, not very often*
                         <u>Yes, some of the time</u>   *No, not at all*

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

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

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

2) I have looked forward with enjoyment to things:

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

3) I have blamed myself unnecessarily when things went wrong:

   Yes, most of the time   Not very often
   Yes, some of the time   No, never

4) I have felt worried and anxious for no very good reason:

   No, not at all   Yes, sometimes
   Hardly ever   Yes, very often

5) I have felt scared or panicky for no very good reason:

   Yes, quite a lot   No, not much
   Yes, sometimes   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   Not very often
   Yes, sometimes   No, not at all

8) I have felt sad or miserable:

Yes, most of the time   Not very often
Yes, quite 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   Hardly ever
Sometimes   Never

Appendix 10:

Young Schema Questionnaire

Young Schema Questionnaire

Please read each statement and decide how well it describes you. Base your answer on what you emotionally feel, *not what you* think *is true. Then choose the* highest rating from 1 to 6 *that describes you and write the number on the line after the question.*

1 - Completely untrue of me   4 - Moderately true of me
2 - Mostly untrue of me   5 - Mostly true of me
3 - Slightly more true than untrue   6 - Describes me perfectly

1)   Almost nothing I can do at work or home is as good as other people can do   ____

2)   I do not feel capable of getting by on my own in everyday life   ____
3)   I must be the best at most of what I do; I can't accept second best   ____
4)   I'm incompetent when it comes to achievement   ____
5)   Most other people are more capable than I am in areas of work and achievement   ____
6)   I try to do my best; I can't settle for "good enough"   ____
7)   I'm so busy doing things for the people I care about that I have little time for myself   ____
8)   I'm not as talented as most people are at their work (or home duties)   ____
9)   I think of myself as a dependent person, when it comes to everyday functioning   ____
10)   I'm the one who usually ends up taking care of the people I'm close to   ____
11)   I'm not as intelligent as most people are when it comes to work (or home duties)   ____
12)   I've always been the one who listens to everyone else's problems   ____
13)   I am a good person because I think of others more than of myself   ____
14)   I must meet all my responsibilities   ____
15)   I feel there is constant pressure for me to achieve and get things done   ____
16)   Other people see me as doing too much for others and not enough for myself   ____

17)   I lack common sense   ____
18)   My judgement cannot be relied upon in everyday situations   ____
19)   I don't feel confident about my ability to solve everyday problems that come up   ____
20)   I can't let myself off the hook easily or make excuses for my mistakes   ____

Appendix 11:

Obstetric and Pregnancy Questionnaire

Obstetric and Pregnancy Questionnaire

1) What date did you deliver your baby?   /   /   (dd/mm/yy)

2) Did you have a boy or a girl? _____

3) Was your delivery vaginal, or via a caesarean section? _____

    If via caesarean, was it elective or emergency? _____

    If birth was vaginal, did you tear or need an episiotomy? _____

4) Were there any complications during the birth? If yes, please write them clearly here:

_____

_____

_____

_____

5) Were there any complications during the pregnancy? If yes, please write them clearly here:

_____

_____

_____

_____

6) How stressful did you find giving birth? Please rate the event from 1 to 7 on the following scale by circling the appropriate number:

1	2	3	4	5	6	7
not at all stressful			a medium level of stress			the most stressful event of my life

7) How stressful did you find being pregnant? Please rate the pregnancy overall from 1 to 7 on the following scale by circling the appropriate number:

1	2	3	4	5	6	7
not at all stressful			a medium level of stress			the most stressful time of my life

Appendix 12:

Bates' Infant Temperament Scale

Bates' Infant Characteristics Questionnaire

On the following questions please circle the number that is most typical of your baby. "About average" means how you think the typical baby would be scored.

1. How easy or difficult is it for you to calm or soothe your baby when he/she is upset?

1	2	3	4	5	6	7
Very easy			About average		Difficult	

2. How easy or difficult is it for you to know what's bothering your baby when he/she cries or fusses?

1	2	3	4	5	6	7
Very easy			About average		Difficult	

3. How much does your baby cry and fuss in general?

1	2	3	4	5	6	7
Very little -much less than the average baby		Average - about as much as the average baby			A lot - much more than the average baby	

4. How much does your baby want to be held?

1	2	3	4	5	6	7
Wants to be free most of the time		Sometimes wants to be held; sometimes not			A great deal - wants to be held almost all the time	

5. How does your baby respond to disruptions and changes in everyday routine, such as when you go to church or a meeting, on trips, etc.?

1	2	3	4	5	6	7
Very favourably - doesn't get upset			About average		very unfavourably - gets quite upset	

6. On the average, how much attention does your baby require, other than for caregiving (feeding, nappy changes, etc.)?

1	2	3	4	5	6	7
Very little - much less than average			Average amount		A lot - much more than the average baby	

7. Please rate the overall degree of difficulty your baby would present for the average mother.

1	2	3	4	5	6	7
Super easy			Ordinary, some problems		Highly difficult to to deal with	