

Doctoral Thesis

Breastfeeding Expectations and Experiences: Associations with Mood and Well-being
A Pilot Study

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Abstract

Background

Research indicates that there are benefits to both the mother and infant of breastfeeding. Campaigns have been launched in the UK with some efficacy in increasing the numbers reporting an intention to breastfeed, however, breastfeeding continuation rates remain relatively low. It is known that women's expectations of breastfeeding are important when considering breastfeeding continuation. It is also recognised, that for women there is the potential of impact on postnatal mood and wellbeing when expectations of breastfeeding are not met by experience.

Aims

The study aimed to explore the relationship between prenatal breastfeeding self-efficacy, mood and well-being and breastfeeding expectations. It then aimed to explore the relationship between a discrepancy between breastfeeding expectation and experience and postnatal mood and well-being.

Method

Participants (N= 63) were first time mothers attending NHS antenatal groups reporting an intention to breastfeed. They completed a measure of breastfeeding expectation, breastfeeding self-efficacy and mood and well-being prenatally. Participants were asked to complete further measures of breastfeeding experience, mood and well-being around 12 weeks postnatally (N=29).

Results

It was found that women's prenatal breastfeeding self-efficacy correlated with their breastfeeding expectations. Breastfeeding social expectations were found to positively correlate with prenatal mood and well-being, while breastfeeding expectations of self were found to be independent of prenatal mood and well-being.

Postnatally women's experiences of breastfeeding were not found to differ significantly from their expectations.

Conclusion

Overall, the results suggest that women's social expectations of breastfeeding may be associated with their mood and well being prenatally. It is considered that breastfeeding expectations of self, however, were not associated with current functioning. It was observed in the current study that breastfeeding expectations were being met by experience, and therefore why an impact on postnatal mood and wellbeing would not be expected is discussed.

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CHAPTER 1

1. Introduction

1.1 Chapter Overview

There are two aims from the current thesis, firstly to investigate the relationship between of prenatal mood and wellbeing on breastfeeding expectations, and then to further investigate the relationship between breastfeeding expectations, experience and postnatal mood and well-being. This study aimed to build on current hypotheses regarding postnatal depression and the role of parenting expectations (Harwood, McLean, & Durkin, 2007; O'Mahen,, 2012; Sockol, Epperson, & Barber, 2014), but with particular focus on the role of breastfeeding, which is just one of the many elements which contributes to women's concept of motherhood.

This chapter initially discusses the present breastfeeding guidelines. These were developed in reaction to the knowledge that good infant nutrition reduced morbidity and mortality, with breastfeeding seen as critical to this. The chapter then goes on to critically appraise the literature available reporting on the long term benefits to health, cognitive development and well-being of breastfeeding, for both the mother and the infant. The evidence base available and why this supports the recommendations made in the guidelines, is discussed.

The current prevalence rates of breastfeeding in the UK are then discussed. Data from the Infant Feeding Survey (McAndrew et al., 2012) report that rates of breastfeeding continuation in the UK are low. Reasons for these low rates are considered, particularly the reasons given by women for discontinuing. The chapter goes on to briefly discuss the current status of breastfeeding support in the United Kingdom (UK) which has developed in response to the low rates of breastfeeding.

The second half of the chapter considers postnatal mood and the current status of the research regarding the relationship between postnatal mood and breastfeeding difficulties. It is considered that Postnatal Depression (PND) is the extreme end of a continuum of low mood in the postnatal period, and as such research regarding the current status of PND is considered. PND as a diagnosis is discussed and the potential consequences of PND to the infant and the maternal infant bond are considered. Research regarding theories of PND development are considered.

The chapter goes on to appraise the literature available looking at the relationship between breastfeeding and PND. Whilst it is argued that PND more often precedes breastfeeding cessation, the impact of breastfeeding difficulties on mood and well-being of the mother are considered. The rationale for the current study is discussed in relation to the findings from the literature. The hypotheses for this research are then stated.

1.2 Breastfeeding

1.2.1 Breastfeeding guidelines. In 2002 the World Health Organisation (WHO) outlined a global strategy for the feeding of infants and young children. The guidelines were developed in reaction to the knowledge that 45% of child deaths internationally are associated with under nutrition. It was recognised that having good infant and young child feeding was key to improving child survival and promoting healthy growth and development (WHO, 2002). It should be noted that the guidelines are international and were developed in response to figures which may reflect the higher infant morbidity and mortality in economically poor countries. The guidelines published were based on an extensive review of scientific literature and technical consultations. They recommended that women exclusively breastfeed their child for the first 6 months of their life, with continued breastfeeding alongside additional nutrition until they are 2 years old (WHO, 2002). The aim of the strategy

was to improve, through optimal feeding, the nutritional status, growth and development, and health and survival of infants and young children.

In preparing the guidelines the WHO recognised that continued breastfeeding played a significant role in the health and development of infants and mothers and in turn was central to the greater public health. This belief has been echoed in further reviews which recognise the role breastfeeding plays in public health and in turn sustainable socioeconomic development and poverty reduction (Dyson, Renfrew, Mcfadden, Herbert, & Thomas, 2005; Renfrew, McCormick, Wade, Quinn, & Dowswell, 2012) Renfrew and colleagues (2012) go as far as to state that ‘few health behaviours have such a broad spectrum and long lasting impact on population health with the potential to improve life chances, health and well-being’.

1.2.2 Reasons for Breastfeeding. With the above discussion and the WHO guidelines in mind it could be assumed that the benefits of breastfeeding to both the infant and the mother across all societies is unequivocal. The following section offers a discussion of the benefits of breastfeeding to the infant and the mother with consideration as to whether there is sufficient evidence to support the benefits in western cultures.

1.2.2.1 Benefits for the infant. The benefits of breastfeeding for the infant are widely referred to in the literature and appear now to be accepted as fact. Large scale reviews however suggest that the methodologies used by some of the studies which provided the evidence for the benefits of breastfeeding were not always rigid or comparable; these are discussed further below (Ip, Chung, Raman, Trikalinos, & Lau, 2009; Kramer & Kakuma, 2012).

1.2.2.1.1 Physical. The reported benefits of breastfeeding to a child’s long term physical health, including reduced gastro-intestinal and respiratory difficulties, are widely reported (Fergusson, Horwood, Shannon, & Taylor, 1981; Howie, Forsyth, Ogston, Clark, &

Florey, 1990; Ip et al., 2009; Quigley, Kelly, & Sacker, 2007; Wright, Parkinson, & Scott, 2007) and are further discussed in the context of the reviews below. However, while there is relatively robust evidence to support some physical benefits, findings from some studies should be generalised with caution due to methodological shortfalls, such as not controlling for potential confounding maternal factors and selection bias in recruitment. It is recognised that studies that investigate the long term impact of breastfeeding on an infant's health cannot be randomised controlled trials and there is a demographic difference between those that chose to breastfeed and those that do not due to a self-selection bias. Women that breastfeed tend to be white, older, more educated and in a higher educational stratum (McAndrew et al., 2012), all factors which may independently impact on physical health and therefore will need to be controlled for.

A large scale review of studies investigating the physical health benefits of breastfeeding to the infant and mother was published by Ip and colleagues (2009). This paper is widely referenced and referred to in the breastfeeding literature. The authors screened over 9,000 abstracts and reported conclusions indicating benefits to infants based on 43 studies investigating infant health outcomes. They recognised that there were differences between studies with regards to definition of breastfeeding. Some studies reported outcomes from exclusive breastfeeding only while others were more relaxed in their inclusion criteria, including all children who were receiving some breast milk, e.g. if this was expressed and given in a bottle. The lack of agreed definition between papers made it difficult to utilise the information to give unequivocal guidelines on optimal breastfeeding for infant health, however they did report some general trends. Findings supported a lower incidence of middle ear infections, atopic dermatitis, gastrointestinal infections, respiratory tract infections, asthma, type 1 diabetes, type 2 diabetes, childhood leukaemia, infant mortality and sudden infant death syndrome in infants who were breastfed compared to those that had been

exclusively bottle fed. However, Ip and colleagues (2009) noted that many of the studies included did not control for additional potential confounders to health outcomes such as birth weight and maternal factors including socio-economic status, maternal education and familial incidence of illnesses. It has been demonstrated that all these factors could independently impact on incidence of the childhood illnesses and conditions assessed (Bicego & Boerma, 1993; Repetti, Taylor, & Seeman, 2002; Thompson, Syddall, Rodin, Osmond, & Barker, 2001) and therefore findings should be generalised to the wider population with caution.

In a more recent Cochrane review Kramer and Kakuma (2012) investigated the optimal duration of breastfeeding considering the health benefits for children and parents. They reviewed 23 studies from developing and developed countries and concluded that in infants who were exclusively breastfed for 6 months compared to those exclusively breastfed for 3 -4 months there were lower levels of morbidity from gastrointestinal infection. Unlike Ip and colleagues (2009), Kramer and Kakuma (2012) were much more stringent about the inclusion criteria for their review and it is therefore perhaps unsurprising that they found breastfeeding alone could account for far fewer benefits to the infant's physical health.

Findings from large UK only studies over the last decade reflect the findings of Kramer and Kakuma (2012). They highlight that in the UK breastfeeding duration is key when considering the long term health benefits for the infant. The Infant Feeding Survey, (McAndrew et al., 2012), further discussed in section 1.2.3.1, reported that children who are breastfed for at least 4 months were less likely to get diarrhoea, constipation or vomiting than those who had never been breastfed, however partial breastfeeding was not found to be significantly beneficial. These findings were in part reflected in data presented by Quigley, Kelly and Sacker (2007) who analysed data from the millennium cohort study. This was a representative longitudinal study which collected data from over 18, 000 infants born in the UK between September 2000 and January 2002. They, too, found that being breastfed for

prolonged periods, and exclusively, was key to the protection against severe morbidity, and estimated that 53% of hospital admissions for diarrhoea, and 27% of admissions for respiratory infections could be prevented every year if infants were exclusively breastfed. They did differ from the findings of the Infant Feeding Survey (McAndrew et al., 2012) however in that they also recognised that partial breastfeeding, while not the ideal, could have a significant positive impact on infant health.

In summary, there is little evidence to dispute that breastfeeding can have some long term health benefits for the infant. It has been found to reduce the likelihood of infants experiencing gastrointestinal or respiratory difficulties and this effect is not exclusively found in socioeconomically poor countries (Kramer & Kakuma, 2012). Duration of breastfeeding, and exclusivity of breastfeeding are particularly important factors when considering the optimal benefit for the infant. Caution should, however, be taken when making sweeping statements about the other suggested health benefits of breastfeeding to the infant as there is not sufficient reliable controlled research to support these unequivocally at this time.

1.2.2.1.2 Cognitive development. There has been much debate in the literature, and reported in the media, about the possible benefits to an infant's cognitive development of being breastfed. However, as with the literature published on the impact of breastfeeding on long term physical health, it is recognised that caution must be taken when findings are generalised to the wider population due to methodological difficulties, for example the poor control of potential confounding variables in some studies. It is particularly important to note that research has found that maternal intelligence is the strongest predictor of a child's cognitive ability (Lawlor et al., 2005) and therefore if this has not been considered, or only by using a proxy measure such as maternal education, any findings are unlikely to be valid.

A number of studies in recent years have been conducted assessing cognitive development in childhood and the relationship with breastfeeding using adequate controls for

confounding variables. Findings from the studies continue to demonstrate variance in conclusions though. Some report a significant relationship between breastfeeding and cognitive outcomes in childhood (e.g. Angelsen, Vik, Jacobsen, & Bakketeig, 2001; Mortensen, Michaelsen, Sanders, & Reinisch, 2002; Oddy et al., 2003; Quigley et al., 2012; Quinn et al., 2001; Whitehouse, Robinson, Li, & Oddy, 2011), while others report no significant relationship once confounders were controlled for (Der, Batty, & Deary, 2006; Holme, MacArthur, & Lancashire, 2010).

Quinn and colleagues (2001) assessed cognitive outcomes in a large cohort at 5 years, using the Peabody Picture Vocabulary Test – Revised (PPTV-R; Dunn & Dunn, 1981), a well validated measure of verbal intelligence. They found a dose response effect with duration of breastfeeding correlating with increased verbal intelligence at 5 years. This effect was also reported by Oddy and colleagues (2003) who assessed cognitive ability at 6 and 8 years in a large Australian cohort. They had also used the PPTV-R (Dunn & Dunn, 1981) as a measure of verbal intelligence at 6 years, and the block design sub-test of the Weschler Intelligence Scale for Children- III (WISC-III; Wechsler, 1991) at 8 years to give an indication of performance IQ. Although they used standardised tests at both ages the methodology employed means that only conclusions regarding the impact of breastfeeding on cognitive verbal ability at 6 years and performance IQ at 8 years can be made. While Whitehouse and colleagues (2011) did not find as clear a relationship between breastfeeding duration and cognitive ability, they did recognise that breastfeeding for more than 6 months was related to better language development at 10 years according to scores on the PPTV-R. Quigley and colleagues (2012) reported data from the large millennium cohort study, described previously. They used three sub-scales of the British Ability Scale Second Edition (BAS-II; Elliott, Smith, & McCulloch, 1996), which they reported were individually robust and interpretable assessments of verbal ability, spatial processing and pictorial reasoning. They

too found that when considering the impact of breastfeeding on cognitive outcome at 5 years, breastfeeding duration was key. Angelsen and colleagues (2001) conducted a multi-centre study of more than 300 children in Norway. They used the Bayley's Scale of Infant Development (BSID; Bayley, 1969) at 13 months which assesses both cognitive and motor development, the Wechsler Preschool and Primary Scales of Intelligence Revised (WPPSI-R; Wechsler, 1989) as a measure of cognitive development and the Peabody Developmental Motor Scales (PDMS; Folio & Fewell, 1983) as a measure of motor development at 5 years. They reported that although breastfeeding duration was associated with benefits in cognitive development at 13 months and 5 years, it had relatively little impact on motor development. When looking at cognitive development in adults who were breastfed Mortensen and colleagues (2002) used data from 973 individuals who had been part Copenhagen perinatal cohort. They asked participants to complete the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1958), and used background data regarding maternal characteristics which they had available from the original cohort when they were recruited between 1959 and 1961. The study found that in adulthood breastfeeding as a baby continued to be related to improved cognitive outcomes, with the length of breastfeeding again being the key factor.

A meta-analytic review by Anderson, Johnstone, & Remley (1999) included 20 studies investigating the relationship between breastfeeding and cognitive development. They found that after adjustment for appropriate key co-factors, such as socio-economic status and maternal education, breastfeeding was associated with significantly higher scores for cognitive development than was formula feeding. Increasing duration of breastfeeding was accompanied by a gradual increase in benefit to cognitive development.

Overall the findings from studies that found a relationship between breastfeeding and cognitive outcome in childhood suggest that length of breastfeeding is key. However, one of the shortfalls of most of the studies described above was that they were large cohort studies.

While this allowed for inclusion of data from a large number of participants, extensive data from individuals that participated in the studies was not available and conclusions were drawn based on brief measures of cognitive ability, in a number of cases using verbal ability only, with little in depth detail of perceptual and spatial development and therefore little is known about the impact of breastfeeding on these areas of cognitive development specifically. When spatial development was considered separately (Quigley et al., 2012) no impact of breastfeeding was found on this element of cognitive functioning. It could be suggested therefore that future research should use more in depth measures of cognitive ability. In addition the studies did not control specifically for maternal intellect, the factor shown previously to have the greatest impact on cognitive development (Lawlor et al., 2005), instead they used maternal education level as a proxy measure of intellect. Der and colleagues (2006) are an exception to this however, using a direct measure of maternal intellect and found that once this was controlled for there was no impact of breastfeeding on cognitive development. They report that maternal education alone is a not a concise enough measure to represent true intellect so findings from studies controlling for this alone may not be accurate.

When considering the possible mechanism by which breastfeeding may impact on cognitive development, it has been suggested that there is a biological component related to the high concentrations of fatty acids in breast milk in comparison to formula (Oddy et al., 2003; Quigley et al., 2012). However it has also been suggested that there may be a psychological element with the experience of breastfeeding and the associated social interactions mediating the relationship between breastfeeding and cognitive development (Oddy et al., 2003; Quigley et al., 2012). If the quality of the interactions between mothers and their infants is a mediating factor in the relationship between breastfeeding and cognitive development there is an argument that future research, looking at the relationship between

breastfeeding and cognitive development, should take into account women's experiences of breastfeeding and the impact of this on their interactions with their child. The current research does not take into account the impact of breastfeeding difficulties on cognitive outcome specifically and it remains to be investigated whether a breastfeeding difficulties impact on the mother infant interaction, and in turn on what impact, if any, this has on cognitive outcome. Breastfeeding and the infant maternal bond is discussed in more detail in section 1.2.2.2.2.

1.2.2.1.3 Psychological well-being. There is less research investigating the long term impact of breastfeeding on psychological well-being in childhood and adulthood. Woodward & Liberty (2005) presented a brief review of the literature investigating the link between breastfeeding and psychosocial outcomes early in life, which they had compiled to inform interventions to increase breastfeeding rates. The paper however does not appear to have been a systematic review of the available literature so is unlikely to be exhaustive. They reported that the relationship between breastfeeding and psychological well-being of the child later in life was, at best, modest once adequate controls for confounding variables, including social and family background, were in place. They did report however, that overall there may be some benefit to the infant of breastfeeding as breastfed infants were reported to be more alert, to cry less and be better able to engage in social interactions. It cannot be concluded however whether breastfeeding led to more of these attributes being displayed or whether these infants were easier to breastfeed because of these traits so mothers were less likely to introduce additional nutrition.

One study has investigated psychological well-being at 10 years and the interaction with breastfeeding. Montgomery, Ehlin and Sacker's (2006) study used data from the 1970 British birth cohort study, a study following the development of all babies born in a 5 day period in the UK in 1970. They asked teachers to rate all children on a scale of 1 to 50 of how

anxious they thought the children were, with data for 8958 being available. They found that infants who had been breastfed were less anxious and more resilient to the stresses of parental divorce than were those that had not been, however caution must be taken when generalising the findings of this single score rating from a teacher. It should be considered that a teacher may not be the best placed person to rate a child's anxiety across different settings and therefore it can only be concluded that children who were breastfed were less anxious in school settings. Cable, Bartley, McMunn and Kelly (2012) combined data from the National Child Development Study (1968) and the British Birth Cohort (1970). Montgomery and colleagues (2006) who reported psychosocial adjustment as a single measure, they reported findings from responses by teachers on questions from the Rutter child behaviour scale (Rutter, Tizard, & Whitmore, 1970) at 10 years and the self-report Malaise Inventory (Rodgers, Pickles, Power, Collishaw, & Maughan, 1999) at 33 years. They reported that childhood psychosocial adjustment was a mediator for the impact of breastfeeding on psychological development in adulthood, though interestingly they found this effect only for women and not men suggesting possibly that breastfeeding alone could account for this affect. Oddy and colleagues (2009) reported data from the Western Australia pregnancy cohort, a group of 2900 women who had been recruited during pregnancy between 1999 and 2001, and who have been followed up at regular intervals. The study had the most comprehensive methodology of the studies reported here, using the Child Behaviour Check List (CBCL; Achenbach, 1991) a reliable and valid measure of 8 constructs of child psychopathology, and asking parents to complete this at 2, 5, 8, 10 and 14 year follow-ups. The nature of the study meant that they were also able to control for confounders such as maternal education. Oddy and colleagues (2009) found a relationship between breastfeeding and child and adolescent well-being, with more mental health morbidity in those that had not been breastfed once confounders had been controlled for.

In summary, the limited findings available are supportive of breastfeeding playing a role in childhood psychosocial well-being, and in turn there being an impact on adult psychological adjustment. Unfortunately to date research regarding the relationship between breastfeeding and psychological development is sparse and this is an area for further research.

1.2.2.2 Benefits for the mother. The following section discusses the physical benefits to the mother of breastfeeding and considers the impact of breastfeeding on the maternal infant bond.

1.2.2.2.1 Physical. As with the physical benefits of breastfeeding to the infant, the benefits to the mother are widely referred to in the literature. However, also in line with the infant research, it is recognised that many of the studies reporting the benefits are poorly controlled for with regards to pre-existing variables and breastfeeding exclusivity (Kramer & Kakuma, 2012).

Kramer & Kakuma's (2012) Cochrane review, the methodology of which was described above with regards to infant outcomes, also evaluated the physical health benefits of breastfeeding to women. They included only studies which had considered adequate controls, such as for maternal education and pre-existing health conditions, and therefore some confidence can be assumed in their conclusions. The authors reported that breastfeeding reduced maternal risk for developing type 2 diabetes, cardiovascular disease, breast cancer and ovarian cancer. The reduction in breast and ovarian cancer had also been referred to in the review by Ip and colleagues (2009), although as already discussed this review was less stringent in their inclusion criteria of studies and therefore there can be less confidence in findings.

Additional physical benefits of breastfeeding to the mother reported in the literature include being able to return to their pre-pregnancy weight more quickly and breastfeeding

reducing the chances of becoming pregnant again, although not all women may see this as a benefit (Kramer & Kakuma, 2012).

1.2.2.2.2 Breastfeeding and the mother infant bond. The benefits of breastfeeding to the development of a good infant-mother bond are generally assumed in the literature though there is little evidence available to fully support the benefits of breastfeeding over bottle feeding to this relationship. (Else-quest, Hyde, & Clark, 2003) used observational measures and questionnaires to assess the infant maternal bond and maternal mood and perceptions of the bond at 4 and 12 months in 570 mothers who were participating in a longitudinal study. They found that overall breastfeeding dyads tended to show higher quality relationships at 12 months and that mothers reported lower levels of perceived stress, negative mood and maternal attachment than did bottle feeding mothers. Importantly though they did not find that bottle feeding dyads displayed poor quality interactions. As with the literature discussed above regarding cognitive development, it is impossible to say whether the effects seen could be attributed to inherent infant or maternal characteristics. It should be considered that characteristics of the mother, or the child, may have meant that they found the breastfeeding experience easier or that they were more likely to persevere with breastfeeding where others found it more difficult. Mezzacappa & Katkin (2002) investigated the impact of breastfeeding on maternal mood and perceptions of bond immediately after feeding. They asked 28 women to breastfeed their child and then complete measures of stress and bonding, then asked the same women to bottle feed their child and complete the same measures. They found that after a breastfeed mothers reported being less stressed post-feed than after bottle feeding their child. They also found that mothers reported a more positive bond with their infant post breastfeed than they did post bottle feed. They drew the conclusion that the differences in mood, and in turn bonding, could not be attributed to individual differences of the parent or child and that breastfeeding was acting as a buffer for negative mood. What was not

considered in this study however, was the role of the women's perceptions of themselves as a result of bottle feeding their child. However, in sum from the literature available a direction of causality cannot unequivocally be taken, and it should be considered that characteristics of the mother or infant may make breastfeeding easier in some dyads and that these characteristics may also be those being measured as an outcome from the breastfeeding experience.

1.2.3 Breastfeeding Prevalence. As discussed above, it is widely accepted that there are benefits to both the infant and the mother from establishing and sustaining exclusive breastfeeding (Anderson et al., 1999; Else-quest et al., 2003; Ip et al., 2009; Kramer & Kakuma, 2012; Oddy et al., 2003, 2009). Despite this understanding and the use of large scale projects to promote the benefits of breastfeeding to women the prevalence remains relatively low, particularly in the UK, the rates are further discussed below in section 1.4.1. Rates of breastfeeding are higher in Scandinavia, Germany and Norway, countries with comparable income to that of the UK, therefore the low initiation and continuation rates in the UK cannot simply attributed to socioeconomic factors as both these areas are comparable on these factors (Renfrew et al., 2012).

1.2.3.1 UK breastfeeding prevalence and the Infant Feeding Survey. The Infant Feeding Survey is a national survey in the UK that is conducted every 5 years. It aims to give estimates of the incidence, prevalence and duration of feeding practices adopted by mothers in the UK. The most recent survey available at the time of writing was conducted in 2010 (McAndrew et al., 2012), collecting data at 3 time points from a representative sample of 10,768 women who had given birth between August and October 2010. Information was collected about women's feeding practices at 4-10 weeks, 4-6 months and 8-10 months. The most recent survey reported that there was a 5% increase from 2005 in the number of women who reported that they intended to breastfeed (70-75%) and a 5% increase in the number of

women who initiated breastfeeding (76%-81%). However, the definition of initiating was quite broad including all women who had put the baby to the breast on at least one occasion, and may possibly over-represent the number of women who had initiated breastfeeding in the more specific sense that they were actively sustaining their child by feeding them in this way. The survey reported that there were higher rates of initiation if mothers were over 30, from a minority ethnic background, had continued in education over the age of 18 years, were in a managerial or professional occupation or were from the least deprived areas of the UK. These trends are reflected in the previous surveys (Bolling, Grant, Hamlyn, & Thornton, 2007).

In line with an increased breastfeeding initiation rate from 2005 to 2010, continuation rates of breastfeeding were found to be higher, with 34% of women reporting that they were continuing to breastfeed in some form at 6 months, compared to only 25% in 2005. The authors have hypothesised that the increase in breastfeeding may be reflective of the improvements being made in support offered to women who are choosing to breastfeed enabling them to breastfeed for longer. In the report however, they also document the fact that more women had returned to work full-time in 2005 (45%) compared to 2010 (29%) and of those that had returned to employment, 76% had waited until their child was over 6 months compared to 57% in 2005. The authors attributed this change to the changes in maternity allowance in 2007. Returning to work has been found to have an impact on women's breastfeeding rates, and attitude towards breastfeeding (Cooklin, Donath, & Amir, 2008; Goodman & Gotlib, 1999; Taveras et al., 2003).

The initiation of breastfeeding has shown some variability across the UK, with the Infant Feeding Survey reporting the highest rates in England, compared with Wales, Scotland and Northern Ireland. Within England variability of initiation has also been found with the highest rates being seen in the South East of England and lower than average rates in the North and Midlands (Del Bono & Rabe, 2012; McAndrew et al., 2012). London has been

found to have the highest rates of initiation compared to other areas, and the highest rates of exclusive breastfeeding.

1.2.4 Factors influencing initiation and cessation of breastfeeding. What can be summarised from the data available from the Infant Feeding Survey (McAndrew et al., 2012) is that breastfeeding rates in the UK are low, with some regional variation, although intention to breastfeed is relatively high. The following section will discuss the reasons women give for not initiating and for ceasing breastfeeding. It is well recognised that there is a need for intervention to increase breastfeeding initiation and more particularly continuation and research has therefore reviewed these factors extensively. There appears to be a clear distinction in the literature between women who make a decision prenatally not to breastfeed and those that choose to breastfeed but may cease earlier than the WHO guidelines would recommend (DiGirolamo, Thompson, Martorell, Fein, & Grummer-Strawn, 2005). Breastfeeding is a dynamic process, rather than a static all or nothing process, and therefore it is to be expected that different factors will influence breastfeeding initiation and maintenance over time (DiClemente et al., 1991).

1.2.4.1 Breastfeeding initiation. The strongest indicator of breastfeeding initiation is reported intention to breastfeed in the prenatal period; women who report they do not intend to breastfeed are unlikely to engage in breastfeeding behaviour (Chezem, Friesen, & Boettcher, 2003; DiGirolamo et al., 2005). This finding is perhaps expected, in line with the theory of planned behaviour (Netemeyer, Ryn, & Ajzen, 1991) people who report an intention to engage in behaviours are more likely to follow through and do the behaviour. What perhaps is more interesting though is understanding what influences women's intention to initiate breastfeeding.

The factors found to be most important with regards to intention to initiate breastfeeding have been found to be educational and social factors. Women with higher

education and from higher SES backgrounds have consistently been found to be more likely to initiate breastfeeding (Agboado, Michel, Jackson, & Verma, 2010; DiGirolamo et al., 2005; Ford & Labbok, 1990; Hauck, Fenwick, Dhaliwal, & Butt, 2011; Meedya, Fahy, & Kable, 2010; Thulier & Mercer, 2009; Wright, Parkinson, & Scott, 2007). It has also been reported that if a woman breastfed herself this increases the probability of her breastfeeding her child (Meedya et al., 2010). When considering why these factors are key the role of social learning should be considered. This theory suggests that if a behaviour is modelled by those around someone then the likelihood of them engaging in that behaviour themselves increases. The theory states that people are more likely to want to replicate the behaviours of someone who they observe to have qualities they respect and would like to emulate (Bandura, 1977). If breastfeeding successfully has been modelled to women, by their mothers, or by their peers, people that women respect and identify with, then it can be hypothesised that they will be more likely to engage with it themselves. Social conformity is also likely to be playing a role in the impact on rates of breastfeeding initiation. It has been found that when people lack knowledge, or are ambiguous, about a behaviour they are more likely to conform to the norms of their group as they are assuming that others in their group are more knowledgeable (Sherif, 1935). Therefore if the norm in a social group is to bottle feed women will be more likely to engage in this behaviour, and vice versa with breastfeeding.

In summary, breastfeeding intention is the biggest predictor of breastfeeding initiation and social and educational factors have been found to be the most important to breastfeeding intention. These factors have been considered when designing interventions to increase breastfeeding rates, further discussed below. However as the Infant Feeding Survey (McAndrew et al., 2012) discussed above highlighted, the intention and initiation rates of breastfeeding are now relatively high. Rates of continuing to breastfeed for the WHO

recommended 6 months however are particularly low highlighting that breastfeeding cessation is an area which should be considered and targeted.

1.2.4.2 Breastfeeding cessation. Considering the high rates of breastfeeding cessation that are reported (McAndrew et al., 2012) there is understandably a large amount of research investigating the reasons women give for ceasing. Research suggests that 4 weeks is a particularly important turning point at which the steepest decline in breastfeeding occurs (Quigley et al., 2007) with the mean age of the infant when breastfeeding is ceased reported as 4.27 weeks (Hauck et al., 2011; Kronborg & Vaeth, 2004). This figure is slightly lower if only considering first time mothers (Hauck et al., 2011). It could be hypothesised that this time is key as it is when peri-natal services are withdrawing, mid-wives hand care over to health visitors at 28 days, and women are receiving less support from health professionals, alternatively it may be at this point that women are becoming more aware of their infants weight gain trajectory. Poor milk supply, and subsequently poor weight gain, is the number one reason women give for breastfeeding cessation (Dias & Figueiredo, 2014; Kirkland & Fein, 2003; Lewallen et al., 2006; Li et al., 2008; Thulier & Mercer, 2009). If women can successfully breastfeed to 10 weeks this has been found to be an indicator of longer term breastfeeding success (DiGirolamo et al., 2005).

1.2.4.2.1 Risk factors for early cessation. A number of risk factors have been recognised for early cessation of breastfeeding. Women who are first time mothers (Agboado et al., 2010; Hauck et al., 2011) are more likely to cease breastfeeding early. It has been recognised, and will be discussed further later in this introduction, that breastfeeding expectations are often not met by experiences (Borra, Iacovou, & Sevilla, 2014; Mazingo, Davis, Droppleman, & Merideth, 2000). Women who are first time mothers, with no personal experience of breastfeeding may have ideals about the breastfeeding experience which are not met and this could be having an impact. Women who have had an experience of

breastfeeding are either likely to have lower expectations of the experience second time, or may have chosen not to breastfeed following their earlier experience.

Further risk factors for early breastfeeding cessation include low maternal age (Hauck et al., 2011; Taveras et al., 2003) and low maternal education (Taveras et al., 2003; Wright et al., 2006). Both these groups have been found to also have low breastfeeding initiation rates (Agboado et al., 2010; DiGirolamo et al., 2005; Ford & Labbok, 1990; Hauck et al., 2011; Meedya et al., 2010; Thulier & Mercer, 2009; Wright et al., 2006). The social norm, for women in both these groups is more likely to be bottle feeding. It is also known that the drive to succeed in a behaviour is key to success in that behaviour (Netemeyer et al., 1991), and if women in these groups are not experiencing the same pressure to conform to the breastfeeding norm they may not experience the same drive and may be more comfortable to cease breastfeeding. Ethnic origin has also been recognised as a risk factor for early cessation (Agboado et al., 2010) and a similar understanding may underlie this.

Other risk factors for early cessation include being a single parent (Taveras et al., 2003) and returning to work early (Taveras et al., 2003; Vogel, Hutchison, & Mitchell, 2007). These could be linked to the practical constrictions of breastfeeding. The behaviour of breastfeeding can be time consuming and relies on the mother being available at all times. When there is inadequate social support, or enforced times away from the baby, it can be understood that bottle feeding would be practically advantageous. Mode of delivery may also impact practically on whether women are able to breastfeed immediately after birth, a time known to be key in breastfeeding establishment (Colson, Meek, & Hawdon, 2008) and it is therefore unsurprising that this too is a risk factor for breastfeeding cessation (Hauck et al., 2011).

Knowledge of breastfeeding has been found to be key to breastfeeding continuation (Chezem et al., 2003; Hogan, 2001; McLeod, Pullon, & Cookson, 2002), with those that have

the best understanding continuing for the longest period. Again this is probably reflecting the fact that people rely on the experiences and the model of those around them to inform decisions; if they have been exposed to others, who they respect, breastfeeding this gives them opportunity to be educated about the breastfeeding experience. If women offer mixed feeds from the start this is also a risk factor for early cessation, possibly as women that report a plan to offer mixed feeds have lower confidence in their ability to breastfeed successfully, and therefore this affect too could be related to their expectations of breastfeeding (Agboado et al., 2010; Hauck et al., 2011; Lawson & Tulloch, 1995; Wright et al., 2006). Maternal depressive symptomatology has also been found to be associated with breastfeeding cessation (Taveras et al., 2003), and this is discussed further in section 1.3.3.

1.2.4.2.2 The role of breastfeeding self-efficacy in breastfeeding continuation. The theory of self-efficacy was first described by Bandura (1977), who described a process by which a person evaluates their ability to perform a specific behaviour, with this evaluation informing their persistence in that behaviour. He described self-efficacy as being strengthened by a number of factors, including previous success in the behaviour, seeing others perform the behaviour successfully, and psychological responses, including current mood and emotional state. Bandura (1977) reported that self-efficacy must be behaviour specific, as belief in ability to perform each individual behaviour is assessed, and informed, by previous behaviour specific experiences and influences.

Breastfeeding self-efficacy, defined as a women's perceived ability to breastfeed her infant successful, has been shown to predict how much effort a women will expend in breastfeeding and whether her thought patterns will be self-enhancing or self-defeating (Dennis, 1999). In line with self-efficacy theory, breastfeeding self-efficacy has been shown to be determined by a mother's evaluation of her past performance, accomplishments, vicarious experience, verbal persuasion and physiological and psychological states (O'Brien,

Buikstra, & Hegney, 2008) and a measure of breastfeeding self-efficacy has been strongly associated with breastfeeding initiation and duration in a number of studies (Blyth et al., 2002; de Jager, Broadbent, Fuller-Tyszkiewicz, & Skouteris, 2014; Ertem, Votto, & Leventhal, 2001; O'Brien et al., 2008) and are more likely to continue in their behaviour in the face of difficulties (de Jager, Skouteris, Broadbent, Amir, & Mellor, 2013). It is therefore hypothesised that all the risk factors discussed above are likely to impact on a women's breastfeeding self-efficacy, or belief in her ability to breastfeed successfully, and breastfeeding self-efficacy would correlate with women's expectations of the breastfeeding experience.

1.2.4.2.3 Reasons for early cessation. Women's reasons for ceasing breastfeeding have been shown to differ depending on the time at which they stop (Williams, Innis, & Vogel, 1996). Reasons for ceasing in the first week include insufficient milk, poor latch, or pain (McAndrew et al., 2012). While insufficient milk continues to be the most cited reason for breastfeeding cessation in the first 4 months (Hauck et al., 2011; McAndrew et al., 2012; Taveras et al., 2003; Vogel et al., 2007) the infant's well-being becomes more salient a reason after the first 4 weeks with infant hunger (McAndrew et al., 2012; Wright et al., 2006) or infant physical health also being important factors (McAndrew et al., 2012).

There is a body of research to suggest that there may be a biological basis for early breastfeeding cessation. Women who ceased breastfeeding earlier were also found to have the tallest infants at 1 year. It could therefore be hypothesised that the higher nutrient requirements of the taller infants put bigger demands on the mother and increased the likelihood of them stopping feeding (Wright, Bauer, Naylor, Sutcliffe, & Clark, 1998; Wright et al., 2006). However, this is unlikely to be the case for all women who cease breastfeeding.

Alternative suggestions are that women are not prepared for the realities of the breastfeeding experience sufficiently and therefore the demands placed on them physically

feel excessive and unachievable (Wright et al., 2006). Women's expectations and experiences of breastfeeding have been found to be important to breastfeeding continuation with those having the most positive attitude towards breastfeeding (Taveras et al., 2003; Vogel et al., 2007) and the least negative experience and discomfort in the first (DiGirolamo et al., 2005) also being the most likely to continue breastfeeding. Women's expectations and attitudes towards breastfeeding are discussed in more depth in section 1.3 of this thesis, with regards to women's postnatal mental health.

1.2.5 Initiatives to increase breastfeeding prevalence. Understanding of why women may not be choosing to breastfeed, or are ceasing breastfeeding before the WHO recommended time point of 6 months is gradually expanding. In response there is an increasing body of research investigating the utility of interventions developed with the intention of increasing breastfeeding behaviours.

1.2.5.1 Breastfeeding support and the National Institute for Clinical Excellence (NICE) guidelines. The current NICE infant feeding guidelines were developed considering the outcomes of four reviews (Fairbank et al., 2000; Protheroe, Dyson, Renfrew, Bull, & Mulvihill, 2003; Renfrew, et al., 2005; Tedstone, Aviles, Shetty, & Daniels, 1998). The guidelines suggest that one-to-one support from a health professional should be offered during the antenatal period. Peer or volunteer support should be offered by telephone to complement face-to-face support during the early postnatal period, with support being offered for the entirety of the first year (Dyson et al., 2005)

The more recent Cochrane review of breastfeeding support (Renfrew et al., 2012) took into account literature which had been published regarding infant feeding support since the NICE guidelines were first developed. This review included mainly papers from high income countries and therefore findings can be applied to the UK population with some confidence. As the previous review had found, Renfrew and colleagues reported that overall

all forms of breastfeeding support had a positive impact on breastfeeding prevalence and continuation rates. Importantly they found that how women accessed support was key with only support that was actively sought being beneficial. It was therefore unsurprising that they also found that support was most effective in areas where initiation rates were high; willingness to ask for help has been found to be related to motivation to breastfeed (Graffy, Taylor, Williams, & Eldridge, 2004). Qualitative studies (McInnes & Chambers, 2008; Best The Joanna Briggs Institute, 2012) investigating women's experiences of breastfeeding support, found that key to success of support was the authentic presence of the support giver. Women reported that if the support felt genuine and easy this was more likely to impact on their breastfeeding behaviours. If they felt they were not supported they reported experiencing feelings of guilt and lack of confidence in their ability to feed their child and were less likely to seek further help or sustain breastfeeding. Giving both and positive and realistic advice, even if this was somewhat negative, was highly valued by women (The Joanna Briggs Institute, 2012).

1.2.5.2 The UNICEF UK Baby Friendly Initiative. The World Health Organisation (WHO) and UNICEF baby friendly initiative was established in the UK in 1991. It includes 10 steps to successful breastfeeding, and provides guidelines for best practice for breastfeeding support for NHS trusts, other health care facilities and higher education institutions. Services implement the standards over a number of years and at each stage are externally assessed and accredited by representatives of WHO. It has been reported that women who deliver their baby in a baby friendly initiative accredited hospital are 15% more likely to initiate breastfeeding and are 8-9% more likely to be breastfeeding at 4-8 weeks (Dyson et al., 2005). Current NICE guidelines for infant feeding advocate that the Baby Friendly Initiative should be introduced across all NHS trusts in the England as it provides a recognised and accredited framework for routine practice (Dyson et al., 2005).

One of the steps in the Baby Friendly Initiative is to ensure that there is no promotion of breast milk substitutes, bottles, teats or dummies in any part of the facility or by any staff. The guidelines acknowledge that there are mothers who choose not to breastfeed or are unable and in these instances it is recommended that mothers should be encouraged as the value of any breastfeeding is recognised. Any alternative methods encouraged should support returning to full breastfeeding. The guidelines do not appear to show much flexibility with regards to how to work with women who choose to cease breastfeeding; in fact they appear to actively discourage supporting women who have made this decision. It should be considered that following these guidelines may be giving women the message from the health professionals around them that their choices are not acceptable. There is a potential for the views of health professionals to impact on women's views of themselves if they make the decision to cease breastfeeding. A further discussion of the impact of breastfeeding cessation on women's appraisals of themselves is given in section 1.3.3.2.

1.2.6 Summary of breastfeeding. This section discussed the current status with regards to the benefits to both infant and mother of breastfeeding. There are some recognised physical, cognitive and psychological benefits to the infant and mother, though these may not be as extensive as previously suggested due to the reporting of data from insufficiently controlled studies. Recognising that breastfeeding is a behaviour which offers some benefits to the infant and mother, low breastfeeding prevalence rates in the UK were then discussed. Intention and initiation rates are relatively high in the UK, though breastfeeding continuation rates remain low. Interventions have been put into place in the UK in reaction to the understanding of why women chose not to initiate breastfeeding and why they may cease early, however, these are still having limited impact on breastfeeding rates. While the literature supports that increasing breastfeeding education and support is likely to increase prevalence, it does appear to be ignoring the fact that breastfeeding intention is actually

relatively high (McAndrew et al., 2012). The statistics suggest there are a group of women who intend to engage in breastfeeding but do not successfully and a question would be whether the current guidelines would offer adequate support to these women. The main reason women are reporting across the literature for breastfeeding cessation is poor milk supply and concerns about their infant's health. Women are perceiving that they are unable to feed and care for their child adequately and it should be considered that this perception has the potential to impact on their postnatal mental well-being.

The following section offers a discussion of the current understanding of postnatal mental health and the potential role that breastfeeding could play in this.

1.3 Postnatal mental health and well-being

The focus of this thesis is to investigate the impact of breastfeeding on postnatal mental well-being, with well-being considered as a continuum, with Post-Natal Depression (PND) considered as one end of the continuum. However, there is currently limited research available which does not look at PND as a diagnosis. To guide the current research therefore PND, and theories of PND, are discussed. The following discussion highlights the potential importance of women's expectations of motherhood prenatally on postnatal well-being. The section then goes on to discuss more specifically the current research regarding breastfeeding and PND incidence, considering the potential cause and effect relationship, and links this to the more general understanding of PND.

1.3.1 Post Natal Depression (PND)

1.3.1.1 What is PND? PND is a diagnosis made when significant depression occurs in the first year postpartum and it is considered temporary and treatable (Lee & Chung, 2007). PND is thought to affect 10-15% of women in developed countries, with higher incidences in developing countries (Fairlie, Gillman, & Rich-Edwards, 2009; Lee & Chung, 2007)

PND is not recognised by the American Psychiatric Association (APA) as a discrete diagnosis in their Diagnostic and Statistical Manual of Mental Disorders- IV TR (DSM-IV TR; (APA, 2000)). To meet criteria for a diagnosis of PND women must meet criteria for a major depressive episode and in addition the onset must be within 4 weeks of delivery (APA, 2000). Recognised symptoms of PND are therefore in line with those seen in a major depression and may include; depressed mood most of the day nearly every day, diminished interest or pleasure in all or almost all activities, weight loss, insomnia, fatigue or loss of energy, feelings of worthlessness or excessive or inappropriate guilt, difficulty concentrating, and recurrent thoughts of death, suicidal ideation or suicide attempts (APA, 2000). It is considered thought that there are limitations in using these guidelines strictly when making a diagnosis of PND as many of the symptoms discussed above would be true of mother's in the first months after the birth of their baby, regardless of their mental health status.

The nature of PND symptoms means that these can have a detrimental impact on a mother's rate of speech, her eye-to-eye contact and her emotional responsiveness to her child, and on mother-infant interactions (Frankel & Harmon, 1996; Goodman & Gotlib, 1999; Hay et al., 2001; Murray, Fiori-cowley, Hooper, & Cooper, 2014). Further maternal distress resulting from depression can adversely impact broader family relationships and can lead to marital discord (Zelkowitz, Milet, Mortimer, & Hospital, 1996).

1.3.1.2 Consequences of PND for the infant. Neurobiological and neurodevelopmental studies have shown that the period from birth to school age is critical in brain development (Maggi, Irwin, Siddiqi, & Hertzman, 2010). Spending early years in an environment which is not stimulating, or supportive, can affect brain development and lead to cognitive, social and behavioural delays later in life (Glaser, 2000; Keim et al., 2012; Kersten-Alvarez et al., 2012; Maggi et al., 2010). Psychologically well caregivers, and their

interactions with the child, are therefore essential to normal development (Cogill, Caplan, Alexandra, Robson, & Kumar, 1986).

It is recognised that PND may have implications for the social, emotional and cognitive development of a child (Beck, 1998). It may impact on cognitive development as during the first year an infant develops emotional control through normal interactions with their caregiver (Maggi et al., 2010). If this is not modelled by the caregiver emotional control will not develop correctly. If infants do not learn from their mother how to correctly deploy attention this could impact on how they attend to information in their environment and in turn their cognitive development (Bornstein & Tamis-LeMonda, 1997; Weinberg & Tronick, 1998). With this theory in mind it could be suggested that PND will always impact negatively on cognitive development but this has not been found to be the case (Murray, Fiori-Cowley, Hooper, & Cooper, 1996). Chronicity of PND has been found to be particularly important when considering the potential impact on cognitive development, with more chronic depression having a greater impact on development (Brennan et al., 2000; Cornish et al., 2005; Hay et al., 2001; Milgrom, Westley, & Gemmill, 2004; Sutter-Dallay et al., 2011). However, it has also been found that other factors, including socio economic status and maternal education are better predictors of developmental outcome than is PND (Brennan et al., 2000; Murray et al., 1996), possibly reflecting maternal sensitivity and attunement as mediating factors (Hackman & Farah, 2009; McElwain & Booth-Laforce, 2006).

The above discussion highlights that although PND may be a relatively common diagnosis postnatally its impact can be significant for both the mother and the child. It is vitally important therefore to understand why some women experience PND with a view to developing interventions which can be targeted at treating and, if possible, preventing it.

1.3.2 Should PND be considered a discrete diagnosis? The classification by the APA of PND as a sub-class of major depression in the DSM-IV (APA, 2000) suggests that

the causes and consequences of PND are the same as for a major depression. In recent years however there has been a growing body of literature to suggest that PND could be considered as a discrete diagnosis with specific risk factors and therefore different subsequent interventions (Beck, 2001; Church, Brechman-Toussaint, & Hine, 2005; Sockol et al., 2014).

Research has demonstrated that some recognised risk factors for depression are also risk factors for PND including; particular biological dispositions, certain personality characteristics, history of depression, inadequate social support and life stresses (Milgrom et al., 2004; Murray et al., 1996). However, additional postnatal specific risk factors for developing PND have also been recognised. These include birth complications, infant temperament, child care stress (events specific to childcare such as infant health care problems, difficulty in feeding and poor sleep), marital factors, and unwanted/unplanned pregnancy (Beck, 2001; Church et al., 2005).

As PND is currently defined as specific form of more general depression and many of the underlying risk factors for PND overlap with those seen in general depression, it would be logical to assume that models of general depression, and therefore treatments for depression, could be directly applied to PND with similar outcomes. The research discussed below however suggests that the relationship is not that simple and possibly PND should be considered as distinct.

1.3.2.1 Can Beck's cognitive model of emotional disorders be applied to PND? The underlying principle of the cognitive models is that people's emotional reactions and behaviours are mediated by their cognitions; that is their thoughts, beliefs, and interpretations of themselves and the situations they find themselves in (Westbrook, Kennerley, & Kirk, 2011). In line with this therefore it is understandable that individuals have different reactions to the same experiences as their mediating cognitions will differ. Beck's cognitive model of emotional disorders suggests that people who experience depression have a negative

cognitive bias in their perception of stressful life events (Beck & Emery, 1985; Beck, 1967). An individual's cognitive style, or bias, leaves them vulnerable to distress when a negative life event arises which is congruent with their maladaptive schema of that situation, that is dysfunctional but pervasive themes regarding themselves and their relationship with others that have developed and elaborated throughout a person's lifetime (Francis-Raniere, Alloy, & Abramson, 2006; Segal, Shaw, Vella, & Katz, 1992). The link between traits, such as particular personalities and cognitive styles, and vulnerability to major depression is well established (Jones et al., 2010).

Having negative general cognitive biases has been associated with depression in pregnancy and postpartum (Grazioli & Terry, 2000; Warner, Appleby, Whitton, & Faragher, 1997). It could be suggested therefore that the post-natal specific risk factors for PND are simply experiences that happen during the postnatal period which are interpreted according to women's general cognitive biases. If this explanation were accurate though PND would only be seen in women who are also at risk of general depression. While previous depression has been found to be a strong indicator of PND (Boyce & Hickey, 2005; Johnstone, Boyce, Hickey, Morris-Yates, & Harris, 2001; Leigh & Milgrom, 2008; Ross, Sellers, Gilbert Evans, & Romach, 2004) PND is also seen in women who have otherwise been depression free prior to having their baby (Church et al., 2005; Ross et al., 2004). It could be argued therefore that there is something about the specific experience of having a child and motherhood which increases the risk of depression during this period.

1.3.2.2 Evidence from treatment of PND. In line with the understanding of PND as a sub-classification of general depression it would also be assumed that treatments which have been found to be efficacious for general depression would have similar outcomes with PND. This affect has not been reported clearly in the literature. Findings from the papers below add further support to the suggestion that PND should be considered as a discrete diagnosis.

Cuijpers, van Straten, Andersson and van Oppen (2008) present a large scale review of treatments for depression, reviewing 149 papers which considered the outcomes of psychological treatments for depression. They concluded that Cognitive Behavioural Therapy (CBT) is an empirically supported treatment for general depression. Cuijpers, Brannmark and van Straten's (2008) subsequent meta-analytic review of 17 studies, which investigated the utility of CBT for PND, had less convincing findings. Although they found that CBT for PND had better outcomes than treatment as usual and waitlist, there was limited evidence that CBT was more efficacious than other forms of psychotherapy such as Interpersonal Therapy (IPT) and non-specific counselling, a finding reflected in other studies (Milgrom et al., 2004; Prendergast & Austin, 2001; Sockol, Epperson, & Barber, 2011). In a more recent review by Sockol and colleagues (2011) of 27 studies investigating treatments for PND, it was found that IPT was superior to CBT for the treatment of PND. Although they acknowledged that this findings may have been the result of methodological limitations, studies investigating IPT were standardised using manualised treatment whereas CBT treatments were more variable. It was also suggested that IPT was addressing factors which are particularly important in PND including role transitions and interpersonal disputes (Sockol et al., 2011). Both reviews recognise that the amount of controlled studies currently available regarding psychotherapeutic treatments is limited and therefore conclusions should be drawn with caution.

The current available evidence regarding therapeutic treatment for PND suggests that the benefits that are seen could be due to the non-specific therapy factor of a one-to-one interaction, and the social support that women gain from these interactions. Research has demonstrated that women recognise a benefit from social interaction after having their baby as the loneliness they experience was unexpected (Paris & Dubus, 2005). It could also be argued that the specific elements of CBT such as behavioural activation, and cognitive

restructuring were not accessed by women with PND due to factors which made these difficult including the physical limitations of socialisation with a new born. It could also be suggested that CBT is not as an efficacious treatment in PND as in general depression as the underlying model of general depression is not adequate to account for the symptoms seen in PND.

In summary, while PND is currently considered as a sub-classification of general depression, the findings from studies looking at treatments in PND, which are known to be efficacious in general depression, suggest that there is something different about PND. These findings appear to support the suggestion that PND should be considered as a discrete diagnosis. The following sections consider more recent evidence to support the consideration of PND as a discrete diagnosis.

1.3.2.3 Recent evidence to support PND as a discrete diagnosis. Warner and colleagues (1997) suggest that the negative cognitions that women experience in PND are situationally specific, relating to the recent transition to motherhood, rather than general, as seen in major depression. Church and colleagues (2005) used path analysis to test the hypothesis that peri-natal specific and general risk factors increase PND symptoms indirectly through different pathways. They asked 407 women to complete the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987), Maternal Attitudes Questionnaire (MAQ; Warner et al., 1997) and Dysfunctional Attitudes Scale (DAS; Power et al., 1994) at 12 weeks postpartum. They hypothesised that peri-natal specific risk factors would activate dysfunctional maternal cognitions specifically, that is dysfunctional cognitions that only applied to their role as a mother, and that these were separate from women's general cognitions. Further they hypothesised that risk factors which are also recognised as a risk for major depression, including educational level and personality characteristics, would activate general dysfunctional cognitions and increase PND symptoms via a different pathway. As

expected they found that the relationship between peri-natal risk factors, problems relating to baby's health, sleeping, colic, feeding, crying and irritability, and postnatal well-being was mediated by maternal specific cognitions only. How women were appraising and understanding their baby's problems was key to their postnatal mood, but more importantly these appraisals were not necessarily the appraisals that they would employ in other areas of their lives where their cognitions may not be dysfunctional. They found that factors which are not maternally specific e.g. educational level and depression prone personality, could impact on postnatal well-being but that this was via activation of general dysfunctional cognitions only.

The research therefore suggests that women can experience PND if maternal specific dysfunctional beliefs are activated. In turn, what needs to be understood is why do women hold dysfunctional beliefs about motherhood which may be different from their beliefs about themselves in other situations?

1.3.2.3.1 Importance of interpretation of the maternal role. It could be suggested that the schema women develop about motherhood, prior to experiencing it, may be idealistic. Prior to experiencing motherhood for the first time women will have to create a perception of how the experience will be based on their perceptions of how others are experiencing motherhood, either their peers, or through the media, where the perception that others give is likely to be positively biased. Where women hold particularly rigid beliefs about the experience of parenting, which have not been met by their experience, this has been found to negatively impact on their postnatal mood and well-being (O'Mahen et al., 2012; Harwood et al., 2007; Sockol et al., 2014).

O'Mahen and colleagues (2012) conducted a thematic analysis of qualitative interviews with 23 women during the postnatal period. They found that those women who demonstrated the most rigidly held beliefs about the experience of motherhood being

universally positive were at the greatest risk of having difficulties with mood and well-being postnatally. They suggested that it was the discrepancy between their expectations and experience of parenting, when expectation was not matched by experience, which was particularly difficult for them. The women reported that if their experience of parenting did not meet their expectations this would often leave them worrying and ruminating and result in negative thoughts about their effectiveness as a mother. Sockol and colleagues (2014) recent quantitative study recruited 210 women and asked them to complete the empirically supported DAS (Power et al., 1994), MAQ (Warner et al., 1997) and a third questionnaire designed for use in their study, the Attitude to Motherhood scale (AToM). The new measure had been developed as the authors felt that the MAQ was not sufficient as it did not offer an evaluative component of women's cognitions. The measure was found to have good validity prior to being used. They found that maternal attitudes, as measured on their scale, were strongly predictive of postnatal mood. Women who held rigid beliefs about how they should behave in the postnatal period e.g. "I should always want to be with my baby", but then experienced thoughts that did not fit with this schema were more likely to interpret these thoughts as evidence of them being a poor mother. In turn they were found to experience increased symptoms of depression such as guilt, sadness and worthlessness.

Harwood and colleagues (2007) investigated 70 first time mothers' expectations of parenthood, and the impact on mood and relationship adjustment when expectations were not met. They developed, and validated, a scale for use in this study which captured expectations and experience of parenting. They found overall that women's prenatal and postnatal parenting expectations, mood and relationship adjustment were changed by the experience of having had children, with the majority of women's expectations matched or exceeded by experience. When expectations were not met however, they found this had a significant impact on postnatal mood and relationship adjustment. This study included a measure of

parenting self-efficacy, the Parenting Sense of Competence Scale (PSOC; Johnston & Marsh, 1989). Self-efficacy is a dynamic cognitive process by which a person evaluates their ability to perform a given behaviour and this greatly influences their persistence with the given behaviour (Bandura, 1977). As already discussed, it is expected that a person with high behaviour specific self-efficacy will persist in the behaviour in the face of difficulties (Bandura, 1977). Harwood and colleagues (2007) had hypothesised that parenting self-efficacy would moderate mood and relationship adjustment when expectations were not met. They predicted that the higher parenting self-efficacy the less impact expectations not being met would have on mood, but found the reverse. The authors hypothesised that this could be due to those with the highest self-efficacy also having the greatest expectations of parenthood, so they also had more opportunity for expectations not being met. Importantly they had found that a women's belief in her ability to be an effective mother may not in fact be protective in a situation where she had reduced control of the outcome.

Evidence described above suggests that women's expectations specifically of their experience of motherhood are important when considering their vulnerability to poor postnatal well-being and PND. While some women are at an increased risk of poor well-being and PND, due to a general risk for depression related to having a general negative cognitive bias, there is a separate group of women who are at risk specifically of poor mental well-being and PND due to situationally specific cognitive biases. It is suggested that the women's situationally specific cognitive biases are related to their having rigidly held beliefs about the experience of motherhood. Parenting self-efficacy had been hypothesised to be a protective factor for women's mental well-being if expectations of parenting were not met by experience, however, the reverse was found. This is an area of ongoing research.

1.3.3 Breastfeeding and, postnatal mental health, well-being and PND. The research discussed above suggests that PND could be a discrete diagnosis with causes and

consequences which could be considered separately from that of general depression, at least in some women. While some women may be experiencing PND because they have general negative cognitions, other women appear to have parenting specific negative cognitions which are activated during the postnatal period. Women's expectations of the parenting experience, how rigid these expectations are and whether they are met by experience, have been found to be important to women's mental well-being during the postnatal period (Church et al., 2005).

The transition to motherhood is a complex time with many new experiences and challenges. The research discussed above investigated the impact of expectations of motherhood on postnatal well-being, with PND being an extreme of this. However, O'Mahen and colleagues (2012), Sockol and colleagues (2014) and Harwood and colleagues (2007) all assessed motherhood factors as a single concept, incorporating breastfeeding, birthing experience, child health and other factors into one broader concept, peri-natal experience.

It has been described in section 1.2, that breastfeeding has some benefits for both mother and child. However, rates of breastfeeding continue to be low in the UK despite projects aimed at increasing rates, such as the Baby Friendly Initiative. The initiatives have been developed in response to knowledge of specific risk factors for women choosing not to initiate breastfeeding and high rates of early cessation of breastfeeding, these include poor education about breastfeeding and social factors such as low SES background and low educational background. The high rates of cessation though suggest that there are likely to be a sub-group of women who are well educated about breastfeeding and do not fit other high risk criteria but cease breast feeding early. Considering evidence discussed above with regards to PND, it could be hypothesised women who have an intention to breastfeed as part of their concept of parenting, but then are unable to, may be at risk as their expectations of

parenting are not being met. The following section discusses the current literature regarding the relationship between breastfeeding, one of the many factors which contribute to parenting, and postnatal well-being.

1.3.3.1 Breastfeeding and PND. On the whole researchers agree that there is a link between PND and early breastfeeding cessation (Assarian, Moravveji, Ghaffarian, Eslamian, & Atoof, 2014; Henderson, Evans, Straton, Priest, & Hagan, 2003; Taveras et al., 2003; Zubaran & Foresti, 2013) with mothers who score highly for depressive symptoms more likely to have discontinued breastfeeding at 12 weeks (Taveras et al., 2003) and to have reported more failed breastfeeding attempts (Ferguson, Jamieson, & Lindsay, 2002). A recent systematic review by Dias and Figueiredo (2014) reviewed 48 studies investigating the association between breastfeeding and postnatal depression. They included studies, conducted internationally between 1988 and 2013. Only studies which used original data were included, though all study designs were considered appropriate to contribute to the review. The authors concluded that overall there was an unequivocal association between breastfeeding and postnatal depression and went on to discuss the data available to support a direction of causality, does breastfeeding cessation precede PND or vice versa. Below is offered a discussion of the current status of the understanding of the direction of causality of breastfeeding and PND, including the findings of the review presented by Dias and Figueiredo (2014).

1.3.3.1.1 Direction of causality between breastfeeding and PND – biological argument. It has been suggested that there is a biological link between breastfeeding and maternal mental health. Breastfeeding is known to trigger release of the neuropeptide hormone oxytocin (Uvnäs-Moberg & Eriksson, 1996) and this has been linked to reduced stress (Light et al., 2000) and depressive symptomatology in women (Skrundz, Bolten, Nast, Hellhammer, & Meinlschmidt, 2011). However, it has also been suggested that a negative

breastfeeding experience, and particularly an experience of pain, could be linked to a decrease in serotonin release in the brain and, in turn, raised levels of anxiety and stress. This association suggests that a physically negative breastfeeding experience could precipitate symptoms of postnatal distress (Watkins, Meltzer-Brody, Zolnoun, & Stuebe, 2011). At the biological level therefore it can be hypothesised that as long as breastfeeding is not painful it is likely to have a positive impact on mental well-being. However, further research discussed below suggests that this relationship may not be as black and white.

1.3.3.1.2 Direction of causality between breastfeeding and PND – current research.

The recent systematic review of Dias and Figueiredo (2014) was presented following an extensive literature search and assimilation of the data available investigating the association between breastfeeding and postnatal well-being. As such it is sensible to review and consider the findings of this study to form the central part of this discussion rather than repeating the systematic review.

Dias and Figueiredo (2014) reported that in 9 studies included in their review PND symptomatology predicted a shorter duration of breastfeeding. This finding suggests that women who experience symptoms of depression are less likely to continue breastfeeding and therefore symptoms of PND precede, and cause, breastfeeding cessation. However findings from additional papers considering whether breastfeeding status could predict depression, highlighted that the relationship was probably not this simple. They reported that breastfeeding worries (Chaudron et al., 2001), negative breastfeeding attitudes (Galler, Harrison, Biggs, Ramsey, & Forder, 1999; Watkins et al., 2011), breastfeeding difficulties (Ali, Ali, & Azam, 2009), breastfeeding pain (Watkins et al., 2011) and a lower postnatal breastfeeding self-efficacy (Haga et al., 2012) predicted higher levels of self-reported PND symptomatology. The authors concluded that research suggests that depressive symptoms predict the early cessation of breastfeeding but that breastfeeding difficulties and perceptions

are important in predicting the development of the depressive symptomatology. How women are interpreting the breastfeeding experience is key to whether or not they are developing depressive symptomatology and in turn ceasing breastfeeding. Dias and Figueiredo, (2014) conclusions reflected those of an earlier review by Dennis and McQueen (2009). They had reviewed 49 studies investigating the link between feeding choice and postnatal mood and found that there was an overall trend towards higher depressive symptomatology and bottle feeding. They too reported that overall women that scored higher for depressive symptoms were also those that had more worries about breastfeeding, more difficulties and decreased satisfaction with their feeding choice.

In summary, research to date suggests that women that experience difficulties with breastfeeding are more likely to experience symptoms of PND, and these symptoms are likely to precede the actual point of breastfeeding cessation. This suggests that simply looking at breastfeeding success or failure, when considering its role in the development of PND, would be likely to bias the understanding of the relationship. There may be women who are continuing to breastfeed despite difficulties, who are also experiencing PND symptoms. Further discussion and consideration is needed however as to why some women experience symptoms of PND when they experience breastfeeding difficulties and others do not.

1.3.3.1.3 Why do some women experience symptoms of PND when they have breastfeeding difficulties, while others do not? When considering why there is a link between breastfeeding and PND symptom presentation researchers have suggested that women who report more symptoms of PND are prenatally more stress vulnerable, emotionally reactive, and likely to give up on their goals (Ystrom, Niegel, Klepp, & Vollrath, 2008). Additionally, it has been hypothesised that women that present with symptoms of PND, who have experienced breastfeeding difficulties, are more likely to have had a pre-morbid low self-esteem and low self-confidence in turn leading to a more negative interpretation of the

maternal role and higher negative affect (Roux, Anderson, & Roan, 2002; Zubaran & Foresti, 2013). These researchers are therefore suggesting that only those women who have general negative cognitions, and are therefore at risk of general depression, are at risk of PND symptoms when they experience breastfeeding difficulties. As already described above, in section 1.3.2.3, recent research investigating PND suggests that for some women low postnatal mood is precipitated by their beliefs, specifically about themselves as a parent, being challenged. These beliefs being separate from their beliefs about themselves generally. Breastfeeding is one part of the wider experience of parenting, and therefore it is hypothesised here that simply attributing the correlation between breastfeeding difficulties and low mood to prenatal general negative cognitive biases, may be over simplistic. It is suggested that women's breastfeeding expectations specifically may be important when considering the relationship between breastfeeding experience and postnatal mental health. The following section offers a consideration of current research which has investigated women's breastfeeding expectations, breastfeeding experiences and postnatal mental health.

1.3.3.2 Evidence to support a role of breastfeeding expectations. Qualitative studies have investigated how women appraise and understand the experience of breastfeeding (Burns, Schmied, Sheehan, & Fenwick, 2010; Misri, Sinclair, & Kuan, 1997; Mozingo et al., 2000). A consistent finding from these studies is that women experience a clash between their idealised breastfeeding experience and the reality. When their expectations of the experience were not met by the reality they reported experiencing disillusionment, and this was linked to early breastfeeding cessation (Mozingo et al., 2000). Women reported feelings of guilt, shame, self-doubt, loss, distress and inadequacy in response to their expectations not being met and their breastfeeding decisions (Burns et al., 2010; Mozingo et al., 2000; Renfrew et al., 2012). The experience of breastfeeding symbolised more than infant nourishment, for many women it was the embodiment of the maternal role (Mozingo et al., 2000) and they

equated their ability to breastfeed with their ability to bond with their infant (Misri et al., 1997). Findings from qualitative research are therefore suggesting that breastfeeding expectations may be key to women's appraisals of the breastfeeding difficulties they encounter. Where breastfeeding expectations are not being met by experience it is suggested that their schema of themselves as a parent is challenged which is resulting in an experience of feelings such as guilt, and shame. These feelings are consistent with those expected in women experiencing low mood.

There is currently only one published quantitative research study which has specifically investigated the relationship between breastfeeding expectations, breastfeeding experience and postnatal mental health. This study presents an analysis of data available from the large scale Avon Longitudinal Survey of Parents and Children (ALSPAC; Borra et al., 2014). Researchers reviewed pre- and postnatal data for 8,985 women and children and reported that difference between women's planned length of breastfeeding, asked prenatally and actual experience, impacted on postnatal mood at 8 weeks on the EPDS (Cox et al., 1987). Where planned length was greater than actual length of breastfeeding more symptoms of low mood were reported. This association was true even when prenatal mood was controlled for.

Taking the findings of the qualitative and quantitative studies in combination the current status of research is suggesting that when women's expectations of breastfeeding are challenged by their experience of breastfeeding this can impact on their postnatal mood. It is suggested here that this affect is universal, when expectations are not matched by experience this impacts on postnatal well-being.

1.4 Rationale for current research.

Research has demonstrated that there are some benefits to both mother and infant from breastfeeding (Ip et al., 2009; Kramer & Kakuma, 2012) but despite this awareness and

campaigns to increase breastfeeding prevalence, continuation rates remain low (McAndrew et al., 2012). Relatively few women are continuing to breastfeed beyond four weeks postnatally despite many reporting an intention to do so (Hauck et al., 2011; Kronborg & Vaeth, 2004; McAndrew et al., 2012; Quigley et al., 2007). This highlights that there are a large number of women who are reporting an intention to breastfeed, but are not following through with their intentions. It has been demonstrated that women's expectations of breastfeeding are important when considering whether they will engage with the behaviour (Taveras et al., 2003; Vogel et al., 2007) and therefore further understanding of factors which are important in the creation of women's expectations is warranted. Further research however, is also needed to understand the postnatal consequences for women if these expectations are not matched by experience.

It has been recognised that common risk factors for both low breastfeeding intent and early breastfeeding cessation are, younger age, poorer education and less breastfeeding knowledge (Chezem et al., 2003; Hauck et al., 2011; Hogan, 2001; McLeod et al., 2002; Taveras et al., 2003; A. Wright et al., 1998). In turn, it is recognised that within these groups the norm will not be to breastfeed your child. It is suggested therefore where there is less modelling of successful breastfeeding that breastfeeding expectations will be lower. Interventions have recognised that in these groups it may be beneficial to increase breastfeeding expectations, and women's belief in their ability to breastfeed. However, it is also recognised that breastfeeding early cessation is not confined to these groups. Even in areas where breastfeeding intention and initiation rates are high, relatively high numbers cease breastfeeding early (McAndrew et al., 2012). Here it is suggested that for some women expectations may still be lower, not because breastfeeding has been poorly socially modelled, but because other factors, such as psychological state, are impacting on their breastfeeding expectations. The first aim of the current research will, therefore, be to assess whether

women's expectations of breastfeeding, and their prenatal breastfeeding self-efficacy, correlate with their prenatal mood and well-being. It is considered that should a correlation be found this could have implications for the support that could be offered to women prenatally to improve expectations, and in turn could raise breastfeeding continuation rates.

The second aim of the current research is to further investigate the relationship between breastfeeding expectations and experiences, and whether when breastfeeding expectations are different from breastfeeding experience, this impacts on postnatal mood and wellbeing. This will build on previous qualitative (Burns et al., 2010; McAndrew et al., 2012; Misri et al., 1997; Mozingo et al., 2000) and limited quantitative (Borra et al., 2014) research which has shown that when women's breastfeeding expectations, as measured as planned length of breastfeeding are not being matched by their breastfeeding experience, measured as actual breastfeeding length, this can impact on their postnatal mood (Borra et al., 2014). The current research suggests that this affect is universal, with all women whose expectations are not being met at risk of negative mood postnatally. This study will aim to replicate these findings using a more in depth measure of breastfeeding expectation and experience than intended length of breastfeeding. It is anticipated that these research findings will be of utility when considering whether interventions to increase breastfeeding expectations would be beneficial to women, or whether interventions should consider the possible impact on women when expectations are not met by experience.

1.5 Hypotheses

1. Women who report greater breastfeeding self-efficacy, and more positive mood and well-being, in the prenatal period will also report more positive expectations of breastfeeding.
2. Women who self-report having experienced breastfeeding difficulties will report poorer breastfeeding experience, lower postnatal mood and poorer well-being than those that did not.
3. Women who report a more negative breastfeeding experience will report lower postnatal mood and well-being.
4. Women's expectations of breastfeeding will differ significantly from their experience of breastfeeding.
5. Women who experience a discrepancy between their expectation and experience of breastfeeding will report poorer mood and well-being at postnatal follow-up.

CHAPTER TWO

2. Method

2.1 Chapter Overview

This chapter gives an outline of the current study design, participants and recruitment procedure. The measures used in the study are described and psychometric properties reported. Ethical considerations are outlined and a description of how these were managed is given. This chapter concludes by giving a detailed description of the study procedure and plan for analysis.

2.2 Design

The current study had two aims. Firstly, to investigate the relationship between women's prenatal breastfeeding self-efficacy, mood and well-being, and their breastfeeding expectations. The second aim was to investigate the correlation between women's postnatal mood and well-being and their breastfeeding experience, and the discrepancy between their expectations and experience. In order to meet the aims of the study a repeated measures design was used. Women were asked to complete measure during the final trimester of pregnancy, and then at around 12 weeks postnatally. This design allowed for collection of data prenatally which, it was expected, would capture women's beliefs about themselves in the breastfeeding experience, uninfluenced by actual experience as was observed in previous studies.

2.3 Participants

Women were invited to participate in the study if they were pregnant with their first child and reported an intention to breastfeed. Women of all ages were considered eligible to participate in the study. While it is acknowledged that younger mothers are less likely to initiate and continue breastfeeding (Hauck et al., 2011; Taveras et al., 2003), it was

considered that information about their expectations and experience of breastfeeding would still be valid.

2.3.1 Inclusion criteria. All women who were more than 28 weeks into their pregnancy with their first child who had an intention to breastfeed could participate in the study, with the exception of those who met the specific exclusion criteria below. Only first time mothers were asked to participate as previous research has shown that having had an experience of breastfeeding, successful or unsuccessful, significantly impacts on women's breastfeeding attitude in later pregnancies (Swanson & Power, 2005).

2.3.2 Exclusion criteria. Women who did not have a good understanding of written English were not eligible to participate in the study. This criterion was set as the study was conducted using questionnaire measures and it was essential that participants could understand and complete measures independently. In addition, mothers who reported an intention to bottle feed their child were not invited to participate in the study as the concept, and therefore the questionnaire measures, used in the study would not be relevant.

2.3.3 Recruitment procedure. In total four NHS Trusts in Cambridgeshire and Norfolk were approached to participate in recruitment. All Trusts approached were known to provide community maternity services and offer NHS funded antenatal groups. The Trusts were Cambridge University Hospitals NHS Foundation Trust, Hinchingbrooke Health Care NHS Trust, Peterborough and Stamford NHS Foundation Trust and Queen Elizabeth Hospital King's Lynn NHS Foundation Trust.

The lead midwives from the four potential recruitment sites were approached by the researcher, either by telephone or email, with a brief explanation of the study research aims, protocol and what the expectations of their involvement would be. All those approached were given the opportunity to ask questions of the researcher at this stage. All four sites approached agreed to the researcher recruiting to the study through the antenatal classes

being run by their Trust and to displaying a poster advertising the research in their antenatal clinics.

Once community-based antenatal groups had been identified the researcher and a colleague, who was conducting a related study, attended as many antenatal classes in the areas as was feasible, to present the study. Figures outlining the number of classes attended in each area, with the number of attendees per class can be seen in Appendix A.

A brief description of the study and what involvement would mean for women was presented to all antenatal class attendees. Potential participants were given opportunity to ask questions regarding the study. On two occasions the attendees asked about dissemination of findings of the study and it was explained that a brief description of the research outcomes would be distributed to participants on completion of the study along with any potential publication in peer reviewed journals. It was highlighted that no data would be individually recognisable in any dissemination. No other questions were asked of the researcher at the stage of presentation. If participants demonstrated an interest in participation they were provided with a participant information sheet and consent form (Appendix B) and pack 1 (further described in section 2.6). Participants were informed that if they choose to participate they should complete the enclosed consent forms and measures and return these to the researcher using the envelopes and postage provided.

Participants were also recruited via posters (Appendix C) advertising the research in the antenatal clinics of the four maternity units. In this instance the contact details of the researcher were included in the poster and if women were interested in participating they were asked to contact the researcher via email or telephone for further details about the study. If women were interested in participating they were asked to provide their address and were then sent the information sheet, consent form and pack 1 with the appropriate return postage.

The start of recruitment was delayed due to the amount of time taken for NHS ethical approval and approval of the Research and Development Offices of the participating sites. In addition, the response rate from initial recruitment was lower than expected. In response to this a second method of recruitment was added to the original protocol. The poster which had been designed to advertise the research in antenatal clinics was adapted (Appendix D) to a format that could be shared electronically through social media forums (Mumsnet, Facebook and Twitter). Ethical approval was sought, and granted, for recruitment to the study through these media. Women who saw a poster advertising the research and were interested in participating were asked to email the researcher for further information about the study. They were then asked to provide their address and were sent the information sheet, consent form and pack 1 with appropriate postage, as they would be if they had responded to a poster in their antenatal clinic.

2.3.4 Sample size. The most complex analysis planned for this study was a multiple regression to investigate whether women who reported more positive prenatal mood, well-being and breastfeeding self-efficacy also reported more positive expectations of breastfeeding. A power analysis was conducted in G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) using the r^2 value taken from the study conducted by Harwood and colleagues (2007) for a comparable analysis ($r^2=0.44$). This gave an effect size of 0.79. This analysis indicated that a sample size of at least 19 would be needed for this study to be conducted with sufficient power. It has been suggested however that multiple regression should not be conducted with an N of less than 50 (Vanvoorhis & Morgan, 2007). Therefore a 'rule of thumb' for multiple regression was employed to calculate sample size (Green, 1991). This states that an N of greater than $50 + 8m$ (where m is the number of independent variables) should be recruited assuming a medium effect. Using this rule the minimum

number of participants required for this study to be conducted with sufficient power was calculated to be 74 ($50 + (8 \times 3)$).

2.4 Measures

Six self-report questionnaires and measures were used to collect data from participants in this study. The following section describes the measures used.

2.4.1 Contact details questionnaire. Participants were asked to provide their contact details (Appendix E) including name, address, telephone number, email address and contact details for their GP and health visitor if known. All these identifiable details were contained in one document so that the information could be stored separately from other questionnaire measures to ensure anonymity was maintained.

2.4.2 Demographic questionnaire. A questionnaire was designed for use in this study in order to collect data about the population who participated (Appendix F). This included questions about age, marital status, highest level of education, occupation and ethnicity. It also asked for expected due date so the date to send postnatal measures could be calculated.

Socioeconomic status was coded, for the purpose of describing of study participants, based on occupation, following the guidelines of Rose and Pevalin (2005). Participants were also asked to report their ethnicity.

2.4.3 Measures of mood and well-being. Mood and well-being were assessed prenatally and during the postnatal period using the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987; Appendix G) and the Warwick Edinburgh Mental Well-Being Scale (WEMBS; Tennant et al., 2007; Appendix H).

2.4.3.1 Description of EPDS (Cox et al., 1987; Appendix G). The EPDS is a 10-item questionnaire designed to screen for postnatal depression, but has also be found to be appropriate for use as a screen for depression in the prenatal period (Cox, Holden, &

Henshaw, 2014; Murray & Cox, 1990; Murray, Cooper, & Stein, 1991). The scale has been widely used within the literature as a method of screening for mood during these time periods (Cox et al., 2014; Evans, Heron, Francomb, Oke, & Golding, 2001; Hewitt et al., 2009; Parsons, Young, Rochat, Kringelbach, & Stein, 2012; Yawn et al., 2012) and has been employed by health visitors in the NHS as a screen for postnatal depression in new mothers (Hewitt et al., 2009). Cox and colleagues (1987) report that this scale has satisfactory sensitivity and specificity, and that it is sensitive to change in depression over time. The scale has been found to have good internal reliability with large general population group of women (Cronbach's $\alpha = .87$; Cox et al., 1987). The EPDS has been used internationally as a screen for postnatal depression and is available in over 20 languages, which have been assessed for reliability (Cox et al., 2014). The measure has also been demonstrated as reliable in the assessment of postnatal and antenatal depression with mothers across the age range, from teenagers, through to older mothers (Cox et al., 2014).

Participants completing the EPDS, are asked to read the 10 statements and rate how much each statement applies to them in the last 7 days. Participants' responses are then scored from 0 -3. Seven of the ten items require reverse scoring (items 3 & 5-10) before scores across the 10 items are then added to give a total score. A higher score on the measure is indicative of more difficulties with low mood. Evans and colleagues (2001) conducted a review of a large sample ($n=11,968$) women's scores on the EPDS at 32 weeks gestation, and followed these women up 8 weeks postnatally ($n=11,579$). They found that the mean score for women on this measure was 7.07 (SD=5.08) at 32 weeks gestation, and 6.06 (SD=5.79) at postnatal follow-up. It has been demonstrated that a score of 12.5 would correctly identify over 80% of mothers with major depression using this measure (Murray & Carothers, 1990). A score of >13 is therefore commonly used as an indication that women may be experiencing symptoms of depression which would warrant further investigation (Evans et al., 2001;

Matthey, 2008). With regards to the data available from the study conducted by Evans and colleagues, use of this cut-off recognised that 1819 (15.2%) of their sample would have met criteria for further low mood investigation prenatally, while 1181 (10.2%) would have met criteria postnatally. In the literature alternative cut-offs have been employed, but these have been criticised for being overly sensitive and associated with over-reporting of PND symptoms (Hewitt & Gilbody, 2009). For the purpose of analysis in this study raw scores on the measure were used. However, to ensure that participants were receiving appropriate support should they be experiencing difficulties, any participant who scored above the cut-off of 13 on this measure were contacted and signposted to services, and their GP was informed. Further details of this protocol can be found in sections 2.5.1 and 2.6.

2.4.3.2 Description of WEMWBS (Tennant et al., 2007; Appendix H). The WEMWBS is a 14 item scale developed following consultation with focus groups in England and Scotland to capture the concept of positive mental health. The scale consists of items covering aspects of mental health including positive affect and satisfying interpersonal relationships. Those completing the measure rate, on a 5-point Likert scale, how much they feel each of the 14 statements described their experience over the previous 2 weeks. The maximum score on the measure is 70, and a minimum of 14. The measure was originally validated with a student population. The measure was further validated with general population when it was incorporated into two Scottish national surveys. The population mean on this measure was found to be 51, for the general population surveys, this was not found to differ significantly from that observed in the student population (Stewart-Brown & Janmohamed, 2008). Only one published study is available which has assessed the sensitivity of the measure to change over time (Lindsay, Strand, & Davis, 2011) with a parent population undertaking a parenting programme, though they found a large effect size (.71) with regards to change before and after the programme. The WEMWBS is used as a core

module of the Scottish Health Survey and is now being widely used throughout the UK and beyond as a measure of well-being. Internal consistency of the scale has been found to be good (Cronbach's $\alpha = .89-.91$; Tennant et al., 2007) and test-retest reliability after one week was high (.83, $p < 0.01$, Tennant et al., 2007).

As with scores from the EPDS (Cox et al., 1987), total raw scores on this scale were used for the purpose of analysis. A score < 32 however has been found to indicate very poor well-being (Tennant et al., 2007). When scores below this cut-off were reported at either time point participants in the study were contacted and signposted to appropriate support and informed that their GP would be informed. Details of this protocol are outlined further in section 2.5.1 and section 2.6.

2.4.4 Measure of breastfeeding self-efficacy. It was suggested by Bandura (1977), when he originally outlined self-efficacy as a concept, that self-efficacy be measured as activity specific. Therefore a measure of breastfeeding self-efficacy, and not a general self-efficacy measure, was used in this study. A long form of the Breastfeeding Self-Efficacy Scale (BSES; Dennis & Faux, 1999) was available, however, participant load was considered and it was decided to administer the shorter form of the measure, the Breastfeeding Self-Efficacy Scale- Short Form (BFES-SF; Dennis, 2003; Appendix I) as there was little indication of a benefit of administering the longer measure.

2.4.4.1 Description of the BFSES-SF (Dennis, 2003; Appendix I). The 14 item BFSES-SF is an abbreviated version of the Breastfeeding Self-Efficacy Scale (BSES; Dennis & Faux, 1999). This is a self-report instrument developed to assess a mother's breastfeeding confidence. Participants respond to statements about breastfeeding on a 5 point Likert scale from 1 (not at all confident) to 5 (always confident). All items are positively worded as recommended by Bandura (1977) for all scales which have been developed to

assess self-efficacy. A total score for breastfeeding self-efficacy is calculated by adding scores achieved on each of the items in the scale.

The original scale, the BFSES, was found to have good internal reliability (Cronbach's $\alpha = .96$; Dennis & Faux, 1999). Internal consistency statistics suggested redundancy of items in the original scale and the abbreviated BFSES-SF was developed in response by Dennis (2003). The BFSES-SF has been found to have good construct validity in a general UK population (.90; Gregory, Penrose, Morrison, Dennis, & MacArthur, 2008).

2.4.5 Measures of breastfeeding expectations and experience. At the time of preparing this study no measure was available which explicitly asked women to describe their expectations of the breastfeeding experience. As described in the Introduction a measure had been developed which aimed to capture the impact of the parenting expectations not being met on postnatal mood and well-being (Harwood et al., 2007). As no measure was available to capture breastfeeding expectation a new measure needed to be developed.

The measures that Harwood and colleagues (2007; Appendix J), developed to capture parenting expectation and experience in their study was used here as a basis for the development of the measure of breastfeeding expectation and experiences. Harwood and colleagues (2007) measure of parenting expectation and experience was also administered to all participants in this study in order for a concurrent validity for the new measure to be calculated.

2.4.5.1 Parenting expectations measure (Harwood et al., 2007; requested for use in this study; Appendix J). The parenting expectations measure was used in this research as validation for the breastfeeding expectations measure further described below in section 2.4.5.3. The parenting expectation measure is a 55 item measure assessing parenting expectations in first time mothers. This was developed by Harwood and colleagues (2007) for

use in their research. It includes original items, and others developed from items and concepts in previous work.

The 55 items in this measure is sub-divided into 4 subscales: Infant Expectations – women's expectations of caring for their infant; Partner Expectations – women's expectations of parenthood on their relationship; Social Expectations – women's expectations of the impact of parenting on social functioning and Self Expectations – women's expectations of how parenting will affect her physical and psychological well-being.

Responses to items on this measure are on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Twenty-six of the items were reverse coded and need to be adjusted before total scores can be calculated (Infant Expectations items 6-9; Partner Expectations items 5-10; Self Expectations items 12-20; Social Expectations items 7-13). Total scores for each of the sub-scales and for the measure as a whole can then be calculated by summing the scores for each of the questions.

The measure was developed with a sample of 87 Australian first time mothers during pregnancy. Concurrent validity was established with the pregnancy and baby scale of the Maternal Adjustment and Attitudes Questionnaire (MAMA; Kumar, Robson, & Smith, 1984), with a Pearson's Product Moment Correlation of .64. The scale as a whole was found to have good reliability (Cronbach's $\alpha = .94$; Harwood et al., 2007). Adequate reliability was also found for each of the individual sub-scales and can be seen in Table 1 below.

2.4.5.2 Parenting experience measure (Harwood et al., 2007; requested for use in this study but unpublished; Appendix J. The parenting experience measure was also developed by Harwood et al. (2007). The measure uses the same questions as the expectations measure described above, but question wording is adjusted to capture women's actual subsequent experience of parenting. Harwood and colleagues published reliability data for the 87 women that participated in their research. They found a Cronbach's α of this

measure as whole was .94, with individual subscales also having adequate reliability (see Table 1 for values).

Table 1

Cronbach's α Values for Sub-scales of Parenting Expectation and Experience Measures.

Sub-scale	Expectations	Experience
Infant	.71	.77
Self	.86	.82
Partner	.82	.89
Social	.75	.73

2.4.5.3 Breastfeeding expectations measure (developed for use in this research; Appendix K). The majority of measures available which aim to capture women's breastfeeding experience focus on the physical activity of breastfeeding and omit to investigate the psychological impact of the experience (Chambers, McInnes, Hoddinott, & Alder, 2007).

For the purpose of the current study a new measure was designed to capture women's social expectations of breastfeeding and their expectations of themselves in the breastfeeding experience. This measure was based on the questions from two of the sub-scales of the measure developed by Harwood and colleagues (2007): expectations of self and social expectations. The wording of the original questions was adjusted so that they applied specifically to breastfeeding rather than parenting in general. One questions were excluded as they did not translate suitably (There will not be enough money for non-essential items or services (for example going to the movies, buying CDs or gifts)). Participants were also asked to indicate how long they planned to breastfeed for and whether they would consider bottle feeding should they experience difficulties.

As the measure was developed for use in this research information about reliability or validity was not available prior to the current study being conducted. The current study has

been presented as a pilot study as it was known that it would be necessary to perform analysis of the measure post hoc to calculate reliability. An analysis of the internal reliability of the measure (Cronbach's α) and the concurrent validity with the parenting expectation measure can be found within the results section of this thesis.

2.4.5.4 Breastfeeding experience measure (developed for use in this research; Appendix K). As already discussed with regards to the breastfeeding expectations measure, no measure was available prior to this research which captured the psychological impact of breastfeeding. In line with the methodology employed by Harwood and colleagues (2007), in their development of their measure to capture parenting experience, a measure to capture breastfeeding experience was created here by rephrasing questions in the breastfeeding expectations measure into the past tense. In addition participants were asked to report on this measure how their child was delivered and give an indication of how long they had exclusively breastfed. They were also asked to indicate whether they had experienced breastfeeding difficulties and described qualitatively what their breastfeeding difficulties had been.

As with the breastfeeding expectations measure, no data regarding reliability of the measure was available prior to the current study being conducted. Analysis of internal reliability of the measure (Cronbach's α) and concurrent validity with the parenting experience measure, can be found within the results section of this thesis.

2.5 Ethical considerations

2.5.1 Confidentiality. All measures distributed to participants were done so with a pre-assigned participant number and site number. This meant that participants were able to return measures separately from identifiable information, retaining respondent anonymity. Participants' personal details and data were then stored separately, electronically on an

encrypted memory stick and in paper version in a locked filing system at the University of East Anglia (UEA). There were three possible instances when anonymity may be broken:

Firstly, if participants contacted the researcher and informed them that they would like to withdraw from the study and their data be destroyed, anonymity would be broken to identify which data points should be removed from the database and destroyed. It had been explained at the point of recruitment that should participants choose to withdraw, data collected up to the withdrawal would be retained for analysis, unless participants explicitly asked for this to be removed.

Secondly, participants completed the EPDS (Cox et al., 1987) and WEMWBS (Tennant et al., 2007) at both pre- and post-natal time points. It was recognised that responses on these measures may indicate that the participant was experiencing distress for which it may be helpful for them to seek further support. Cut off scores of >13 for the EPDS and <32 for the WEMWBS were employed as an indication that a participant may be experiencing distress. These scores were selected based on previous research (Matthey, 2008; Tennant et al., 2007) as described in sections 2.4.3.1 and 2.4.3.2 above.

If participants were found to score above or below either of these cut-offs at the pre-natal time point, anonymity was broken and they were contacted by telephone to discuss the concerns further and to recommend that they seek support from their GP, health visitor or midwife, if they have not already done so. Further, a standardised letter would be sent to their GP (Appendix M). This letter indicated to the GP the participant was taking part in the study, and that their scores on the measures suggest that they may be having difficulties with mood or well-being. Details of the measure(s) would be included along with score(s). This letter would be sent in place of the standard GP notification of participation letter (Appendix N) which is further described below in section 2.6.

If participants scored above or below the pre-defined cut-offs at the postnatal time point the same protocol was employed. The participant would be contacted via telephone by the researcher to discuss concerns and recommend they seek support, and a standardised letter (appendix O) was sent to their GP informing of the concerns.

Participants were made aware at the point of recruitment that should their responses on measures indicate poor well-being the protocol described above would be employed. This was also explained in their participant information sheet. Participants were also reminded that a letter would be sent to their GP when they were contacted by phone to discuss concerns if indicated.

The third situation in which anonymity may be broken was if participants indicated that they would be interested in participating in a further research study being conducted by another trainee clinical psychologist at the University of East Anglia. Participants were informed at the point of recruitment and in their participant information sheet that they would be invited to participate in a further study at the post-natal time point. Included in questionnaire pack 2 was a form asking participants to indicate whether they would like to be contacted by the researcher about this further study (Appendix P). This form explained to participants that should they wish to be contacted about the further research anonymity would be broken to access their contact details and that a researcher would then contact them by telephone to discuss this study further. If participants indicated that they did not want to participate, or did not return this form with their questionnaire responses, anonymity would not be broken and their details would not be accessed.

2.5.2 Consent. Participants were provided with a consent form (Appendix B) at the time of recruitment and were asked to return this completed with their completed initial questionnaire pack. As explained, they were given sufficient postage in order for their consent form to be returned to the researcher separately from questionnaire measures, but

consent forms were marked with participant and site numbers in order that these could be cross referenced.

It was explained to participants in the participant information sheet that they could withdraw from the study at any time without giving a reason. Participants were also informed that should they chose to withdraw, data collected to the point of their withdrawal would be retained as part of the data analyses, unless they explicitly asked for this to be removed. In this case all details and data to the point of withdrawal were removed and destroyed.

As it was necessary to contact participants' health visitor or GP prior to sending follow-up measures, to ensure that only contact was made where appropriate, where both mother and infant were considered well, participants were asked to consent to their health visitor or GP being contacted. If participants did not explicitly consent to this contact they were excluded from the study.

2.5.3 Coercion. Most participants had the study protocol explained to them verbally, either in the form of a presentation at their antenatal group, or when they phoned the researcher requesting further details about the study. Two participants requested further details of the study via email and these instances a written explanation was provided with consideration of participants' questions. Participants were all provided with the participant information sheet, consent form and questionnaire pack with sufficient postage to return this to the researcher should they chose to participate. Participants were not followed up by the researcher if they did not return completed measures at the pre-natal time point; this was taken as an indication that they did not wish to participate.

2.5.4 Risks and benefits. It was not anticipated that participating in the study would cause distress. However, should participants become distressed they were encouraged to contact the researcher who would be able to signpost to the correct source of support for their difficulties, for example their midwife, health visitor or GP. Participants were also provided

with the help line number for the National Childbirth Trust (NCT) who offer support for difficulties relating to pregnancy and the postnatal period. As described above there was a possibility that participants measures may have revealed that they were experiencing symptoms of low mood or poor well-being. The protocol described in section 2.5.1 was employed if this were the case.

There were no direct benefits to taking part for participants in this study other than opportunity to contribute to the research around breastfeeding. Participants were told however, that participation in both stages of the study would enter them into a prize draw for £50 Mothercare vouchers.

2.5.5 Data storage. All documents and measures were pre-assigned with participant and site numbers prior to distribution to participants. This allowed for identifiable information to be returned to the researcher separately from other measures in order to maintain anonymity. At the post-natal time point measures were sent with the measures pre-marked with the participant number. This meant that when measures were returned no identifiable information was included.

Data were input into IBM SPSS (version 22) for the purpose of analyses, and databases were stored on an encrypted memory stick. Paper questionnaires were stored in a locked filing system at the UEA with identifiable information stored separately from questionnaire measures. These were accessible by the researcher and supervisor only

2.5.6 Ethical approval. Ethical approval was obtained from the Norfolk NHS Research Ethics Committee (Appendix Q). A substantial amendment was submitted to, and approved by, the committee when it was recognised that methodological changes needed to be considered to increase recruitment (Appendix R). Additionally, NHS permission was obtained from the four NHS trusts acting as participant identification centres (Appendix S).

2.6 Procedure

The recruitment protocol for the current study has been described above in section 2.3.3. As described, participants were approached to participate in the study if they were attending an NHS run antenatal group run by one of the participating community midwifery services, if they responded to a poster advertisement in their antenatal clinic, or if they responded to the advertisement for the study circulated on social media. When participants indicated an interest in taking part in the research they were given, or sent in the post, the participant information sheet and consent form (Appendix B) and pack 1. This pack contained the following which took around 20 minutes to complete (copies of all measures can be found in Appendices E-K):

- Contact details form, including contact details for GP and health visitor
- Demographic questionnaire
- Edinburgh Postnatal Depression Scale (Cox et al., 1987)
- Warwick-Edinburgh Mental Well-being Scale (Tennant et al., 2007)
- Breastfeeding Self-Efficacy Scale – Short Form (Dennis, 2006)
- Parenting Expectations Scale (Harwood et al., 2007)
- Breastfeeding Expectations Scale (designed for purposes of this study)

Participants were asked to return the completed consent form and measures to the researcher directly using the addressed envelopes and postage enclosed with the questionnaire pack. Participants were provided with two envelopes so that they could return documents that contained identifiable information (consent form and contact details form) separately from questionnaire measures to ensure anonymity was maintained. Questionnaires had all been pre-marked with a participant and site number so that they could be cross referenced to break anonymity if this was required.

Participants were asked to indicate on the consent form that they were happy for the researcher to contact their GP. As part of the protocol therefore a standardised letter was sent to the GP of all participants to indicate that they were participating in the study (Appendix M). The exception would be if participants' scores on the EPDS and/or WEMBS fell above/below the cut-off to indicate a cause for concern. If this were the case the GP would be sent the letter to inform of participation and of concerns regarding mood or well-being (Appendix L).

Participants were asked to provide their estimated due date at the time of recruitment. This was then used to calculate when their child would be approximately 12 weeks old, the time at which they were sent postnatal measures. At 10 weeks after participants expected due date a letter was sent to their health visitor, or GP if they were unable to provide details of their health visitor (Appendix U). This explained that the intention was to send follow-up measures to the participant. The letter asked whether in the professional's opinion it would be appropriate to send measures considering the outcome of the pregnancy. They were asked to complete a tick sheet indicating their opinion and return to the researcher in an enclosed self-addressed envelope. If health visitors or GPs did not return the completed tick sheet a phone call was made to the health visitor or GP surgery asking that this be completed and returned as soon as possible.

If forms were returned indicating that the health professional felt that it would be appropriate to send follow-up measures to participants they were then sent pack 2 (described below). If the health professional had indicated that this would not be appropriate to contact the participant they were not sent measures and were excluded from the second stage of the study. This protocol had been explained to participants at the point of recruitment and was described in the participant information sheet.

Pack 2 contained the following which took around 10 minutes to complete (copies of all measures can be found in Appendices E-L):

- Cover letter
- Edinburgh Postnatal Depression Scale (Cox et al., 1987)
- Warwick Edinburgh Mental Well-Being Scale (Tennant et al., 2007)
- Parenting Experience Scale (Harwood et al., 2007)
- Breastfeeding Experience Scale (developed for the purposes of this study)
- Indication of interest in related qualitative study

Prior to being sent all measures had been pre-marked with the participant's number, so that when measures were returned responses would not be identifiable. Participants were provided with an addressed envelope and postage to return measures directly to the researcher.

Participants had been informed that they would be contacted via telephone or email by the researcher if their measures were returned within two weeks.

Included in the pack was a tick form asking participants whether they would be interested in being contacted about a separate qualitative research study being conducted by another trainee clinical psychologist at UEA. It had been explained to the participants that this would be an option in the participant information sheet at the point of recruitment.

2.7 Plan of analysis

This section describes the plan for data analyses based on the research hypotheses. Any deviations from the plan based on the data collected are described in Chapter 3. All data was analysed using IBM SPSS (version 22). The following section briefly outlines the planned data analyses for each of the hypotheses.

2.7.1. Planned data analyses for hypothesis 1. It was planned that an initial multiple regression would be conducted to assess whether prenatal breastfeeding self-efficacy, mood

and well-being predicted expectations of breastfeeding. A stepwise multiple regression was planned with breastfeeding self-efficacy, and pre-natal mood and well-being as independent variables,, and breastfeeding expectation total score as the dependent variable.

It was planned that two further multiple regression analyses would then be conducted to investigate the relationship between the three independent variables, described above, and each of the two sub-scales of the breastfeeding expectations measure, breastfeeding social expectations and self expectations of breastfeeding.

4.7.2 Planned data analyses for hypothesis 2. It was planned that Independent Samples t-tests would be conducted to compare the breastfeeding experience scores, postnatal mood and postnatal well-being, of those women that reported that they had experienced breastfeeding difficulties with those that did not.

4.7.3 Planned data analyses for hypothesis 3. It was planned that Pearson's Product Moment Correlation Coefficients would be conducted between women's total breastfeeding experience scores and ratings of postnatal mood and well-being

4.7.4 Planned data analyses for hypothesis 4. It was planned that a repeated measures t-test would be conducted to compare women's total scores and sub-scale scores on the breastfeeding expectation and breastfeeding experience measures.

4.7.5 Planned data analyses for hypothesis 5. It was planned that two Pearson's Product Moment Correlation Coefficients would be conducted between women's breastfeeding discrepancy score, as described below, and their ratings of postnatal mood and well-being. 1

It was considered that calculating a discrepancy score by simply subtracting expectation score from experience score, would not be sufficient. It was noted that using this simple means of calculating discrepancy it would not be possible to attribute variance observed to variance in expectation score, variance in experience score or a combination of

both. Therefore it is planned that a regression analysis will be run, with breastfeeding expectation total score as the independent variable, and breastfeeding experience total score as the dependent variable. A residual score would be calculated for each individual and this score would then be taken as the measure of discrepancy between breastfeeding expectation and experience.

CHAPTER THREE

3. Results

3.1 Chapter Overview

The chapter begins with a description of the sample that participated in the current research, with an account of the number of participants lost to follow up and a description of the demographic characteristics of the population. The chapter then goes on to outline how the data which were treated prior to further analyses being conducted, with particular consideration of how missing data, due to participation loss to follow-up, were managed.

Descriptive data analyses of all variables are presented, including a description of the internal reliability and concurrent validity of the breastfeeding measure designed for use in this research. Explorations of data distributions, which informed appropriateness of further analyses and choice of statistical test, are presented. Finally results of the statistical testing are presented for each hypothesis in turn and a summary of the results is provided.

3.2 Sample Description

The following section offers a description of the sample that participated in the current research.

3.2.1 Initial recruitment. Overall, 33 antenatal classes were attended with of a total of 265 attendees across all classes. Of the 265 class attendees 219 women (80.21%) took an information sheet and initial questionnaire pack. Of the women who took an information sheet and initial questionnaire pack 56 (29.22%) consented to participate in the study by completing a consent form and prenatal questionnaire pack and returning this to the researcher. A further eight participants were recruited through social media ($n=3$) and word of mouth ($n=5$). One participant was excluded at the point of recruitment as it was found that her gestational age at response was 23 weeks, and she therefore did not meet inclusion criteria for the study, which dictated that participants must be in their final trimester of

pregnancy (+28 weeks gestation). Therefore data sets from 63 women were available from the prenatal time point.

A full break down of the distribution of recruitment across the four participant identification sites can be seen in Appendix A. It was observed that there was a recruitment bias towards groups being run by Cambridge University Hospital Foundation Trust (CUHFT). There are a number of reasons this bias occurred. Firstly this site ran the highest number of antenatal and breastfeeding groups of the four areas recruited from. Secondly, they offered groups in evenings and at weekends which meant that the researcher was able to attend more groups at these times around placement commitments, and attendance at these groups was observed to be higher due to better accessibility for women. Thirdly, consent for other sites was delayed by difficulties gaining Research and Development approval, therefore recruitment from other sites could not commence as early so more CUHFT classes were attended; this was particularly true of Peterborough and Stamford NHS Trust.

3.2.2 Postnatal follow-up. It was observed that there was a significant attrition in participant numbers in the follow-up stage of the research. Of the 63 women that consented to participate in the research, and met inclusion criteria, only 29 (46%) completed postnatal measures.

Of those women that were lost to follow-up, seven were highlighted by their GP as being unsuitable for follow-up based on review of their medical files, or were no longer registered with the GP so a screen of their medical notes was not possible. At the time of analyses 10 GPs had not returned the completed questionnaire regarding appropriateness to contact participants postnatally. For the remaining 17 participants, a GP letter had been returned, and they had been sent postnatal measures but completed measures had not been returned to the researcher. A description of how the missing data, as a result of the high drop-out rate at follow-up, was managed is given in section 3.4.

The following section offers a consideration of the sample characteristics of those women that participated in the current study. A comparison of the sample characteristics of those that participated in the full study is made with those that were lost to follow-up. This comparison allowed for judgement of whether those that participated in follow-up were representative of the wider sample.

3.2.3 Sample characteristics. The mean gestation at which women completed prenatal measures was 36.05 weeks (SD = 2.89). The gestation of those who completed both pre and postnatal measures was 36.41 (SD= 2.39), while the gestation of those who only completed prenatal measures was 35.74 (SD=3.21). An Independent Samples t-test did not reveal a significant difference in the gestational age between those that completed the follow-up stage of the research, and those that were lost to follow-up ($t=0.94$, $p=0.35$).

Two women declined to give their date of birth and therefore the age of these women could not be calculated, one of these women was lost to follow-up, while the other completed both stages of the study. The age range for all women that participated in the study, excluding those that declined to give their date of birth ($n=61$), was 19-45 years with a mean age of 30.59 years (SD = 5.0). The mean age of participants who completed the pre and postnatal measures ($n=28$; excluding one who declined to give data) was 29.71 (SD= 5.27) years while the mean age of those who did not complete postnatal measures ($n=33$, excluding one who declined to give data) was 31.33 (SD = 4.79). An Independent Samples t-test revealed that there was not a statistical difference between the two groups with respect to age at participation ($t=1.26$; $p=.21$).

Participants were asked to report their current occupation, or occupation immediately prior to maternity leave, in order to code for socio-economic status. Based on their occupation participants were then assigned an operational category according to the guidelines of The National Statistics Socio-Economic Classification (Rose & Pevalin, 2005).

The mean operational category for the total sample was 5.45 (SD= 2.63; 3.1-13.2), indicating that the mean occupation of participants was in lower managerial and administrative roles, with participants from the full range of operational categories. The mean operational category for those that completed follow-up measures was 5.35 (SD=3.03; 3.1-13.2). The mean operational category for those lost to follow-up was 5.54 (SD=2.28; 3.1-12.7). An Independent Samples t-test indicated no significant difference in operational categories of these two groups ($t=.28$; $p=.78$). A summary of further demographic information can be seen in Table 2.

Table 2

Summary of Demographic Characteristics of Participants.

Question	Response	Total sample <i>n</i> (%)	Prenatal only measures <i>n</i> (%)	Pre and postnatal measures <i>n</i> (%)
Highest level of education	GCSE/O-level (or equivalent)	1 (1.6%)	1 (2.9%)	0 (0%)
	A-levels (or equivalent)	11 (17.5%)	7 (20.6%)	4 (13.8%)
	Certificate of higher education	2 (3.2%)	1 (2.9%)	1 (3.4%)
	Diploma of higher education, foundation degree or HND	8 (12.7%)	5 (14.7%)	3 (10.3%)
	Bachelors Degree	15 (23.8%)	9 (26.5%)	6 (20.7%)
	Masters degree or postgraduate qualification	24 (38.1%)	11 (32.4%)	13 (44.8%)
	Doctoral level qualification	2 (3.2%)	0 (0%)	2 (6.9%)
Nationality *	White British	39 (61.9%)	21 (61.7%)	18 (62.1%)
	British	5 (7.9%)	3 (8.8%)	2 (6.8%)
	White	6 (9.5%)	4 (11.8%)	2 (6.8%)
	Chinese	1 (1.6%)	1 (2.9%)	0 (0%)
	Japanese	1 (1.6%)	1 (2.9%)	0 (0%)
	Sri Lankan British	1 (1.6%)	0 (0%)	1 (3.4%)
	White Australian	1 (1.6%)	0 (0%)	1 (3.4%)
	White European	1 (1.6%)	0 (0%)	1 (3.4%)
	White Irish	1 (1.6%)	0 (0%)	1 (3.4%)
	White Non-British	1 (1.6%)	0 (0%)	1 (3.4%)
	White South African	1 (1.6%)	1 (2.9%)	0 (0%)
	White Ukranian	1 (1.6%)	0 (0%)	1 (3.4%)
	Catholic	1 (1.6%)	1 (2.9%)	0 (0%)
	Did not say	1 (1.6%)	0 (0%)	1 (3.4%)

Marital status	Married	44 (69.8%)	23 (69.7%)	21 (72.4%)
	Co-habiting	14 (22.2%)	9 (26.5%)	5 (17.2%)
	In a relationship	4 (6.3%)	1 (2.9%)	3 (10.3%)
	Declined	1 (1.6%)	1 (2.9%)	-

* *Nationality as self-reported.*

3.2.3.1 Demographic breastfeeding data. All women were asked prenatally whether they would consider bottle feeding their child if they experienced breastfeeding difficulties postnatally. Of the 63 women that completed prenatal measures, 53 (84.1%) women reported prenatally that they would consider bottle feeding, while four (6.3%) reported that they would not consider bottle feeding, a further seven (11.1%) declined to answer this question.

Women were also asked to indicate prenatally how long they intended to breastfeed. Women were asked to indicate the length of time they planned to breastfeed exclusively and this was categorised according to their response as: mixed feed from birth; <6 weeks; >6 weeks – 3 months; >3 months – 6 months; >6 months to 1 year; or as long as possible. Data regarding planned length of breastfeeding can also be seen in Table 4. Women who only completed follow-up measures were asked to report birth experience, whether they experienced breastfeeding difficulties (yes/no) and actual length of exclusive breastfeeding. Actual length of breastfeeding was categorised as: ‘did not breastfeed’; < 3 weeks; 3 weeks - <6 weeks; 6 weeks - < 3 months; ongoing (>3months) and did not say. These data are reported in Table 3.

Table 3

Summary of Breastfeeding and Birth Characteristics of Participants.

Question	Response	Total sample n (%)	Prenatal only measures n (%)	Pre and post measures n (%)
Would you consider bottle feeding?	Yes	53 (82.8%)	28 (82.4%)	24 (82.8%)
	No	4 (6.3%)	3 (8.8%)	1 (3.4%)
	Did not say	7 (10.9%)	3 (8.8%)	4 (13.8%)
	Did not say	1 (1.6%)	1 (2.9%)	0 (0%)
Planned length of breastfeeding	Mix from start	1 (1.6%)	1 (2.9%)	0 (0%)
	< 6 weeks	8 (12.5%)	3 (8.8%)	5 (17.2%)
	6 weeks – 3 months	34 (53.1%)	17 (50%)	16 (55.2%)
	>3months – 6months	8 (12.5%)	6 (17.6%)	2 (6.9%)
	>6months – 1 year	9 (14.1%)	5 (14.7%)	4 (13.8%)
	As long as possible	3 (4.7%)	1 (2.9%)	2 (6.9%)
	Did not say	-	-	14 (48.3%)
	Vaginal delivery (no complications)	-	-	1 (3.4%)
	Vaginal delivery (complications)	-	-	7 (24.1%)
Birth experience	Assisted vaginal delivery	-	-	0 (0%)
	Planned Caesarean Section	-	-	7 (24.1%)
	Emergency Caesarean Section	-	-	2 (6.9%)
	Did not breastfeed	-	-	0 (0%)
	Mix feed from birth	-	-	7 (24.1%)
	< 3 weeks	-	-	1 (3.4%)
	3 weeks - < 6weeks	-	-	3 (10.3%)
Actual length of breastfeeding	6 weeks – 3 months	-	-	15 (51.7%)
	Ongoing (> 3 months)	-	-	1 (3.4%)
	Did not say	-	-	-

3.3 Treatment of Data

All data were entered into, and analysed, using the IBM SPSS (Version 22) software package. Data were screened initially for missing data, and then for errors in the data set. The following section presents a description of how missing data was managed in the data set prior to analyses being conducted.

3.3.1 Prenatal data. Following initial screening it was found that one item score was missing for one participant who had completed the prenatal Edinburgh Postnatal Depression Scale (EPDS). For the Parenting Expectations questionnaire there were found to be nine missing data points, with a maximum of two points for one participant. There were no missing data points for the Warwick Edinburgh Mental Well-Being Scale (WEMBS). For the Breastfeeding Expectations Questionnaire no missing data points were found in the quantitative data. For all of these measures, the missing data values were replaced using the mean as a measure of central tendency. It is noted that using this method of substitution can reduce the variance of a variable as the mean will be closer to itself than the missing value it replaces (Tabachnick & Fidell, 2013). This will impact upon any the correlation the variables have with other variables. However, Shrive, Stuart, Quan and Ghali (2006) compared six ways of dealing with missing data, including mean substitution, and found that when <30% of scores were missing all methods performed equally well. Therefore this method was employed in this study to replace missing data points, with the assumption that there would be little resultant impact on subsequent analyses.

For the Breastfeeding Self-Efficacy Short Form questionnaire it was observed that all data points were missing for six questionnaires. A single data point was missing from a further questionnaire. The missing data point was completed using means substitution as described above for other measures. Missing data from the six further questionnaires were

imputed as part of the multiple-imputation, further described in section 3.2.2 with regards to treatment of missing postnatal data.

3.3.2 Postnatal data. Postnatal data were limited due to the poor follow-up response rate as described above in section 3.2.2, therefore two methodologies were used for dealing with the missing data in the postnatal data set.

Firstly questionnaire responses for each individual ($n=29$) were screened for missing data points. Where missing points were found mean substitution was used to enable calculation of total scores for inclusion in analyses. As has already been reported (Shrive et al., 2006), as long as <30% of data is missing, mean substitution is as reliable as alternative methods for handling missing data. No missing data points were found for the post-natal EPDS or WEMWBS. Multiple missing data points were observed for individuals who had completed the parenting experience measure and breastfeeding experience measure. A breakdown of the missing data points can be seen in Table 4 below. It was observed that two women had declined to complete the breastfeeding measure as they reported that they had not breastfed their child. Analyses were conducted including this missing data as part of the multiple imputation described below and excluding these women and no significant differences between the two data set were observed, see further discussion below.

Table 4

Count of Missing Data Points on Parenting Experience and Breastfeeding Experience Measures.

	Parenting Experience				Breastfeeding Experience	
	Infant Experience	Partner Experience	Social Experience	Self Experience	Social Experience	Self Experience
1 missing data point	-	6	6	3	1	1
2 missing data points	2	-	-	1	1	-
3 missing data points	-	-	-	-	1	-
Did not complete	-	-	-	-	2	2

It was observed that a large number of participants ($n=33$; 52.3%), had not completed the postnatal stage of the research. The high follow-up drop-out rate meant that the population size for follow-up analyses was small ($n=29$). It was considered that using a pair-wise deletion of data for those that had not completed postnatal measures would have a significant impact on further analyses. Shrive and colleagues (2006) reported that when >30% of data was missing multiple imputation is the best method for managing missing data and it is currently considered the most respectable method of dealing with missing data (Tabachnick & Fidell, 2013). As 33 (52.3%) participants had not returned follow-up questionnaires multiple imputation, with five imputations, was run, and the resulting data set was used for further analyses. As described above missing questionnaire responses for the prenatal breastfeeding self-efficacy measure were also included in the analyses to account for the missing data sets for this measure.

A comparison of imputed data sets imputing values for those women that had not breastfed, and therefore not completed the postnatal breastfeeding measure, and treating these data points as missing data was made with no significant differences between scores found.

Suspected errors in the data were detected by scanning frequency and descriptive data for all variables: in total two errors were detected and corrected.

3.4 Descriptive Data Analyses

In this section data are presented for the study variables, EPDS, WEMWB, Breastfeeding Self-Efficacy, and Breastfeeding Expectations and Experience. Descriptive data are provided for each variable, along with an exploration of the distribution of the data. The internal reliability of the Breastfeeding Expectations and Experience measure and its concurrent validity with the Parenting Expectations and Experience measure are also presented.

3.4.1 Descriptive statistics for measures

3.4.1.1 Descriptive Statistics for the Edinburgh Postnatal Depression Scale (EPDS; Cox, 1987). The mean score for the women that participated in this research on the prenatal EPDS, was 5.20 ($n= 63$, $SD = 3.23$, range 0 – 14). The large scale Avon Longitudinal study, which reviewed women's scores on the EPDS during pregnancy and postpartum, reported a mean score of 7.07 ($SD=5.08$) at 32 weeks gestation when data from 11,968 women were combined (Evans et al., 2001). They also found that 1819 (15.2%) of their sample at 32 weeks gestation scored above the threshold of 13 for probable depression. The data from this study found that only one woman scored above the threshold score of 13, giving an incidence of probable depression in the prenatal period of 1.56% in the current study. Overall, the mean prenatal score on the EPDS for the current sample lower than would be expected in the general population, as is the number of women who fell in the probable depression range.

The mean score for women who completed the postnatal EPDS was 5.79 ($N=29$; $SD = 4.76$). One participant (3.5%) scored above the higher threshold of 13 to indicate probable depression. Postnatal data available for the 11,579 women who participated in the Evans (2001) study, described above, at 8 weeks postpartum, reported a mean score of 6.06 (5.79),

with 1181 (10.2%) falling above the higher threshold of 13 to indicate probable depression. As with prenatal scores, the scores observed in the postnatal period fell below that observed in the larger population study. The mean score on the postnatal EPDS considering the imputed data file ($n=378$), was 5.81 ($SD = 3.70$).

An Independent Samples t-test, comparing prenatal EPDS scores for women who subsequently completed the postnatal measures, and those who did not, found a significant difference in scores ($t=-2.02$, $p=0.047$). Those who completed postnatal measures were reporting significantly less symptoms of low mood in the prenatal period than those who were lost to follow-up.

3.4.1.2 Descriptive statistics for Warwick Edinburgh Mental Well Being Scale (WEMWBS; Tennant et al., 2007). The mean score for the prenatal WEMWBS was 55.25 ($n=64$, $SD = 6.45$, range = 44-68). Validation data for this measure (Stewart-Brown & Janmohamed, 2008) reported the mean score for healthy populations on this measure is 51, with a cut-off of below 32 previously used as an indication of poor mental well-being. No scores were obtained in the current study indicating poor mental well-being (<32).

The mean score for the postnatal WEMWBS was 54.27 ($SD= 4.79$), with no participants' scores falling below the lower threshold of 32. No data are available regarding the use of the WEMWBS with a postnatal population specifically, but comparison with the data for healthy populations described above suggests that the current study sample scored slightly higher on average than would be expected in the general population. The mean score for the imputed data file ($n=378$) was 54.10 ($SD=5.79$).

An Independent Samples t-test found no significant difference in scores on the WEMWBS for those who had completed postnatal measures and those who did not ($t=1.54$, $p=0.13$).

3.4.1.3 Descriptive statistics for Breastfeeding Self Efficacy-Short Form. The mean score for the raw data for the Breastfeeding Self Efficacy- Short Form was 47.84 ($n=58$, $SD=7.71$), the mean score for the imputed data set which was used in further analyses was 48.01 ($n=372$, $SD=7.42$). As discussed regarding the use of the scale in section 2.4.4.1, there is limited data available regarding the use of this measure in the antenatal period, though it is recognised that breastfeeding self-efficacy in the antenatal period is an important factor in breastfeeding initiation and continuation (Dennis, 1999). Data are available for the BFSE-SF in an adolescent population during the antenatal period, with the mean score for this group being 51.62 ($SD=7.62$). The data from the current study population fall slightly below that seen in the adolescent population, suggesting lower breastfeeding self-efficacy.

An Independent Sample t-test was used to compare the prenatal breastfeeding self-efficacy total scores for those women who were not lost to follow-up ($n=26$; $M=47.56$; $SD=6.69$) and those who were ($n=31$; $M=48.26$; $SD=8.61$). This showed no significant difference in scores between the two groups ($t=-.33$; $p=.74$).

3.4.1.4 Descriptive statistics for breastfeeding expectation measure. Descriptive statistics for the breastfeeding expectation measures can be seen in Table 5. This includes a comparison of those women who were lost to follow-up and those who continued in the study. As can be seen from this table there was no significant difference in the breastfeeding expectation reported by those that completed follow-up measures and those that were lost to follow-up.

Table 5

Summary of Descriptive Statistics of Breastfeeding Expectation Measure and Comparison of Scores of Participants Returning Follow-up Measures and Lost to Follow-up

Variable	All participants			Lost to follow up			Follow up measures received			t
	n	Range	M (SD)	n	Range	M (SD)	n	Range	M (SD)	
Self	63	53 - 115	93.96 (11.16)	34	73-115	96.29 (10.6)	29	68-108	92.6 (8.91)	1.46
Social	63	43 – 87	65.97 (8.76)	34	49-87.1	66.77 (8.47)	29	44-79	65.83 (8.26)	0.44
Total	63	96 - 190	159.94 (18.05)	34	126 - 190	163.06 (16.73)	29	112-185	158.48 (163.06)	1.21

A Cronbach's α analysis of reliability was conducted for all items on the measure of breastfeeding expectations, this showed a reliability of $\alpha=.80$, this indicates that the breastfeeding measure had good internal reliability. Further analyses revealed the Cronbach's α 's of the sub-scales were $\alpha=.70$ for the social experience sub-scale and $\alpha=.76$ for the self expectations sub-scale, indicating that both the sub-scales also have good internal reliability. A Pearson's Product Moment Correlation indicated that the breastfeeding expectations scale total score had a significant correlation with the total score given by women on the measure of parenting expectations ($r=.70$, $p<.01$). The self and social expectation sub-scales of the breastfeeding measure were also found to correlate significantly with the self ($r=.60$, $p<.01$) and social ($r=.68$, $p<.01$) sub-scales of the parenting expectations measure. This demonstrates that the measure of breastfeeding expectations here showed good concurrent validity with the measure of parenting expectation

3.4.1.5 Descriptive statistics for breastfeeding experience measure. Descriptive statistics for the breastfeeding experience measure, for both the raw data set and the imputed data set used in further analyses, can be seen in Table 6. Although 29 women had completed postnatal measures the n for available raw data here is 27. Two women declined to complete the measure of breastfeeding experience as they reported they had not been able to breastfeed

their child, and therefore did not have an experience to report. As already discussed this missing data was included as part of the multiple imputation.

Table 6

Descriptive Data for Breastfeeding Experience Measure, excluding raw data and imputed data set as used for further analyses

Variable	N	Raw data			n	Data set with imputations		
		Min	Max	M (SD)		Min	Max	M (SD)
Self	27	45	130	88.53 (20.26)	378	68	115	94.61 (9.88)
Social	27	29	80.17	63.32 (11.60)	378	44	87	66.33 (8.27)
Total	27	74	200	151.86 (27.0)	378	112	190	54.11 (5.79)

A Cronbach's α analysis of reliability was conducted for all items on the measure of breastfeeding experience, this showed a reliability of $\alpha=.79$, this indicates that the breastfeeding measure has good internal reliability. Further analyses revealed the Cronbach's α 's of the sub-scales were $\alpha=.60$ for the social experience sub-scale and $\alpha=.76$ for the self experience sub-scale, this indicates that the social experience has adequate reliability while the self experience sub-scale had good internal reliability. A Pearson's Product Moment Correlation indicated that the breastfeeding experience scale total score had a significant correlation with the total score given by women on the measure of parenting experience measure ($r=.60$, $p<.01$). The self and social experience sub-scales of the breastfeeding measure were also found to correlate significantly with the self ($r=.47$, $p<.01$) and social ($r=.55$, $p<.01$) sub-scales of the parenting measure. This demonstrates that the measure of breastfeeding experience here showed good concurrent validity with the measure of parenting experience.

3.4.2 Distribution of data.

The distribution of the scores for each independent and dependent variable were examined using skewness values, histograms and normality tests. Skewness values and results from the Kolmogorov-Smirnov test for normality for all independent and dependent study variables can be seen in Table 7 below. The table presents skewness values and results from Kolmogorov-Smirnov test for normality for both raw data, and the imputed data set which was used for further analyses.

It was found that postnatal score on the EPDS was significantly positively skewed. Review of histograms revealed that this was due to an outlier score from one participant who was self-reporting, and was receiving treatment for, postnatal depression. Skewness analyses of imputed data files used for further analyses also revealed a positive skew in the data for postnatal EPDS. A positive skew was also found for postnatal WEMWBS in the imputed data set. In order to account for this outlier, non-parametric analyses were used where postnatal EPDS scores were used in analyses.

Social breastfeeding expectations scores were found to have a significantly negatively skewed distribution, as were social breastfeeding experience scores. Analyses of imputed data sets reflected this pattern. As these variables were not normally distributed a decision was made to use non-parametric statistical tests where measures of breastfeeding expectation and experience were used.

Table 7

Skewness and Kolmogorov-Smirnov Analyses of Independent and Dependent Variables including Raw Data Values and Values for Imputed Data Set

Variable	Time point (N)	Sub-scale	Skewness (SE)	Kolmogorov Smirnov Statistic	p
EPDS	Prenatal (63)	-	.215 (.3)	.11	0.08
	Postnatal raw (29)	-	1.16 (.44)	.16	0.05*
	Postnatal with imputed values (378)	-	1.14 (.13)	.07	.00**
WEMWBS	Prenatal (63)	-	.27 (.3)	.08	.2
	Postnatal raw (29)	-	-.46 (.43)	.15	.10
	Postnatal with imputed values (378)	-	-.50 (.13)	.13	.00*
BFSE- SF	Prenatal raw (57)	-	.27 (.31)	.12	.05
	Prenatal with imputed values (378)	-		.12	.00*
Breastfeeding Expectations	Prenatal (63)	Self	-1.01 (.3)	.11	.07
	Prenatal (63)	Social	.51 (.3)	.15	.001**
	Prenatal (63)	Total	-1.02 (.3)	.10	.17
Breastfeeding Experience	Postnatal raw (27)	Self	-.13 (.45)	.09	.20
	Postnatal with imputed values (378)	Self	-.48 (.13)	0.09	.00**
	Postnatal raw (27)	Social	-1.27 (.45)	.20	.01**
	Postnatal with imputed values (378)	Social	-.38 (.13)	.14	.00**
	Postnatal raw (27)	Total	-.77 (.45)	.14	.18
	Postnatal with imputed values (378)	Total	-.59 (.13)	.10	.00**

*p<0.05; **p<0.01

3.5 Hypotheses testing

The following section presents the analyses that were conducted, and outcomes of the analyses, for each hypothesis in turn. Level of significance was considered as 0.05 as is conventional within exploratory studies (Field, 2013), unless otherwise stated. Effect sizes have also been considered as it was appreciated that this study was an underpowered pilot study as it was considered that this would help identify findings which could be replicated in a larger sample where statistical significance may be achieved. Cohen's convention for the classification of effect sizes (1988; ≥ 0.1 = small, ≥ 0.3 = moderate, ≥ 0.5 = large).

3.5.1 Hypothesis 1. Women who report greater breastfeeding self-efficacy, and more positive mood and well-being, in the prenatal period will also report more positive expectations of breastfeeding. Initially it had been planned to run multiple regression analyses to investigate the relationship between breastfeeding self-efficacy, mood and well-being and breastfeeding expectations. It was recognised, however, that the distribution of the social expectations of breastfeeding scores was negatively skewed and therefore non-parametric analyses would be appropriate. Therefore multiple Spearman's rho correlations were run to assess the relationship between breastfeeding expectations breastfeeding self-efficacy, and prenatal EPDS and WEMWBS scores. It was acknowledged that use of multiple comparisons in this way increases the possibility of a Type I error and therefore a Bonferroni Correction was considered. However, due to the relatively small sample size here it was considered that this increase the probability of type II errors. Instead a conservative p value of 0.01 was used throughout analyses.

Spearman's Rho Correlations were conducted between total breastfeeding expectations score and total scores on the BFSE-SF, EPDS and WEMWBS using the multiple-imputation data set as described above. Additional correlations were then conducted between total scores on these measures and the sub-scales of the breastfeeding expectations

measure, breastfeeding expectations of self, and social expectations of breastfeeding. Output from these analyses can be seen in Table 8 below.

Table 8

Spearman's Rho Correlations Between the Breastfeeding Expectation Total Score and Sub-scale Scores, and Scores on the Breastfeeding Self-Efficacy Scale, EPDS, and WEMWBS. (n=378)

	Breastfeeding Self-efficacy (r)	EPDS (r)	WEMWBS (r)
Social	.41**	-.34**	.44**
Self	.63**	-.12	.23
Total	.59**	-.24	.37**

*Significant at $p < .05$, **Significant at $p < .01$,

Breastfeeding self-efficacy was found to correlate highly with total score on the breastfeeding expectation measure, and with scores on both sub-scales, self and social expectations. An appraisal of the effect sizes indicate that these correlations were large (Total and Self) and moderate (Social). This was to be expected as women who report that they expect the breastfeeding experience to be positive are also likely to be those who report strong beliefs in their abilities to do so.

With regards to mood and well-being and breastfeeding expectations, a significant positive correlation was observed between breastfeeding total expectations and well-being, with a moderate effect size. This indicates that with greater reported well-being women were reporting greater expectations of breastfeeding. A significant correlation was not observed between score for mood and breastfeeding total expectations with a small effect size.

Analyses of the sub-scales revealed that women's social expectations of the breastfeeding experience scores correlated negatively with prenatal EPDS scores, that is with where women were reporting more symptoms of low mood, they were also reporting lower social expectations of the breastfeeding experience. A positive correlation was observed between breastfeeding social expectations and prenatal well-being, indicating that with

greater well-being women were reporting greater social expectations of breastfeeding with both correlations showing a moderate effect size. In contrast however, self expectations of breastfeeding were not found to correlate with either prenatal EPDS or WEMWBS, in both cases the effect size was small.

In summary, the hypothesis that women's prenatal self-efficacy, mood and well-being will correlate with their prenatal expectations of breastfeeding was partially supported. Breastfeeding self-efficacy was found to significantly correlate with total breastfeeding expectations, and with both the social and self expectations of breastfeeding sub-scales. Women who reported lower social breastfeeding expectations were also found to have lower prenatal mood and well-being.

3.5.2 Hypothesis 2. Women who self-report having experienced breastfeeding difficulties will report poorer breastfeeding experience, lower postnatal mood and poorer well-being than those who did not. A comparison of women who reported breastfeeding difficulties with those who reported that they had not experienced breastfeeding difficulties was conducted using the independent-samples Mann-Whitney U. This test was selected as a smaller number were reporting no difficulties (N=7), than those who were (N=22) and therefore a non-parametric analyses was considered appropriate. The analyses revealed no significant differences between women who were reporting breastfeeding difficulties and those who did not for total breastfeeding experience ($p=.18$), social breastfeeding experience ($p=.94$) and self experience ($p=.13$) sub-scale scores.

Further Mann-Whitney U analyses were conducted comparing the EPDS and WEMWBS scores for those women who reported breastfeeding difficulties with those who did not and these too revealed no significant impact of breastfeeding difficulties on postnatal EPDS ($p=.67$) and WEMWBS ($p=.50$) scores. These findings therefore suggest that experiencing breastfeeding difficulties is not a sufficient measure of risk for poor postnatal

well-being; having breastfeeding difficulties does not mean you will necessarily have poor well-being postnatally.

In summary, the hypothesis that women who report having experienced breastfeeding difficulties will have lower breastfeeding experience, postnatal mood and postnatal wellbeing must be rejected.

3.5.2.1 Further investigation of breastfeeding difficulties. As described in relation to the breastfeeding measure in the method section, women were also asked to describe their breastfeeding difficulties qualitatively. Whilst this meant that the data obtained for specifying breastfeeding difficulties was not categorical in nature, to enable analysis of the data a classification was generated based on the descriptions women gave of their difficulties. A full description of the breastfeeding difficulties which women reported can be found in Appendix V. Classification suggested that there would be four categories of difficulties that women reported, these included: poor milk supply, maternal difficulties (including pain and mastitis), infant difficulties (including hungry baby, jaundice, poor weight gain, poor latch and tongue tie), and social difficulties (including lack of help and support). Of the 21 women who reported they had experienced difficulties with breastfeeding three reported poor milk production, 14 reported maternal difficulties, 16 reported infant difficulties and five reported social difficulties. Of the 21 women that reported difficulties with breastfeeding seven women had reported difficulties in one area, 11 women reported difficulties in two areas and three women reported difficulties in three areas. The rudimentary classification of difficulties, however, suggests that further statistical analyses, without more in depth qualitative analyses of the reported difficulties, would not be reliable.

3.5.3 Hypothesis 3. Women who report a more negative breastfeeding experience will report lower postnatal mood and wellbeing. As social experience of breastfeeding scores had not been found to be normally distributed non-parametric analyses were used.

Spearman's rho correlations between breastfeeding experience scores, and the sub-scales of this measure, and postnatal EPDS and WEMWBS were conducted. Findings from these analyses can be seen in Table 9.

Table 9

Spearman's Rho Correlations between Breastfeeding Experience and Total Postnatal EPDS and WEMWBS Scores (n=378; imputed data file)

	EPDS (r)	WEMWBS (r)
Social	-.48**	-.46*
Self	-.37	.32
Total	-.44*	.39*

*p<0.05; **p<0.01

These analyses demonstrated that women who report a more negative experience of breastfeeding also reported lower postnatal well-being and mood. This effect was only significant for the social expectations of breastfeeding subscale, but not the breastfeeding expectations of self sub-scale. However, an appraisal of the effect sizes here in line with Cohen's convention (1988) would suggest that this effect size was moderate and there is an argument that a significant effect would have been seen if the power of the research had been achieved.

In summary, the hypothesis that women who report having had a more negative experience of breastfeeding will also report lower postnatal mood and postnatal well-being was partially supported by testing for levels of significance. Women's social breastfeeding experience was found to be significantly correlated with both mood and well-being. However while self breastfeeding experience was not found to be significantly correlated, though it was noted that the effect size for this correlation was moderate and may have reached significance in a larger study. This pattern of correlations reflected the pattern observed prenatally between breastfeeding expectations and prenatal mood and well-being. However, it

was noticed that the effect size for the correlation between breastfeeding experience of self and mood and well-being was greater post-natally.

3.5.4 Hypothesis 4. Women's expectations of breastfeeding will differ significantly from their experience of breastfeeding. As social expectations of breastfeeding were not found to be normally distributed, a non-parametric Wilcoxon Signed Rank comparison was carried out to compare scores on the breastfeeding expectations and experience measures. No significant difference was found between total breastfeeding expectation, and total breastfeeding experience scores ($p=0.35$). Further, when comparing scores for the breastfeeding expectations of self and breastfeeding self experience sub-scales no significant difference were found ($p=.35$). When comparing scores for the social expectations of breastfeeding and those for the social experience of breastfeeding sub-scales again no significant difference between scores were found ($p=.23$). This indicates that in general the women in this study were reporting that their experiences of breastfeeding were not significantly different from their expectations. This hypothesis is therefore rejected. However, it was considered that where women were reporting an individual discrepancy between their breastfeeding expectation and experience this may correlate with their postnatal mood and well-being. This was considered with regards to hypothesis 5 below.

3.5.5 Hypothesis 5. Women who experience a discrepancy between their expectation and experience of breastfeeding will report a decrease in their mood and well-being at postnatal follow-up. As already described in section 2.7 of the method, it had been recognised that simply calculating the discrepancy between women's expectation and experience of breastfeeding by subtracting one from the other would make it difficult to establish the cause of any variance observed. Therefore residual scores were calculated for individuals as a measure of discrepancy between breastfeeding expectation and experience,

following the planned method as described in section 2.7. This residual score was then used, as a measure of discrepancy between expectation and experience, for further analyses.

Residual discrepancy scores were calculated for total breastfeeding expectation/experience scores, and for the two sub-scales, self-expectation/experience and social expectation/experience. These scores were calculated prior to multiple imputation being run, and therefore these scores were used to inform the multiple imputation values.

Spearman's rho Correlations were conducted between the residual discrepancy scores and postnatal mood scores on the EPDS and postnatal well-being scores on the WEMWBS. Findings from these analyses are presented in Table 10 below.

Table 10

Spearman's Rho Correlations between Breastfeeding Expectations and Experience Discrepancy Score, Total Score and Sub-scale scores, and Total Scores on EPDS and WEMWBS (n= 378; imputed value file)

	EPDS	WEMWBS
	(r)	(r)
Social	-.14	.10
Self	-.01	.02
Total	-.08	.02

The analyses show that the discrepancy between women's expectation and experience of breastfeeding, as reported on the measure developed for this research, were not significantly correlated with their reported mood or well-being during the postnatal period. An appraisal of the effect sizes in all analysis can be seen to be small according to Cohen's convention (1988). Therefore the hypothesis that when there is a discrepancy between women's prenatal expectations of breastfeeding and their postnatal breastfeeding experience, they will report a decrease in their mood and well-being at follow-up must be rejected.

CHAPTER 4

4. Discussion

4.1 Chapter Overview

The current research aimed to explore the relationship between breastfeeding expectations and experiences, and their association with pre- and postnatal mood and well-being. In the first instance it investigated whether women's breastfeeding self-efficacy, and prenatal mood and well-being, were associated with their breastfeeding expectations. It then went on to explore whether women's breastfeeding experience, measured as a presence or absence of breastfeeding difficulties and as a self-report of their experience, correlated with postnatal mood and well-being. Finally the research explored whether there was a discrepancy between women's expectations and experiences of breastfeeding, and whether discrepancy between expectation and experience, and not just experience, was associated with postnatal mood and well-being.

In this chapter the outcomes of the study will be summarised for each hypothesis. Theoretical and clinical implications will be discussed with reference to existing research and literature. A critique of the strengths and weaknesses of the study are provided and suggestions made for future research. Finally, the chapter closes with an overall summary and conclusions.

4.2 Evaluation of findings in relation to each hypothesis

4.2.1 Hypothesis 1. Women who report greater breastfeeding self-efficacy, and more positive mood and well-being, in the prenatal period, will also report more positive expectations of breastfeeding. The findings from this hypothesis will be discussed in two stages, the first considers the correlation between breastfeeding expectations and breastfeeding self-efficacy; the second discusses the correlations between breastfeeding

expectations and prenatal mood and well-being, before these are considered together in the final part of this section.

4.2.1.1 Breastfeeding expectations and breastfeeding self-efficacy. The findings from these analyses indicated that there were strong correlations, with a large effect size, between the breastfeeding self-efficacy, or belief in ability to breastfeed, and breastfeeding expectations and with both sub-scales of the breastfeeding expectations scale; breastfeeding expectations of self and social expectations of breastfeeding. These findings demonstrate that as breastfeeding self-efficacy increased, women were reporting more positive expectations of the potential impact of breastfeeding on themselves; including feeling happy to breastfeed and feeling fulfilled by breastfeeding, and socially; including that social relationships would be supportive of their breastfeeding, that breastfeeding would impact positively on relationships and that breastfeeding would not be socially restrictive. Further analyses demonstrated strong correlations between breastfeeding self-efficacy and prenatal mood and well-being, with women who were reporting poorer mood and well-being also reporting more negative beliefs about their ability to breastfeed.

4.2.1.2 Breastfeeding expectations and prenatal mood and well-being. Overall, this study found that there was a significant positive correlation, with a moderate effect size, between breastfeeding expectations and prenatal well-being, measured on the scale of general well-being. A significant correlation between prenatal mood and breastfeeding expectations was not observed, with a small effect size. Further analyses assessed the correlation between prenatal well-being and prenatal mood and the breastfeeding sub-scales of self and social expectations of breastfeeding. Women's expectations of the social experience of breastfeeding were positively correlated with both their prenatal well-being and their prenatal mood, with moderate effect sizes. Women who reported greater expectations of the social experience of breastfeeding, were also those who reported better mood and well-being during

the prenatal period. However, the same relationship was not found for breastfeeding expectations of self. Women, who were reporting greater self-expectations of breastfeeding, were not necessarily those who reported better mood and well-being during the prenatal period. Women's expectations of the impact of breastfeeding on themselves were independent of their prenatal mood and well-being, with small effect sizes.

At the time of writing there was no available research explicitly investigating the correlation between breastfeeding expectations and mood during the prenatal period, however, it is possible to hypothesise why these current relationships were seen by considering Beck's cognitive model of emotional disorders (Beck & Emery, 1985; Beck, 1967) and Bandura's theory of self-efficacy (1977), and these are considered further in section 4.3.1.2.

4.2.1.3 Summary of hypothesis 1. In summary, hypothesis 1 was partially supported. Women who reported greater breastfeeding self-efficacy also reported the greatest expectations of breastfeeding. Women also reported greater social expectations of breastfeeding when they reported better mood and well-being, though no correlation between mood and well-being and expectations of self was observed. A consideration of why a disparity between these two sub-scales was observed is given in section 4.3.1.

4.2.2 Hypothesis 2. Women who self-report having experienced breastfeeding difficulties will report poorer breastfeeding experience, lower postnatal mood and poorer well-being than those who did not. The findings from this research did not support this hypothesis. A comparison of breastfeeding experience and postnatal mood and wellbeing of those women who reported difficulties and those who did not found no significant between-group differences. These findings are considered in 4.3.2.

4.2.3 Hypothesis 3: Women who report a more negative breastfeeding experience will report lower postnatal mood and well-being. This hypothesis was partially supported

by the analyses conducted here. Breastfeeding social experience was found to correlate significantly with both postnatal mood and postnatal well-being, with a moderate effect size. While women's breastfeeding self experience, was not found to correlate significantly with either postnatal mood or well-being, the effect size of the correlation was moderate. It is considered that should the study be repeated in a larger population this correlation could reach significance. . This analysis alone could not tell whether it was the same women who were reporting lower breastfeeding expectations, and lower prenatal mood and well-being, and lower breastfeeding experience and lower postnatal mood and well-being. Hypothesis 4 attempted to address this and offer further understanding of whether the women's expectations of breastfeeding were being met by their experience.

4.2.4 Hypothesis 4. Women's expectations of breastfeeding will differ significantly from their experience of breastfeeding. The findings from this analysis did not support the hypothesis. It was found that women's expectations of breastfeeding were in line with their experience of breastfeeding.

Whilst overall it was found that breastfeeding expectations were being met by experience, it was considered that where a discrepancy existed this would correlate with women's postnatal mood and well-being. It was hypothesised that women who interpreted that their breastfeeding expectations had not been met would report lower mood and poorer well-being in the postnatal period. The following hypothesis investigated whether this was the case.

4.2.5 Hypothesis 5: Women who experience a discrepancy between their expectation and experience of breastfeeding will report a decrease in their mood and well-being at postnatal follow-up. It was hypothesised that the discrepancy between women's breastfeeding expectations and breastfeeding experience would correlate with their postnatal mood and well-being. The analyses conducted here did not support this hypothesis

being accepted. The discrepancy between women's breastfeeding expectations and experience did not correlate with their postnatal mood and well-being.

4.2.6 Summary of findings. In summary, a positive correlation was found between women's prenatal breastfeeding self-efficacy and their expectations of breastfeeding. Women who reported lower mood and well-being prenatally also reported lower social expectations of breastfeeding. No correlation was observed between prenatal mood and well-being and prenatal self expectations of breastfeeding. A discussion of why this difference was observed is offered in section 4.3.1.2.

With regards to breastfeeding experience and postnatal mood and well-being the findings from this research demonstrated that social expectations of breastfeeding, but not self expectations of breastfeeding, correlated significantly with postnatal well-being. It was important to note however, that the effect size for the correlation between breastfeeding expectations of self and postnatal mood and well-being had a moderate effect size. Although at the level of significance this reflected the pattern of correlations between prenatal mood and well-being and breastfeeding expectations it was considered that the effect sizes were indicative of women's breastfeeding experience being more associated with their postnatal mood and well-being than their prenatal. Further analyses revealed that women's breastfeeding expectations were not significantly different from their experience of breastfeeding. This hypothesis and alternative explanations for this pattern of findings are considered further in section 4.3.1.3. The final analyses did not find a correlation between breastfeeding expectations and experience discrepancy, and postnatal mood and well-being. This hypothesis was developed in line with previous research which found that when women's expectations of parenting were not met this impacted on their postnatal mood and well-being. A consideration of why this relationship was not observed in the current research is offered in section 4.3.1.3.

The following section offers a consideration of why these patterns of results may have been observed with consideration of existing literature as presented in the introduction of this thesis.

4.3 Theoretical implications of findings

The current research was conducted to further understanding of the relationship between prenatal mood and breastfeeding expectations, postnatal mood and breastfeeding experiences, and to investigate whether a disparity between expectations and experience impacted on postnatal mood and well-being.

4.3.1 Breastfeeding expectations, prenatal breastfeeding self-efficacy, and prenatal mood and well-being. The following section offers a consideration of the current findings with regards to breastfeeding expectations, breastfeeding self-efficacy and mood and well-being during the prenatal period. Discussions draw upon the theory of self-efficacy (Bandura, 1977) and Beck's cognitive theory of emotional disorders (Beck & Emery, 1985; Beck, 1967). A consideration of the current findings is given within the context of the wider breastfeeding and postnatal mental health literature.

4.3.1.1. Breastfeeding expectations and breastfeeding self-efficacy. Prior to the current research a number of studies, and reviews had been published which discussed breastfeeding self-efficacy as a concept. These papers defined breastfeeding self-efficacy as a women's perceived ability to breastfeed her infant successfully (Dennis, 1999). A number of studies had shown positive correlations between breastfeeding self-efficacy and breastfeeding initiation and duration (Blyth et al., 2002; de Jager et al., 2014; O'Brien et al., 2008) indicating that breastfeeding self-efficacy could be an important factor to consider when developing interventions to increase breastfeeding rates. It was recognised however, that the majority of the research investigating breastfeeding self-efficacy, and its impact on breastfeeding behaviour, had recruited women postnatally, that is once they had had an

experience of breastfeeding (Dykes & Williams, 1999). This point is important when considering how self-efficacy develops.

Bandura (1977) stated that self-efficacy in a given behaviour is strengthened by a number of factors: previous experience of performing the behaviour successfully; seeing someone else perform the behaviour successfully; persuasion from others that they can perform the behaviour successfully; and psychological responses, that is current mood and emotional state. Further, Bandura (1977) argued that self-efficacy should therefore be considered as behaviour specific. General self-efficacy would not be sufficient to predict specific behaviours as each behaviour is assessed and informed by previous, behaviour specific experiences and influences. Breastfeeding self-efficacy, in line with self-efficacy more generally, has been demonstrated to be determined and influenced by past performance and accomplishments, vicarious experiences, verbal persuasion and physiological and psychological states (O'Brien et al., 2008). From this, it can be concluded that previous research, where self-efficacy is measured postnatally, will therefore be influenced by actual experience. The current research in contrast investigated prenatal breastfeeding self-efficacy with only first time mothers. These women had no previous experience of breastfeeding and in turn were reliant on the other factors, including as above, vicarious experience, verbal persuasion and psychological states, to inform their prenatal breastfeeding self-efficacy.

The current study demonstrated that women's prenatal breastfeeding self-efficacy correlated positively with their breastfeeding expectations, and their prenatal mood and well-being. That is women who had greater breastfeeding self-efficacy also had the most positive expectations of breastfeeding and more positive mood and well-being. It can be suggested that, in the absence of experience, and in line with the self-efficacy theory, other factors had informed their belief in their ability to perform the behaviour of breastfeeding. Those who had the more positive expectations, likely to have been informed by positive vicarious

experiences of breastfeeding, and more positive psychological state, in turn also reported the greatest belief in their ability to breastfeed.

It was observed however, that although overall breastfeeding self-efficacy was correlated with both breastfeeding expectations, and prenatal mood and well-being, the subscales of the breastfeeding expectations measure did not both correlate with prenatal mood and well-being. Breastfeeding expectations of self did not correlate with prenatal mood and well-being, while breastfeeding social expectations were observed to. The following section considers why these different patterns may have been observed.

4.3.1.2 *Breastfeeding expectations and prenatal mood and well-being.* A review of the existing literature suggested that prior to the current study no research had specifically investigated the relationship between prenatal mood and expectations of breastfeeding.

The findings of the current research found that women's social breastfeeding expectations positively correlated with their prenatal mood and well-being; that is, those who reported more positive social expectations of breastfeeding were also those reporting better mood and well-being. This positive correlation was not observed for breastfeeding expectations of self. This section will initially consider why the relationship between breastfeeding social expectations and mood was observed, before going on to consider why it may not have been observed for breastfeeding expectations of self.

4.3.1.2.1 *Social expectations of breastfeeding and prenatal mood and well-being.* Although a positive correlation was observed in the current study between breastfeeding social expectations and prenatal mood and well-being, the direction of causality of the relationship could not be established from the data available here. Drawing on literature relating to Beck's cognitive model of emotional disorders (Beck & Emery, 1985; Beck, 1967) and the theory of self-efficacy (Bandura, 1977), as discussed above, it is hypothesised that

low mood precipitated poorer social expectations of breastfeeding. The following offers a discussion of the theory which suggests this hypothesis.

Beck's cognitive model of emotional disorders hypothesises that people's emotional reactions and behaviours are mediated by their cognitions, and interpretations of themselves and situations they find themselves in (Westbrook et al., 2011). The model posits that people's cognitions develop over the course of their lifetime, with their experiences shaping whether they have positive or negative pervasive biases in their cognitions (Beck & Emery, 1985; Beck, 1967; Francis-Raniere et al., 2006; Segal et al., 1992). The theory suggests that the cognitions that people develop impact on their behaviour as they are more likely to seek situations where their cognitive biases are not challenged (Veale, 2008).

Research has shown that having more general negative cognitions is associated with lower mood in pregnancy (Grazioli & Terry, 2000; Warner et al., 1997). It was hypothesised therefore that, in the current research, women who were reporting fewer symptoms of low mood prenatally were also those with more positive general cognitions, and vice versa those with more symptoms of low mood had more negative general cognitions. When people have a more negative bias in their general cognitions, one known impact is on their willingness to engage in social interactions where their negatively biased cognitions may be challenged (Veale, 2008). In line with this, it is hypothesised therefore that the women who reported lower mood here may have also been experiencing poorer social interactions. In turn their current social behaviour may have been impacting on their predictions of future behaviour.

When considering someone's confidence in their ability to complete a behaviour in the future, or their self-efficacy about completing that behaviour, as already discussed in section 4.3.1.1, the theory suggests that this is impacted by a number of factors. These include previous performance of the task, vicarious experiences of the behaviour and psychological responses (Bandura, 1977). As noted, self-efficacy is behaviour specific,

informed by previous, behaviour specific experiences and influences. As already, discussed women who participated in this study were first time mothers and as such these women did not have previous experience of breastfeeding on which to base their perceptions of self-efficacy about this future behaviour. It is hypothesised, in accordance with the theory, that women in the current study were able to utilise previous similar behaviours to inform future behaviour expectations. Here it is hypothesised that women who reported lower social expectations of breastfeeding were drawing on their current social behaviour to inform their belief about future social behaviours, one element of the breastfeeding experience. They had a model of their social interactions, which correlated with their current mood, which they were able to draw on to inform beliefs about their future breastfeeding social behaviours. Breastfeeding expectations of self, in contrast, were not found to positively correlate with prenatal mood and well-being. The following section offers a consideration of this.

4.3.1.2.2 Breastfeeding expectations of self and prenatal mood and well-being. While social breastfeeding expectations were found to correlate with prenatal mood and well-being, breastfeeding expectations of self were not. As already discussed, self-efficacy is behaviour specific and informed by a number of factors (Bandura, 1977). With regards to social expectations it is hypothesised that previous success in social behaviours could be drawn on to inform beliefs about future social behaviours. With regards to breastfeeding expectations of self however, there is less clear previous experience to inform predictions of future behaviour, as breastfeeding is a unique behaviour. Instead it is hypothesised that women are more reliant on vicarious learning, through social modelling and social persuasion, to inform their belief in their own abilities to breastfeed. Research investigating Post Natal Depression (PND) which explored the role of women's parenting expectations and beliefs in the development of PND, highlighted that women develop parenting attitudes and beliefs which are idealistic and tend to be independent of other beliefs they hold about themselves (Sokol

et al., 2014). When women have no previous experience to inform their future behaviour self-efficacy, they instead rely on other sources of social modelling to inform them what parenting will be like and their likelihood of success. Further support for this hypothesis can be taken from previous research which has shown that there are higher breastfeeding intention and initiation rates in women who are educated to a higher level and are from higher SES backgrounds as breastfeeding is more prevalent in these groups (Agboado et al., 2010; DiGirolamo et al., 2005; Ford & Lobbok, 1990; Hauck et al., 2011; Meedya et al., 2010; Thulier & Mercer, 2009) and those who had been breastfed themselves (Meedya et al., 2010). In the introduction to this thesis it had been hypothesised that these relationships may have been observed as in these situations women were more exposed to experience of other women successfully breastfeeding, which in turn impacted on their belief in their ability to breastfeed.

It is hypothesised therefore that no correlation was observed in this study between breastfeeding expectations of self and prenatal mood and well-being as the self expectations of breastfeeding were created mainly from vicarious learning of role models and existing sources of information available to the women in this study, who could not rely on previous experience.

4.3.1.3 Summary. In summary the current research found that overall women's breastfeeding self-efficacy positively correlated with their expectations of breastfeeding and prenatal mood and well-being. This finding was in line with self-efficacy theory. People who have more positive expectations of a behaviour, informed by previous experience and vicarious learning, and a more positive psychological state will display more confidence in completing a behaviour in the future (Bandura, 1977).

The current research however, goes on to suggest that different factors impact on a women's perception of their ability to breastfeed, and these factors differ between women,

depending on their actual experience, vicarious experience, persuasion by others and psychological state. The research here found that women's pre-natal mood significantly correlated with their social expectations of breastfeeding, while it did not correlate with their self expectations of breastfeeding. It was hypothesised that when women are making predictions about their social expectations of breastfeeding they are able to use more general social experiences, which in turn were impacted by their current mood. In contrast however, it was hypothesised that their expectations of themselves to breastfeed were directed more by their vicarious experiences, and encouragement from others, as the experience of breastfeeding was new and unique for them and therefore they were not able to draw upon previous experience to inform it.

Previous research has argued that breastfeeding self-efficacy correlates with breastfeeding continuation (Dennis, 1999), and therefore more should be done to increase women's breastfeeding self-efficacy. What the current research is suggesting, however, is that breastfeeding self-efficacy is multi-factorial which could have particular clinical implications. These are further discussed in section 4.4.

4.3.2 Breastfeeding experience and postnatal mood and well-being. The second aim of the current thesis was to build on previous research and understanding of breastfeeding experience and its relationship with postnatal mood and well-being. Previous qualitative studies investigating women's experiences of breastfeeding reported that women consistently experience a clash between their idealised breastfeeding experience and reality (Burns et al., 2010; Misri et al., 1997; Mozingo et al., 2000; Renfrew et al., 2012). Women have reported feelings of guilt, shame, self-doubt, loss, distress and inadequacy in response to their decisions around breastfeeding (Burns et al., 2010; Mozingo et al., 2000; Renfrew et al., 2012). It has been demonstrated, in a large sample (N= 8,985), that when women's expectations of breastfeeding, defined as expected length of breastfeeding, are not met by

their experience, this impacts negatively on their postnatal mood (Borra et al., 2014). These findings would suggest that universally women experience lower mood when they experience difficulties which impacts on their length of breastfeeding. Dias and Figueiredo (2014), and Dennis and McQueen (2007), however, suggested that this direct relationship is unlikely to be true for all women. Individual factors such as breastfeeding worries, negative breastfeeding attitudes and breastfeeding pain have all been found to impact on women's interpretation of the breastfeeding experience, in turn impacting on postnatal mood. The current study supported the conclusions of Dias and Figuriado (2014), and Dennis and McQueen (2007), in that when simply looking at breastfeeding difficulties, presence or absence of them was not sufficient to discriminate women's postnatal mood and well-being. Women who reported experiencing difficulties were not automatically those who were reporting lower postnatal mood and well-being. For women here having had difficulties with breastfeeding did not necessarily equate to a negative breastfeeding experience, in line with previous research findings.

The current research directly investigated the relationship between breastfeeding experience, captured by the measure of breastfeeding experience, and postnatal mood and well-being. It was found that postnatal mood and well-being were significantly correlated with social experiences of breastfeeding but not self experiences of breastfeeding. It was considered however that the effect size of the correlation between breastfeeding expectations of self and postnatal mood and well-being were moderate and that had a larger sample been available this may have reached significance. A direct comparison of the correlations prenatally, as discussed in section 4.3.1.2, and postnatally showed some differences when effect sizes were considered. Prenatally the correlation between expectations of social experience and mood and well-being was moderate, which was reflected in the postnatal

correlations. However, the prenatal correlations between breastfeeding self expectations and mood and well-being had been weak, but had risen to a moderate correlation postnatally.

As already discussed considering self-efficacy theory, a person's confidence in completing a behaviour is informed by a number of factors including previous performance of the task, vicarious experiences of the behaviour and psychological responses (Bandura, 1977). It had been hypothesised that in the prenatal period a correlation was observed between women's social breastfeeding expectations and mood and well-being as women were modelling their social expectations of breastfeeding from their more general social experiences which was in turn correlated with their mood. In the postnatal period it is hypothesised that as expectations had been met by experience, performance on the task was in line with their expectations which had been informed accurately by previous experience.

With regards to breastfeeding self expectations and prenatal mood however, it had been hypothesised that a correlation was not observed as without previous experience of breastfeeding women were creating expectations of themselves based on vicarious experience and observations of others with who they identified. This fits with recent models of PND which suggest that women create a belief about their parenting abilities which can differ from their general cognitions of themselves. It is hypothesised that that their beliefs about their abilities are based on positively biased vicarious experience of those around them (Sokol et al., 2014). Postnatally however women it is hypothesised that actual experience, which is more likely to be influenced by other factors such as mood and general cognitions about self, becomes more important. It would therefore be expected that the correlation between mood and well-being and breastfeeding self experience would be more strongly correlated during the postnatal period as was observed here. It is important however to note that even though the correlation between breastfeeding self experience and mood is stronger in the postnatal period overall women were reporting that their breastfeeding expectations were being

matched by their experience and the discrepancy between breastfeeding expectations and experience did not correlate with postnatal mood and well-being.

Sockol and colleagues (2014) had investigated the relationship between parenting expectations and postnatal mood and the current observed pattern supports the findings of their study. These authors reported that maternal attitudes to parenting were predictive of postnatal mood. They found that when women held beliefs about how they should behave in the postnatal period, but then experienced thoughts that did not fit with these schema, they would interpret this as evidence of them being a poor mother. When women in their research experienced a dissonance between their expectations of themselves and their experience of parenting, they reported a rise in symptoms of depression, such as guilt, sadness and worthlessness. In line with these research findings the pattern of interaction in the current research would be expected. Women in the current study were reporting that their expectations of breastfeeding were being met. Therefore their prenatal schema of the breastfeeding experience, captured as breastfeeding expectation, were not being challenged. As they were not perceiving that their breastfeeding expectations had been challenged, they were not experiencing negative thoughts about themselves, and their abilities as a parent. If women's experiences are not challenging their beliefs then onwards impact on mood would not be expected, as observed here.

In summary, women who participated in the current study were reporting that their breastfeeding expectations were being met by their experience, and in turn it is hypothesised that their beliefs about themselves as parents were not being challenged and no onwards impact on mood was observed. These findings fit with the findings of Dias and Figureido (2014), and Dennis and McQueen (2007), who reported that interpretation of breastfeeding experience is more important when considering postnatal mood than actual experience. However, whether women in the current research had had realistic expectations prenatally of

breastfeeding which had been met by experience, whether women participating in the current research had positive bias in their interpretation of their breastfeeding experience or whether women were not honestly reporting their experience of breastfeeding cannot be concluded here. This lack of understanding however, suggests a direction for future research and is further discussed in section 4.6.

4.3.3 Summary of theoretical implications. In summary it was found that the prenatal breastfeeding self-efficacy of women who participated in this research positively correlated with their expectations of breastfeeding. In line with self-efficacy theory (Bandura, 1977), women who were reporting that they had more positive expectations of an experience were also reporting more confidence in their ability to complete that behaviour. The research however, then went on to assess different aspects of women's expectations of breastfeeding, their social expectations and their expectations of self, and the relationship with prenatal mood and well-being. It was found that women's social breastfeeding expectations positively correlated with their prenatal mood, but their expectations of self did not. Drawing on the Beck's cognitive theory of emotional disorders (Beck & Emery, 1985; Beck, 1967) and self-efficacy theory (Bandura, 1977), it was hypothesised that this disparity in findings may reflect the fact that women are able to draw on their current social experiences, which may also have been impacting on their general mood, when generating social expectations of breastfeeding. With regards to self expectations however, women were not able to draw upon current experiences of breastfeeding, as they had not had any, and were then creating expectations which were independent of their cognitive biases but were instead influenced by vicarious learning and social experiences. This interpretation should be treated with caution however as these associations have been hypothesised and there are insufficient data available in the current study to support this. Therefore it is considered a direction for future research and is further discussed in section 4.4.

With regards to the second aim of the current study, the findings were unexpected. Previous qualitative research had found that women reported that their breastfeeding expectations were not being met by their experience, and as a consequence they were experiencing negative feelings about themselves and their abilities as a parent. These findings were not replicated here; women were reporting that their expectations were being met by experience, and the pattern of correlations between breastfeeding experience and postnatal mood and well-being reflected those observed prenatally. It was hypothesised that in the current study women's breastfeeding expectations were being met, and as a result their schema of themselves as a parent had not been challenged. It was recognised that there was insufficient information in the current study to establish whether women's breastfeeding expectations were being met as they had been realistic prenatally, whether their interpretation of the experience had been positively biased, or whether they were reporting accurately their postnatal experience of breastfeeding and future research should investigate this further.

4.4 Clinical implications of findings

In light of the findings of this study clinical implications are explored. Previous research has demonstrated that there are benefits to both the infant and mother of breastfeeding (Ip et al., 2009; Kramer & Kakuma, 2012). Despite this awareness, and campaigns to increase breastfeeding prevalence such as the Baby Friendly Initiative, breastfeeding continuation rates remain low in the UK (McAndrew et al., 2012). Consideration of the research findings with regards to possible implications of increasing breastfeeding rates are first considered in section 4.4.1. The clinical implications of the findings from this study with regards to breastfeeding experience, and the disparity between expectations and experience and impact on postnatal mood and well-being are considered in section 4.4.2.

4.4.1 Prenatal social expectations of breastfeeding. Improving social experience

prenatally. The current research found that women's breastfeeding expectations positively correlated with their breastfeeding self-efficacy, that is, women with more positive expectations of breastfeeding also reported more confidence in their ability to breastfeed. This research, however, went on to find that simply looking at breastfeeding self-efficacy as a single concept, that could theoretically be improved by increasing women's belief in their abilities through vicarious learning and social modelling, may be too simplistic. It is hypothesised that breastfeeding self-efficacy may be multifactorial.

It has been shown that women's beliefs in their ability to breastfeed, or their breastfeeding self-efficacy, are central to their continuation in the behaviour and their willingness to continue in the face of difficulties (de Jager et al., 2014; Dennis, 1999). It is therefore argued that breastfeeding support prenatally should focus on increasing breastfeeding self-efficacy. This research suggests however, that interventions should not simply focus on the positive education of breastfeeding, and increasing women's confidence in their ability to breastfeed, it should also consider women's prenatal mood and well-being as these could contribute to their expectations of the social experience of breastfeeding and in turn could impact on their willingness to access help.

All forms of breastfeeding support have been found to have a positive impact on breastfeeding prevalence (Renfrew et al., 2012) and it has been demonstrated that women who are more willing to ask for help are those who are most motivated and likely to continue to breastfeed (Graffy et al., 2004). This suggests that creating an environment where women feel that they are able to access support is going to increase the probability of them doing so, and in turn increase breastfeeding continuation rates. Considering that women's prenatal mood and breastfeeding social expectations were found to positively correlate, it may be

possible to recognise those women prenatally who are at a greater risk of not accessing breastfeeding social support postnatally.

It is therefore argued that using a measure, such as a mood and well-being screen, may help recognise those women who are at greater risk of not accessing social support postnatally, and put interventions into place to help support these women. It may be of benefit to encourage women to attend postnatal breastfeeding groups prenatally where not only would realistic breastfeeding experience be modelled, but where women would have opportunity to build social relationships and shape their postnatal social expectations of breastfeeding and possibly increase their willingness to access breastfeeding support postnatally.

4.4.2 Impact of breastfeeding expectations being met on postnatal interventions.

It had been hypothesised that the current research would demonstrate that women's expectations of breastfeeding were not being met by their experience, based on the findings of previous qualitative literature (Burns et al., 2010; Misri et al., 1997; Mozingo et al., 2000; Renfrew et al., 2005). In line with this it had been anticipated that the research findings would be of use in informing considerations of both prenatal education of breastfeeding, and postnatal support. This study found however, that for the women participating in it expectations of breastfeeding were being met, where women's prenatal expectations had been better their experience had been better and vice versa. As it stands little can be taken from the findings to inform postnatal interventions.

It is considered that one of the major shortfalls of this research, the small sample size and low follow up response rate, which are further discussed in section 4.5.1, may have limited the data available. It is impossible to conclude why a large number of women chose not to complete the follow up stage of the research but it could be hypothesised that those that had not responded had experienced greater difficulties, despite perhaps being more optimistic

in pregnancy. It is considered that extending the study with a larger population, and considering factors in order to retain participants at follow up may provide more meaningful data for informing postnatal interventions.

The following section offers a discussion and critique of the methodology of the current research.

4.5 Methodological critique

The strengths of the current research are first considered. This is then followed by a discussion of the methodological weaknesses in section 4.5.2.

4.5.1 Study strengths. A significant strength of the current study was the recruitment of women to the study during the prenatal period and following the same women through to the postnatal period. This was a real strength in comparison to past research designs where women had been asked to report on their prenatal expectations during the postnatal period where they will have had an experience of breastfeeding impacting on their report of their expectations (O'Brien, Buikstra, Fallon, & Hegney, 2009). Other studies had used a cross-sectional design comparing two groups of women, one in a prenatal condition and a second in a postnatal condition (Sockol et al., 2014). By asking women to report their expectations pre-natally, and following the same women up postnatally changes in scores could be more confidently attributed to changes as a consequence of experience.

It was highlighted that the findings of the current study differed from previous qualitative research findings which found no discrepancy between women's expectations and experiences (Burns et al., 2010; Mozingo et al., 2000; Renfrew et al., 2012) because these studies had all recruited women postnatally. These were therefore likely to be representing the experience of a sub-group of women who are actively reporting breastfeeding difficulties for which they require support. Women who experience difficulties, but manage the difficulties effectively, are less likely to have been recruited to previous research. This

research highlighted that previous research findings may be biased by postnatal recruitment and this should be considered in future research. This is further discussed with regards to future research in section 4.6.

4.5.2 Study limitations.

4.5.2.1 Sample including recruitment. A significant limitation to the current research was the small sample recruited to participate. As recruitment was of a non-clinical population it had anticipated that recruitment would be relatively straightforward, however, a number of factors contributed to the low initial take up and high follow-up drop out.

4.5.2.1.1 Initial recruitment. Initial recruitment was significantly delayed by the slow speed of processing documents for ethical and research and development approval. This significantly impacted upon the amount of time available to recruit to the study. As the study had a pre-post design delays impacted on time for initial recruitment as sufficient time needed to be allowed for follow-up data to be collected. The study was limited further as only a finite number of antenatal groups were run each month. A change was made to the recruitment protocol, to include recruitment through social media, but response from this recruitment method was very low.

There was a discrepancy in the time taken for research and development approval to be given at different study recruitment sites, and this also impacted on the number of participants who could be recruited from each site. Additionally each site ran antenatal breastfeeding support classes differently; some sites running classes on weekday afternoons, while others ran evening and Saturday groups. Where evening and Saturday groups were offered this was easier for both the researcher and mothers to attend and it was observed that attendance at these groups was higher. This, however, had an onwards impact on the study sample, with a bias towards recruitment of mothers from one particular area. Four recruitment sites had been identified across the county in order to increase socio-economic

variation in recruitment but practicalities meant that this variation was lost and there was an overall bias in the sample to highly educated mothers. This makes it difficult to generalise findings to the wider UK population.

Initial power calculations for this study had suggested that a sample of 74 was needed in order to conduct a multiple regression analysis to explore the relationship between breastfeeding expectations, prenatal breastfeeding self-efficacy and prenatal mood and well-being. However, it should be noted that the sample was smaller (N=63) than was calculated (N=74) and the low power should be considered in interpreting the research findings.

4.5.2.1.2. Loss to follow-up. It is acknowledged that there was a significant reduction in participants who completed the follow-up measures. Of the 63 participants that consented to participate in the research, only 29 completed postnatal measures. There were a number of reasons why this number was so low. Firstly, for the study to be ethically sound it was important that participants' and their infants' health were checked prior to sending follow-up measures to safeguard against potential distress. This meant that the GP of the participant needed to return a form to indicate that they would support contact based on a review of the participants' medical notes. This added an extra stage to the recruitment process, was often delayed and in many cases involved phone calls to the GP to chase the status of their response. A total of 12 participants were lost to follow-up due to non-response or refusal to respond by their GP. A further three were lost to follow-up because they were no longer registered with their GP, while the GP indicated in four cases that they would not recommend sending postnatal measures. A further 14 were lost to follow up as, although their GP indicated it was appropriate to go ahead with contact, the participant did not return postnatal measures. In these cases participants were sent a reminder e-mail to the address that was provided two weeks after the measures were sent as per the ethically approved protocol. If participants did not respond following the email they were sent one further follow-up email

after another week and following non-response to this they were excluded from the study as at this stage as four months would have elapsed from their estimated due date and their data would not fit within the wider study protocol.

The amount of missing follow-up data was in part managed by the use of statistical multiple imputation, but there are drawbacks to this method which are discussed in section 4.5.2.4. It was recognised though that in previous research those who were lost to follow up were those women at the greatest risk of psychological difficulties in the postnatal period (Sokol et al., 2014) and therefore when generalising the findings of the current research it should be appreciated that findings may be biased to those who experience the least psychological difficulties postnatally and therefore may not accurately represent the general population.

4.5.2.2 Study follow-up protocol. While it was appreciated that using a pre-post design was a strength of the current study, the variations in timing of follow-up as discussed above meant that the actual point of follow-up varied across participants and this was not adequately controlled for. It had been anticipated that participants would return measures quickly and no date of completion was included on follow up measures. However, this meant there was no way of monitoring at what point postnatally participants had completed measures. As it was not clear at which point exactly women were completing the postnatal measures, this has implications of the generalizability of findings.

In addition it could also be considered that not following up with women prior to 12 weeks postnatally may have impacted on their responses. It is known that breastfeeding cessation is most likely to occur at week 4 (Hauck et al., 2011; Kronborg & Vaeth, 2004), indicating that this is also the point at which women are likely experiencing the most difficulties. By choosing the time point of 12 weeks postnatally it had been anticipated that women would have settled into a feeding pattern of choice, either overcoming difficulties and

ongoing with breastfeeding or moving to mixed or bottle feeding, and women would therefore reflect their true beliefs about the feeding experience at this time. However, leaving follow up till this time may have meant that women may have been in a space where they were not in the moment of distress, and therefore able to be more reflective of their breastfeeding experience with the difficulties impacting less on their current breastfeeding perceptions.

4.5.2.3 Measures. All data which were analysed in this study were collected through the use of self-report measures. The use of self-report measures is widely believed to be a less than ideal methodology for data collection. In the instance of this research common method variance should be considered, that is that participants completed multiple questionnaires which were then analysed for correlations. It is argued that when participants complete multiple self-report measures the correlations that are observed are attributable to common variance due to data being collected in the same way. Using a correlational analysis of multiple measures from the same participant therefore biases the estimation of the inter-construct effect (Campbell & Fiske, 1959). This idea posits however, that all self-report measures are susceptible to the same social desirability but this is not always necessarily the case (Chan, 2008). To reduce the probability of correlations being observed due to common method variance it is argued that non-self-report measures should be used. Using more objective measures would improve validity and be less influenced by social desirability. This study however was interested in assessing a person's self-referential perceptions, and as such it has been reported in these cases it is more useful to ask an individual for their perception, rather than relying on translation from other observable behaviours (Chan, 2008). Although it is acknowledged that self-report measures may not be an ideal for data collection, these were considered appropriate in the current study in order to recruit as many women as possible to the current study within the time frame available.

The majority of measures used within the current research were measures that had been used previously within the wider literature and had been adequately assessed for reliability and validity. The exception to this however, was the breastfeeding expectation and experience measures. The current study was presented as a pilot as the researcher was aware prior to conducting it that this issue was going to be a limitation. Reliability analyses, presented in sections 3.4.1.4 and 3.4.1.5, reported that internal reliability for both the breastfeeding expectation and experience measure in the current study was good, as was the internal reliability of the sub-scales of the measure. The measure was also found to have good concurrent validity with the parenting expectation and experience measures from which it was adapted. It is recognised, that creating a new measure for the use in this study was always going to be a significant drawback of the current methodology. However, at the time of design there were no measures available that adequately captured the concept of breastfeeding expectations and experience, and therefore creation of a measure was necessary.

The final drawback of the measures used in the study, which will be briefly mentioned here, was the use of an open ended question to capture breastfeeding difficulties. This meant that further analyses investigating the effects of different types of breastfeeding difficulties could not be conducted. It could be argued however, that this had not been an initial aim of the current study. That women will interpret whether their breastfeeding expectations have been met, according to the type of difficulties they have experienced, is a consideration for future research and is considered further in section 4.4.

4.5.2.4 Statistical analyses. A limitation of the current study was incomplete data. This was due to both missing data points on the self-report measures completed, possibly due to measures being completed without support of the researcher, and loss of participants in the postnatal stage of the study. As described within section 3.3.2 missing data points on

individual measures were managed by the use of the imputation of the mean as a measure of central tendency, a methodology which is supported in the literature to be adequate when <30% of the data is missing (Shrive et al., 2006). With regards to the management of complete missing data sets, both of complete missing measures, complete data sets at follow-up, multiple imputation was used to create new data sets for analyses. Multiple imputation is currently considered the more respectable method of dealing with missing data (Tabachnick & Fidell, 2013), but even with this consideration it would have been preferable to have a full data set for follow-up participants. Multiple imputation relies on estimation of values utilising the data set that is available. As has already been discussed, a response bias has been observed in previous research with those at the greatest risk of psychological difficulties postnatally least likely to respond to follow-up (Sokol et al., 2014). Had a similar response bias been evident in the current research, the new data set which was created from the data available would be likely to perpetuate this bias. Had a complete data set been used in analyses a different pattern may have been observed with regards to the postnatal follow-up data.

It had been planned, prior to the current study commencing, to conduct a multiple regression when considering the relationship between expectations of breastfeeding, prenatal breastfeeding self-efficacy and prenatal mood and well-being. As already described, it was not possible to run this analysis due to a negative skew in the data, instead multiple Spearman's correlations were conducted. It is acknowledged that conducting multiple analyses in this way increases the probability of a type I error, and a Bonferroni correction had been considered. However, it was recognised that with the relatively small sample here use of this correction may increase the probability of a type II error. Instead a conservative level of significance of <.01, was used in the analyses which required these multiple correlations.

4.6 Future research

The current research study was presented as a pilot study, in main due to the use of a measure of breastfeeding expectation and experience which had been created for use here and was previously untested for reliability and validity. While conclusions and suggestions can be drawn it is appreciated that the limitation of using a previously unused measure means that all findings should be taken with caution. There is a suggestion therefore, that future research should focus on developing the measure of breastfeeding expectation and experience further and carry out this research with a more diverse and inclusive sample. The current study has been useful in highlighting that there are likely to be difficulties in recruitment and retention of participants to further research studies investigating breastfeeding expectations and experiences. Liaison and closer joined up working with maternity services, and GPs is likely to be key to more successful recruitment and retention of participants. In addition, using electronic media for completion of measures could be considered to increase participation and retention rates, though it is recognised that there may be ethical limitations to this.

This research has been helpful as it has highlighted that there may be a shortfall in the majority of the breastfeeding experience literature published to date. Recruitment to studies investigating the impact of breastfeeding difficulties on postnatal mood and well-being have tended to recruit postnatally (Burns et al., 2010; Mozingo et al., 2000; Renfrew et al., 2012), with a resulting bias in the sample to those presenting with breastfeeding difficulties for which they are recognising they need support. This research has highlighted that breastfeeding difficulties are often experienced by women, but that women process the experience of breastfeeding difficulties differently. It is argued that future research should focus on investigating further why some women are experiencing breastfeeding in line with their expectations, while others are reporting that their expectations are not being met.

The current research generated hypotheses about why the patterns of correlations were observed, particularly why women were reporting that their social expectations of breastfeeding correlated with their prenatal mood, while their self-expectations of breastfeeding did not. It would be important for future research to investigate whether these hypothesised explanations are supported. Future research could consider using a measure that would capture women's general attitudes prenatally, such as the Dysfunctional Attitudes Scale (DAS; Power et al., 1994), alongside the measure of breastfeeding expectations. It would then be possible to see whether women's social expectations of breastfeeding correlated with their general cognitions of themselves, while their expectations of themselves in breastfeeding did not. This research would support, or dispute, the conclusions of the current research which have been inferred through understanding of the interaction between social avoidance and mood.

Finally, it is suggested that future research should consider the type of breastfeeding difficulties that women are experiencing. The current research highlighted that the breastfeeding difficulties women were reporting were varied, some related to difficulties as a consequence of concerns about the health of their infant, including in a large number of cases experience of tongue tie, while others relating to women's personal experiences and health. It would be interesting in future research to focus on understanding the impact of different breastfeeding difficulties on perceived experience. This was beyond the scope of the current study.

4.7 Final summary and conclusion

The current study had two main aims, firstly to further understanding of the relationship between breastfeeding expectations and prenatal breastfeeding self-efficacy, mood and well-being. Secondly it aimed to further investigate the impact of breastfeeding difficulties on postnatal mood and well-being, with particular investigation of the role of

breastfeeding expectations not being met by breastfeeding experience. In this chapter the outcomes of the analyses in response to each of the hypotheses were initially presented and summarised. Following this the findings from the studies were discussed with reference to the previous literature.

With regards to the first aim of the current thesis the findings partially supported the hypotheses. It was found that women's prenatal breastfeeding self-efficacy correlated with their prenatal breastfeeding expectations and prenatal mood and well-being. Previous research had reported a relationship between breastfeeding self-efficacy and breastfeeding behaviour, however the majority of these studies had investigated breastfeeding self-efficacy postnatally (Dennis, 1999) that is following an experience of breastfeeding. The current research was novel in that here breastfeeding self-efficacy had been measured at a point at which women's experience of breastfeeding was not contributing to her belief in her ability to breastfeed.

Although breastfeeding self-efficacy was found overall to correlate with breastfeeding expectations, and prenatal mood and well-being, the correlations between breastfeeding expectations and prenatal mood and well-being were not as clear. It was found that social expectations of breastfeeding were correlated with prenatal mood and well-being while breastfeeding expectations of self were not. It was discussed that this pattern of findings may have been observed as when women were creating social expectations of breastfeeding they were recalling their current social functioning to inform future behaviour, with their current functioning correlating with their current mood and wellbeing. It was considered however, that when women created beliefs about how they themselves would experience breastfeeding, a novel experience, their current functioning and psychological state did not impact on their expectations.

The second aim of the current research was to investigate the relationship between breastfeeding experience and postnatal mood and well-being. This study reflected the conclusions of previous reviews (Dennis & McQueen, 2007; Dias & Figueiredo, 2014), as it was found that breastfeeding difficulties alone could not account for variations in women's reported breastfeeding experience, or for variations in mood postnatally. However, this research had further hypothesised, based on findings from previous qualitative research (Burns et al., 2010; Misri et al., 1997; Mozingo et al., 2000), that women would report a discrepancy in their breastfeeding expectations and experience. This was not observed in the current research. Here women's expectations of breastfeeding was being met by their experience. It is suggested that methodology of the current study, recruiting women prenatally rather than through postnatal support groups, meant that participation was a better representation of the expectations and experiences of women that were planning to breastfeed, previous research may have been biased towards those perceiving that their expectations had not been met. In line with the fact that women here were reporting that their breastfeeding expectations were being met, the pattern of relationships between breastfeeding experience and mood and well-being reflected that between breastfeeding expectations and mood and well-being. It is suggested that as women's breastfeeding schema had not been challenged by their experience their mood was remaining stable across the pre- and postnatal time points.

In light of the outcomes of the study two potential clinical implications were presented. It was considered that interventions were needed that would further increase women's breastfeeding behaviour. It had previously been shown that having better breastfeeding expectations was positively correlated with breastfeeding behaviour (Taveras et al., 2003; Vogel et al., 2007), and where women have more belief in their ability to breastfeed, or breastfeeding self-efficacy, they would be more likely to persevere in the face

of difficulties (Dennis, 2009). The current study had aimed to understand whether women's mood and well-being prenatally influenced their expectations of breastfeeding which had been hypothesised to increase their breastfeeding behaviour. The current findings highlighted that simply increasing a women's belief in her ability to breastfeeding, or her breastfeeding self-efficacy, may be insufficient. It is suggested that future interventions should consider women's mood and wellbeing in the prenatal period. It was recognised that women's prenatal mood and well-being were correlated with women's social expectations of breastfeeding and therefore interventions could focus on increasing, mood and well-being prenatally.

It had been anticipated that the current research would reflect the findings of previous research (Borra et al., 2014; Misri et al., 1997; Mozingo et al., 2000), with breastfeeding expectations not being met by experience. It had been anticipated therefore that there would be scope for discussion of the clinical implications supporting women when breastfeeding expectations were not met. However, the current study suggests that, on the whole, women were realistically prepared for the breastfeeding experience. It could be inferred, therefore, that the support and education being offered to women in the area is adequate. It was highlighted though that the methodological flaws of the current study, and particularly the high drop out rate at follow-up, would warrant caution when generalising the findings to a wider population.

The main strength of the current study has been outlined, that is the use of a pre/post design with women recruited to the study within the antenatal period. It was recognised however, that there were limitations to the current study including the small sample size, the high drop out rate at follow up, and the use of self-report measures, including one designed for use in this study. While the high drop out rate was managed with the use of an appropriate statistical technique, the limitations of using this method of management were discussed.

Recommendations for future research have been made. It was particularly recognised that the current research had been limited by the small sample size and loss to follow-up. It has been recommended that further research be conducted to extend the current study and further validate the use of the measure created here. Particular consideration should be given to the difficulties with recruitment and attrition encountered here within any future research design. The current research also highlighted that there may be a bias in the qualitative research investigating women's experiences of breastfeeding to those that are encountering difficulties, due to postnatal recruitment. It is highlighted that future qualitative research may convey a more balanced view of women's experiences of breastfeeding if they were to recruit antenatally. Finally it was recognised that many of the conclusions of the current research had been inferred from hypothetical relationships e.g. low mood as a measure of general negative biases, and future research could measure for these factors explicitly.

The application of findings from the current study have been limited due to methodological considerations, however, they have indicated future directions in the research.

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APPENDICIES

- Appendix A** Consort table
- Appendix B** Participant information sheet and consent form
- Appendix C** Recruitment poster
- Appendix D** Recruitment poster with revisions for online recruitment
- Appendix E** Contact details questionnaire
- Appendix F** Demographic questionnaire
- Appendix G** Edinburgh Postnatal Depression Scale
- Appendix H** Warwick Edinburgh Mental Well-Being Scale
- Appendix I** Breastfeeding Self-Efficacy Scale – Short Form
- Appendix J** Parenting Expectations and Experience Measures
- Appendix K** Breastfeeding Expectations and Experience Measures
- Appendix L** Postnatal cover letter
- Appendix M** Prenatal GP letter – Cause for concern
- Appendix N** Prenatal GP letter – No cause for concern
- Appendix O** Postnatal GP letter – Cause for concern
- Appendix P** Interest in qualitative research questionnaire
- Appendix Q** Norfolk NHS Ethics Committee approval letter
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- Appendix S** Trust Research & Development Approval Letters
- Appendix U** GP letter – Consent to contact
- Appendix V** Summary of qualitatively reported breastfeeding difficulties

APPENDIX A

	Cambridge University Hospital Foundation Trust	Hinchingbrooke Healthcare Trust	Peterborough and Stamford NHS Foundation Trust	Queen Elizabeth Kings Lynn NHS Foundation Trust	Social media and word of mouth	Total
Number of antenatal classes attended	25	4	2	2	-	33
Number of attendees	196	22	31	16	-	265 (+8 social media/word of mouth)
Number of packs distributed (%)	147 (75.0)	19 (86.36)	29 (93.55)	16 (100)	8	219 (80.21)
Number of packs returned part 1 (%)	47 (31.97)	3 (15.79)	6 (20.69)	3 (18.75)	5 (62.5)	64 (29.22)
Follow up						
Number excluded as did not meet inclusion criteria (% of returned)	1 (2.13)	-	-	-	-	1 (1.56)
Number GP letters outstanding (% of returned)	5 (10.64)	-	4 (66.67)	-	1 (20)	10 (15.63)
Number not appropriate to contact (% of returned)	6 (12.77)	1 (33.33)	-	-	-	7 (10.94)
Number participant packs outstanding (% of returned)	13 (27.66)	1 (33.33)	2 (33.33)	1 (33.33)	-	17 (26.56)
Number returned follow-up packs (% of returned)	22 (46.8)	1 (33.33)	-	2 (66.67)	4 (80)	29 (45.31)

APPENDIX B**PARTICIPANT INFORMATION SHEET**

Breast-feeding Expectations and Experience: Impact on postnatal mood and well-being.

Researcher: Amy Shayle, Trainee Clinical Psychologist

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. We would be happy to go through the information sheet with you and answer any questions you have.

Part 1 of this information sheet tells you the purpose of this study and what will happen if you decide to take part.

Part 2 of this information sheet will give you more detailed information about the conduct of the study

Ask us if there is anything that is not clear.

PART 1**What is the purpose of the study?**

Research with small groups of women has shown before their baby is born women have expectations about what the breastfeeding experience will be like for them. Women's expectations of breastfeeding are often different from their actual experience of breastfeeding. When women's expectations of breastfeeding are different from their experience some women report that they can view themselves as a bad parent and this has been found to impact on their mood and well-being.

The first aim of this research is to find out more about women's expectations and experiences of breastfeeding and the differences between the two. The research will then go on to look at whether a difference between expectation and experience can be linked to low mood after women have had their baby.

The findings from this study will be helpful in expanding our knowledge about the experience of breastfeeding for women.

Why have I been invited?

We would like around 80 first time mothers who are planning to breastfeed to participate in this study. You are being approached as you are more than 30 weeks pregnant with your first child and you intend to breastfeed your child.

Do I have to take part?

It is up to you to decide to join the study. We will describe the study and go through the information sheet. If you would like to take part we will ask you to sign a consent form. You are free to withdraw from the study at any time and do not have to give us a reason. This will not affect the standard of care you receive.

What will happen to me if I take part?**Part 1 – Prenatal Measures**

Once you have consented to participate in the study you will be given a pack of questionnaires. We would like you to complete these questionnaires before your baby is born. The questionnaires will ask about your expectations of breastfeeding and parenting, and your current mood and well being.

Part 2 – Postnatal Measures

Around 3 months after you have had your baby we will send you a second set of questionnaires in the post. These measures will ask about your experience of breastfeeding and parenting and your postnatal mood and well-being. We will send these measures in the post with an envelope and stamp to return the questionnaires to the researcher. If we do not receive your questionnaires we will follow up via telephone after 2 weeks to confirm whether you would like to continue to participate in the study.

We understand that you might not want us to make contact with you at the follow-up time point. We would like to check with your health visitor or GP before sending measures to you that they think it is appropriate for us to send you follow-up measures.. We will send a letter to your health visitor or GP explaining that you have consented to participate in this research. We will ask them to complete and return a reply slip indicating whether they feel it would be appropriate to send you the measures. We will not ask the health visitor or GP for any other information about their decision.

When we send you follow-up measures we will also send a form asking if you would like to participate in a further research study being conducted by a trainee at the University of East Anglia. This study is an interview study looking in more depth at women's experiences of breastfeeding. If you would like to participate in this study please complete the form and return with your other measures. A researcher will then contact you by phone to discuss this further. You are under no obligation to continue into this study.

Expenses and payments

All participants who complete both stages of the questionnaire study will be entered into a prize draw for £50 worth of Mothercare vouchers.

What are the possible disadvantages and risks of taking part?

While there is no immediate risk to you of taking part in this stud, we are aware that the measures being used may tell us that your mood is low. If your scores on the measures indicate to that your mood is low we would like to break anonymity to give you a call to talk about this. We would recommend you seek further support from your GP, midwife or health visitor. We would also send a letter to your GP

explaining that we have concerns and that we have recommended that you seek further support.

If at any time point you feel that you would like further support with any aspect of pregnancy, childbirth, parenting or feeding, we would recommend that you contact your midwife, health visitor or GP. They will be able to signpost you to support services available through the NHS in your area.

Alternatively you can contact the National Childbirth Trust (NCT) helpline 0300 330 0700, who are able to offer practical and emotional support in all areas of pregnancy, birth and early parenthood.

What are the possible benefits of taking part?

While this study is unlikely to have a direct benefit to you as a participant, the information from this study will help inform considerations with other women who plan to breastfeed.

What happens when the research study stops?

This is intended to be a brief research study. After taking part in the study you will be offered the opportunity to participate in a further research study. This is an interview study investigating women's breastfeeding experience. If you take part in this study you will be under no obligation to take part in the second study.

We would like to share overall findings from the research with professionals and other groups for which the findings may be of interest. At no stage will we share an individual's data.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in part 2.

Will my taking part in the study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details are included in part 2.

This completes part 1. If the information in part 1 has interested you and you are considering participation, please read the additional information in part 2 before making any decision.

Part 2

What will happen if I don't want to carry on with the study?

If you decide to withdraw from the study you can do so at any time without giving a reason. We would like to include data collected up to the time you withdraw in our final analysis. If you would rather all data was withdrawn and destroyed we would be happy to do this.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researcher, Amy Shayle, who will do her best to answer questions; she can be

contacted via telephone (07899 666922) or email (a.shayle@uea.ac.uk). If you remain unhappy you can contact the researcher's supervisor, Dr Imogen Hobbis on email (i.hobbis@uea.ac.uk), or telephone (01603 593581).

Will my taking part in this study be kept confidential?

Data will be stored using coded participant numbers. Identifiable data (consent forms, contact details) will be stored separately from other information in a locked storage system. Electronic data will be stored on an encrypted storage system, accessible only by the researcher. Paper questionnaires will be stored in a locked filing system, accessible only by the researcher and supervisor. Data will be stored for 5 years following the completion of data collection at which point it will be disposed of securely.

Involvement of other professionals.

We will be asking you to consent to us making contact with your health visitor and GP and for the contact details of your health visitor and GP.

As explained above we would like to contact your health visitor or GP to check that they would be happy for us to send you follow-up measures. We will ask them to make a decision on whether it would be appropriate based on their knowledge of your pregnancy and subsequent health. We will not ask health visitors or GPs to give reasons for their decision.

If at any time your scores on the measures completed show us that you may be having difficulties with your mood or well-being we would like to contact you to discuss this further. In this instance we would need to break anonymity in order to access your contact details. We will contact you by telephone to discuss our concerns and recommend that you seek further support from your GP, midwife or health visitor. We will also send a letter to your GP to inform them that your responses on the measures indicate that you are experiencing low mood or poor psychological well-being and that we have made the recommendation to you that you contact them to seek further support.

What will happen with the results of the research study?

The study forms part of the researcher's Clinical Psychology Doctorate. As such the study will be presented as a doctoral thesis for assessment. In addition the researcher is aiming to publish the findings from the study in a peer reviewed journal.

A brief summary of findings will be sent to all participants following completion of the study for their information.

Who is organising and funding the research?

The study forms part of the researcher's doctoral studies and as such is funded by the University of East Anglia and organised in collaboration with NHS services in Cambridge, Huntingdon, Kings Lynn and Peterborough.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been

reviewed and given favourable opinion by NRES Committee East of England – Norfolk.

Further information and contact details

If you have any further questions regarding the research, or would like to speak further with the researcher please contact

Researcher

Amy Shayle

Trainee Clinical Psychologist

E-mail: a.shayle@uea.ac.uk

Tel: 07899 666922

Research Supervisor

Dr Imogen Hobbis

Clinical Tutor in Clinical Psychology

E-mail: I.Hobbis@uea.ac.uk

Tel: 01603 593581

Postal address for all researchers

Elizabeth Fry Building
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

Participant Identification Number:

Site number:

**CONSENT FORM**

Breastfeeding Expectations and Experience: Impact on postnatal

Researcher: Amy Shayle, Trainee Clinical Psychologist

Please initial in the box to indicate that you agree with the statements below and sign at the bottom.

1. I confirm that I have read and understand the participant information sheet (version 1.2; 15/04/2013) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. ☐
3. I agree to the researcher contacting my health visitor or GP prior to my being sent follow-up questionnaires and the reasons for this have been explained in the information sheet ☐
4. I agree to take part in the above study. ☐

Name of participant_____
Date_____
Signature_____
Name of researcher_____
Date_____
Signature

When completed 1 copy for participant and 1 copy for researcher file

APPENDIX C



BREASTFEEDING RESEARCH

Are you 30 – 40 weeks pregnant?

Is this your first baby?

Are you planning to breastfeed your baby?

Would you be interested in participating in a study about your breastfeeding expectations and experience?

We are looking for women to participate in a questionnaire study to find out more about women's expectations and experiences of breastfeeding and whether this impacts on their mood and well-being in the postnatal period.

Participants in the study will automatically be entered in to a prize draw for £50 Mothercare vouchers!!

Please contact Amy Shayle (Trainee Clinical Psychologist, University of East Anglia) for further details

E-mail: a.shayle@uea.ac.uk

Tel: 07899 666922

Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922	Amy Shayle Trainee Clinical Psychologist a.shayle@uea.ac.uk ; 07899 666922
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APPENDIX D



BREASTFEEDING RESEARCH

Are you 30 – 40 weeks pregnant?

Is this your first baby?

Are you planning to breastfeed your baby?

**Would you be interested in participating in a study about your
breastfeeding expectations and experience?**

We are looking for women to participate in a questionnaire study to find out more about women's expectations and experiences of breastfeeding and whether this impacts on their mood and well-being in the postnatal period.

**Participants in the study will automatically be entered in to a
prize draw for £50 Mothercare vouchers!!**

Please contact Amy Shayle (Trainee Clinical Psychologist, University of East Anglia) for further details
E-mail: a.shayle@uea.ac.uk

APPENDIX E

Participant number:

Site number:



PARTICIPANT CONTACT DETAILS

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being

Researcher: Amy Shayle, Trainee Clinical Psychologist

Name

Address

Preferred contact telephone number

E-mail address

GP name and address

Health visitor name and contact details

APPENDIX F

Participant number:
Site number:

**DEMOGRAPHIC QUESTIONNAIRE**

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being
Researcher: Amy Shayle, Trainee Clinical Psychologist

This questionnaire has been designed for use in this research. It was designed in order to give us background information about the women who have participated in the research.

It will be helpful if you can complete the information as fully as possible but if there are any questions that you are not happy completing please just leave them blank.

Date of birth _____

Marital status

Married	<input type="checkbox"/>
Co-habiting	<input type="checkbox"/>
In a relationship	<input type="checkbox"/>
Single	<input type="checkbox"/>
Divorced	<input type="checkbox"/>
Separated	<input type="checkbox"/>
Widowed	<input type="checkbox"/>
Other	<input type="checkbox"/>
Would rather not say	<input type="checkbox"/>

Education

No formal qualifications	<input type="checkbox"/>
GCSE's/O-levels (or equivalent)	<input type="checkbox"/>
Apprenticeship	<input type="checkbox"/>
A-levels (or equivalent)	<input type="checkbox"/>
Certificate of higher education	<input type="checkbox"/>
Diploma of higher education, foundation degree or HND	<input type="checkbox"/>
Bachelors degree (or equivalent)	<input type="checkbox"/>
Masters degree or postgraduate qualification (e.g. PGCE)	<input type="checkbox"/>
Doctoral level qualification	<input type="checkbox"/>

Please describe your ethnicity below

Occupation (or occupation prior to taking maternity leave)

What is your baby's Estimated Due Date (EDD)? _____
(We will use this information to calculate when to send you follow up measures)

THANK YOU

APPENDIX G

Participant number:

Site number:

EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS)

J.L. Cox, J.M. Holden, R. Sagovsky (1987)

Because you are expecting a baby, or recently had a baby, we would like to know how you are feeling. Please TICK the answer that comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

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

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

2. I have looked forward with enjoyment to things.

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

3. I have blamed myself unnecessarily when things went wrong.

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

4. I have been anxious or worried for no good reason.

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

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

Yes, quite a lot

Yes, sometimes

No, not much

No, not at all

6. Things have been getting on top of me.

Yes, most of the time I haven't been coping as well as usual
Yes, sometimes I haven't been coping as well as usual
No, most of the time I have coped quite well
No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping.

Yes, most of the time
Yes, sometimes
Not very often
No, not at all

8. I have felt sad or miserable

Yes, most of the time
Yes, quite often
Not very often
No, not at all

APPENDIX H

Participant number:**Site number:****The Warwick-Edinburgh****Mental Well-being Scale****(WEMWBS)****Below are some statements about feelings and thoughts.****Please tick the box that best describes your experience of each
over the last 2 weeks**

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

"Warwick Edinburgh Mental Well-Being Scale (WEMWBS)
 © NHS Health Scotland, University of Warwick and University of Edinburgh, 2006,
 all rights reserved."

APPENDIX I

Participant number:

Site number:

Breastfeeding Self-Efficacy – Short Form
Cindy Dennis (2006)

For each of the following statements, please choose the answer that best describes how confident you are with breastfeeding your new baby. Please mark your answer by circling the number that is closest to how you feel.

I will always	Not at all confident				Very confident
	1	2	3	4	5
Determine that my baby is getting enough milk					
Successfully cope with breastfeeding like I have with other challenging behaviours					
Breastfeed my baby without using formula as a supplement					
Ensure that my baby is properly latched on for the whole feeding					
Manage the breastfeeding situation to my satisfaction					
Manage to breastfeed even if my baby is crying					
Keep wanting to breastfeed					
Comfortably breastfeed with my family members present					
Be satisfied with the breastfeeding experience					
Deal with the fact that breastfeeding can be time consuming					
Finish feeding my baby on one breast before switching to the other breast					
Continue to breastfeed my baby for every feeding					
Manage to keep up with my baby's breastfeeding demands					
Tell when my baby is finished breastfeeding					

APPENDIX J

Participant number:

Site number:

EXPECTATIONS OF PARENTING
Harwood et al., (2007)

The statements below have been designed to capture your expectations of parenting. Please place a tick in the box that you feel indicates how much you agree with the statement, from 1 (strongly disagree) to 7 (strongly agree).

Infant Expectations

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I will enjoy my baby's company								
I will feel that my baby loves me								
My baby will be fun to play with								
Breastfeeding will make me feel close to my baby								
I will enjoy breastfeeding my baby								
Caring for a baby will be very difficult								
I will find breastfeeding uncomfortable								
I will be disturbed by feelings I have towards my baby								
I will resent being the main caretaker of my baby								

Partner Expectations

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
My partner will be able to take care of the baby when I go out								
I will feel satisfied with my partner's involvement in the daily care of the baby								
My partner will help out more with household chores								
My partner and I will have more fun together								
My partner will get on my nerves								
The arrival of the baby will cause difficulties in my relationship with my partner								
My partner will be less								

sensitive to my feelings								
My partner will show less attention to me								
I will feel more distant from my partner								
My partner will show too little attention to the baby								

Self Expectations

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I will feel proud to be a parent								
Being a parent will make me feel happy								
Being a parent will be the most important thing in my life								
Being a parent will fit into the life that I want to live								
My life will change for the better								
I will have a feeling of “fulfilment”								
Being a parent will make me feel satisfied								
Being a mother will make me feel fulfilled as a women								
Being a parent will be the best thing that ever happened to me								
I will return to my normal physical self within a few months of the birth of the baby								
Being a parent will increase my sense of independence								
There will not be enough money for non-essential items or services (for example going to the movies, buying CDs or gifts)								
I will feel more vulnerable to being criticised by others								
I will feel “edgy” or emotionally upset								
I will be less sexually responsive								
I will feel confined to the house								
Being a parent will make me feel frustrated								

I will have more periods of boredom								
My life will lack variety								
I will feel disappointed by parenthood								

Social Expectations

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I will receive emotional support from my family and friends								
I will be able to go to my family and friends for advice								
My family and friends will help me out after the baby is born								
I will form new friendships								
I will have an increased appreciation for family tradition								
My relationship with my relatives will be closer								
The demands of being a parent will restrict my social life								
There will be unwanted interference from other people in my life								
I will continue my social activities as usual								
I will feel that my friends without children will no longer understand me								
I will have less contact with friends								
My friends and colleagues will think that I am less interesting								
I will become too dependent on others when the baby is born								

Participant number:**Site number:**

EXPERIENCE OF PARENTING
Harwood et al., (2007)

The statements below have been designed to capture your expectations of parenting. Please place a tick in the box that you feel indicates how much you agree with the statement, from 1 (strongly disagree) to 7 (strongly agree).

Infant Experience

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I enjoy my baby's company								
I feel that my baby loves me								
My baby is fun to play with								
Breastfeeding made me feel close to my baby								
I enjoyed breastfeeding my baby								
Caring for a baby is very difficult								
I find breastfeeding uncomfortable								
I am disturbed by feelings I have towards my baby								
I resent being the main caretaker of my baby								

Partner Experience

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
My partner takes care of the baby when I go out								
I feel satisfied with my partner's involvement in the daily care of the baby								
My partner helps out more with household chores								
My partner and I have more fun together								
My partner gets on my nerves								
The arrival of the baby caused difficulties in my relationship with my partner								
My partner is less sensitive to my feelings								
My partner shows less attention to me								
I feel more distant from my partner								
My partner shows too little attention to the baby								

Self Experience

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I feel proud to be a parent								
Being a parent makes me feel happy								
Being a parent is the most important thing in my life								
Being a parent fits into the life that I want to live								
My life has changed for the better								
I have a feeling of “fulfilment”								
Being a parent makes me feel satisfied								
Being a mother makes me feel fulfilled as a women								
Being a parent is the best thing that ever happened to me								
I returned to my normal physical self within a few months of the birth of the baby								
Being a parent increased my sense of independence								
There was not be enough money for non-essential items or services (for example going to the movies, buying CDs or gifts)								
I feel more vulnerable to being criticised by others								
I feel “edgy” or emotionally upset								
I am less sexually responsive								
I feel confined to the house								
Being a parent makes me feel frustrated								
I have more periods of boredom								
My life lacks variety								
I feel disappointed by parenthood								

Social Experience

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I receive emotional support from my family and friends								
I am able to go to my family and friends for advice								
My family and friends help me out after the baby is born								
I formed new friendships								
I have an increased appreciation for family tradition								
My relationship with my relatives is be closer								
The demands of being a parent restricts my social life								
There is unwanted interference from other people in my life								
I continue my social activities as usual								
I feel that my friends without children no longer understand me								
I have less contact with friends								
My friends and colleagues think that I am less interesting								
I have become too dependent on others when the baby is born								

APPENDIX K**Participant number:****Site number:****EXPECTATION OF BREASTFEEDING**

I plan to exclusively breastfeed my child for _____

I would consider bottle feeding my child if I experienced difficulties Yes/No

The statements below have been designed to capture your expectations of breastfeeding. Please place a tick in the box that you feel indicates how much you agree with each statement, from 1 (strongly disagree) to 7 (strongly agree).

Self Expectations of Breastfeeding

	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	N/A
I will feel proud to breast feed.								
Breast feeding will make me feel happy.								
Breast feeding will be the most important thing in my life.								
Breast feeding will fit into the life that I want to live.								
My life will change for the better								
I will have a feeling of "fulfilment".								
Breastfeeding will make me feel satisfied.								
Breastfeeding will make me feel fulfilled as a woman.								
Breastfeeding will be the best thing that ever happened to me.								
I will return to my normal physical self within a few months of the birth of the baby.								
Breastfeeding will increase my sense of independence.								
Breast feeding will make me feel more vulnerable to being criticised by others.								

Breastfeeding will make me feel “edgy” or emotionally upset.								
Breastfeeding will make me less sexually responsive								
Breastfeeding will make me feel confined to the house.								
Breastfeeding will make me feel frustrated.								
Breastfeeding will make me have more periods of boredom.								
Breastfeeding will mean my life will lack variety.								
I will feel disappointed by breastfeeding.								

Social Expectations of Breastfeeding

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I will receive emotional support from my family and friends for breastfeeding.								
I will be able to go to my family and friends for breastfeeding advice.								
My family and friends will help me out while I am breastfeeding								
Breastfeeding will mean I will form new friendships								
Breastfeeding will increase my appreciation for family tradition.								
Breastfeeding will mean my relationship with my relatives will be closer.								
The demands of being a breastfeeding will restrict my social life.								
There will be unwanted interference from other people in my life with regards to my breastfeeding								

Breastfeeding will mean I will continue my social activities as usual.								
Breastfeeding will mean that I will feel that my friends without children no longer understand me.								
Breastfeeding will mean that I will have less contact with friends.								
My friends and colleagues will think that I am less interesting because I am breastfeeding								
I will become too dependent on others because I am breastfeeding.								

Participant number:**Site number:****EXPERIENCE OF BREASTFEEDING**

Please can you describe how your child was delivered?

Vaginal delivery, no complications
 Vaginal delivery, complications
 Assisted vaginal delivery e.g. forceps
 Planned caesarean section
 Emergency caesarean section
 Other

I breastfed my child exclusively for _____

I encountered difficulties with breastfeeding Yes/No

If you are comfortable to, please can you briefly describe your difficulties?

The statements below have been designed to capture your experience of breastfeeding. Please place a tick in the box that you feel indicates how much you agree with each statement, from 1 (strongly disagree) to 7 (strongly agree).

Self Experiences of Breastfeeding

	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	N/A
I felt proud to breast feed.								
Breast feeding made me feel happy.								
Breast feeding was the most important thing in my life.								
Breast feeding fit into the life that I wanted to live.								
My life changed for the better								
I had a feeling of "fulfilment".								
Breastfeeding made me feel satisfied.								
Breastfeeding made me feel fulfilled as a woman.								
Breastfeeding was the best thing that ever happened to me.								

I returned to my normal physical self within a few months of the birth of the baby.								
Breastfeeding increased my sense of independence.								
Breast feeding made me feel more vulnerable to being criticised by others.								
Breastfeeding made me feel “edgy” or emotionally upset.								
Breastfeeding made me feel less sexually responsive								
Breastfeeding made me feel confined to the house.								
Breastfeeding made me feel frustrated.								
Breastfeeding meant I had more periods of boredom.								
Breastfeeding meant my life lacked variety.								
I felt disappointed by breastfeeding.								

Social Experiences of Breastfeeding

	Strongly Disagree						Strongly Agree	N/A
	1	2	3	4	5	6	7	
I received emotional support from my family and friends for breastfeeding.								
I was able to go to my family and friends for breastfeeding advice.								
My family and friends helped me out while I was breastfeeding								
Breastfeeding meant that I formed new friendships								
Breastfeeding increased my appreciation for family tradition.								
Breastfeeding meant my relationship with my relatives was closer.								
The demands of breastfeeding restricted my social life.								
There was unwanted interference from other								

people in my life with regards to my breastfeeding								
Breastfeeding meant I could continue my social activities as usual.								
Breastfeeding meant that I felt that my friends without children no longer understood me.								
Breastfeeding meant that I had less contact with friends.								
My friends and colleagues thought that I was less interesting because I was breastfeeding								
I became too dependent on others because I was breastfeeding.								

APPENDIX L



University of East Anglia

Norwich Medical School
Department of Psychological Sciences
Norwich, NR4 7TJ

Researcher: Amy Shayle
Telephone

07899 666922

Email
a.shayle@UEA.ac.uk

Dear <insert name of participant>

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being

We are contacting you regarding the above named study which you consented to participate in earlier this year.

We understand that you have now given birth to your baby and we would like to offer our congratulations to you.

As we explained previously at the point of recruitment, the study you are participating in is investigating women's expectations and experience of breastfeeding and therefore requires participants to complete measures during the prenatal and postnatal periods.

As around 12 weeks have now passed since you had your baby could we please ask you to complete the enclosed questionnaires, which comprise the second stage of the study, and return them in the enclosed envelope?

What happens next?

At this time we would like to invite you to participate in a further study being conducted by another trainee clinical psychologist at the University of East Anglia. This study involves a one-to-one interview where a female researcher will ask you in more detail about your experience of breastfeeding and your general well-being.

If you would like further details of this study please indicate by ticking the enclosed form and returning with your completed questionnaires. A researcher will then contact you by telephone to discuss this study further and provide you with further information.

If you have any further questions about this research please do not hesitate to contact us. We look forward to receiving your completed questionnaires soon and entering your name into the prize draw for £50 Mothercare vouchers.

Yours sincerely,
Amy Shayle
Trainee Clinical Psychologist

APPENDIX M



**Norwich Medical School
Department of Psychological Sciences
Norwich, NR4 7TJ**

Researcher: Amy Shayle
Telephone
07899 666922
Email
a.shayle@UEA.ac.uk

<insert date>

Dear <Insert name of GP>

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being

I am writing to you regarding one of your patients, <insert name>.

<insert name> has consented to participate in the above named study being conducted by researcher from the University of East Anglia as part of their Clinical Psychology Doctorate.

As part of the study, participants are asked to complete questionnaires during the prenatal and postnatal period which give an indication of their mood and well-being.

<insert name> has completed the Edinburgh Postnatal Depression Scale and her total score on this on the <insert date> was <insert score>. Research has found that scores above 13 on this measure are an indication of probable depression for which further support may be helpful.

<insert name> completed the Warwick-Edinburgh Mental Well-being Scale and her total score on this on the <insert date> was <insert score>. It has been found that scores below 32 are an indication of poor mental well-being. It is recommended that those that score below this cut-off seek support to help improve their well-being. (paragraph to delete as appropriate)

We have contacted <insert name> to explain that her scores indicate that she may be experiencing difficulties and we have encouraged her to seek further support from yourself, her midwife or health visitor. She is aware that we are sending this letter to you as well to inform you of our findings.

If you have any further questions regarding this please do not hesitate to contact us.

Yours sincerely

Amy Shayle Trainee Clinical Psychologist

APPENDIX N



**Norwich Medical School
Department of Psychological Science
Norwich, NR4 7TJ**

Researcher: Amy Shayle

Telephone

07899 666922

Email

a.shayle@UEA.ac.uk

<insert date>

Dear <insert name of GP>

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being

This letter is to inform you that one of your patients, <insert name>, has consented to participate in the above named study that I am conducting at the University of East Anglia as part of my Clinical Psychology Doctorate.

The study that your patient is participating in comprises two stages: a battery of questionnaires which she has completed prenatally, and further questionnaires which they will be sent at 12 weeks following the Estimated Due Date (EDD) she has provided.

At this stage this letter is only to inform you of their participation. However, we will be sending another letter to you at around 10 weeks following their EDD. This will ask you to indicate whether, in your opinion, it would be appropriate for us to contact <insert name> with follow-up measures. It will ask you to consider your knowledge of them during their pregnancy and since the birth. This is to ensure we do not contact participants where this would not be appropriate and may cause distress. This will be a simple tick box form to indicate yes or no, we will not ask for details regarding your decision.

If you have any further questions about the research at this time, please contact me using the details above.

I look forward to contacting you again soon.

With many thanks for your support with this research

Yours sincerely,

Amy Shayle

Trainee Clinical Psychologist

APPENDIX O



**Norwich Medical School
Department of Psychological Sciences
Norwich, NR4 7TJ**

Researcher: Amy Shayle
Telephone
07899 666922
Email
a.shayle@UEA.ac.uk

<insert date>

Dear <Insert name of GP>

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being

I am writing to you regarding one of your patients, <insert name>.

As you are aware, <insert name> has consented to participate in the above named study being conducted by researcher from the University of East Anglia as part of their Clinical Psychology Doctorate.

As part of the study, participants are asked to complete questionnaires during the prenatal and postnatal period which give an indication of their mood and well-being.

<insert name> has completed the Edinburgh Postnatal Depression Scale and her total score on this on the <insert date> was <insert score>. Research has found that scores above 13 on this measure are an indication of probable depression for which further support may be helpful.

<insert name> completed the Warwick-Edinburgh Mental Well-being Scale and her total score on this on the <insert date> was <insert score>. It has been found that scores below 32 are an indication of poor mental well-being. It is recommended that those that score below this cut-off seek support to help improve their well-being. (paragraph to delete as appropriate)

We have contacted <insert name> to explain that her scores indicate that she may be experiencing difficulties and we have encouraged her to seek further support from yourself, her midwife or health visitor. She is aware that we are sending this letter to you as well to inform you of our findings.

If you have any further questions regarding this please do not hesitate to contact us.

Yours sincerely

Amy Shayle Trainee Clinical Psychologist

APPENDIX P

Participant number:

Site number:



Please tick the below the statement that applies to you and return with your completed questionnaires in the enclosed envelope.

I would be interested in participating in a further research study where I will have an interview with a female researcher (Mariam Errington, Trainee Clinical Psychologist) will ask about my experience of breastfeeding and general postnatal well-being. I understand that a researcher will contact me by telephone to discuss this research and my participation further.

☐

I would **NOT** be interested in participating in the further research study. I understand that returning my completed questionnaires will conclude my participation in the study.

☐

APPENDIX Q



Health Research Authority

NRES Committee East of England - Norfolk

Nottingham NCR Centre

The Old Chapel

Royal Standard Place

Nottingham

NG1 6PS

Telephone: 0115 853 4634

16 April 2014

Mrs Amy Shayle
5 Copse Way
Cambridge
CB2 9RL

Dear Mrs Shayle

Study title:	Breastfeeding expectations and experience. Impact on postnatal mood and well-being.
REC reference:	14/EE/0158
IRAS project ID:	147724

Thank you for your letter of 15 April 2014, responding to the Proportionate Review Sub-Committee's request for changes to the documentation for the above study.

The revised documentation has been reviewed and approved by the sub-committee.

We plan to publish your research summary wording for the above study on the NRES website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to withhold permission to publish, please contact the REC Manager, Ms Tracy Leavelley, NRESCommittee.EastofEngland.Norfolk@nhs.uk

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the AH/UK/IRAS office prior to the start of the study (see 'Conditions of the favourable opinion' below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which can be made available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).|

Approved documents

The documents reviewed and approved by the Committee are:

Document	Version	Date
Advertisement	Recruitment Poster version 1.1	11 December 2013
Covering Letter	Signed by Amy Shayle	03 April 2014
Evidence of insurance or indemnity	Zurich Municipal	22 May 2013
GP/Consultant Information Sheets	GP Prenatal cause for concern	11 December 2013
GP/Consultant Information Sheets	GP letter informing of participation version 1.1	11 December 2013
GP/Consultant Information Sheets	GP postnatal cause for concern version 1.1	11 December 2013
GP/Consultant Information Sheets	Health visitor/GP letter postnatal measures version 1.1	11 December 2013
Investigator CV	Amy Shayle	
Investigator CV	Imogen Hobbis	
Letter of invitation to participant	Cover Letter Postnatal Measures version 1.1	11 December 2013
Participant Consent Form	1.1	11 December 2013
Participant Information Sheet	1.2	15 April 2013
Protocol	1.1	10 January 2014
Questionnaire: Edinburgh Postnatal Depression Scale		
Questionnaire: Warwick Edinburgh Mental Well-Being Scale		
Questionnaire: Breastfeeding self-efficacy - Short Form		
Questionnaire: Expectations of Parenting		
Questionnaire: Experience of Parenting		
Questionnaire: Demographic Questionnaire	1.1	11 December 2013
Questionnaire: Participant Contact Details	1.1	11 December 2013
Questionnaire: Breastfeeding Expectation Measure	1.1	11 December 2013
Questionnaire: Breastfeeding Experience Measure	1.1	11 December 2013
Questionnaire: Notification of interest qualitative research	1.1	11 December 2013
REC application	147754/589895/1/646	25 March 2014
Referees or other scientific critique report	Thesis Proposal Pass Document	27 March 2013
Response to Request for Further Information	Letter Amy Shayle	15 April 2014

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical reviewReporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

14/EE/0158**Please quote this number on all correspondence**

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

With the Committee's best wishes for the success of this project.

Yours sincerely



Dr Michael Sheldon
Chair

Email: NRESCommittee.Eastofengland-Norfolk@nhs.net

Enclosures: *"After ethical review – guidance for researchers"*

Copy to: *Mrs Sue Steel*

*Mr Stephen Kelleher, Cambridge University Hospitals NHS
Foundation Trust*

APPENDIX R

**NRES Committee East of England - Norfolk**

The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS
Tel: 01158839390

26 August 2014

Mrs Amy Shayle
6 Cope Way
Cambridge
CB2 8BJ

Dear Mrs Shayle

Study title: Breastfeeding expectations and experience. Impact on postnatal mood and well-being.
REC reference: 14/EE/0158
Amendment number: SA#01
Amendment date: 05 August 2014
IRAS project ID: 147754

The above amendment was reviewed on 18 August 2014 by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Copies of advertisement materials for research participants [Recruitment poster online]	1.1	22 July 2014
Evidence of Sponsor Insurance or Indemnity (non NHS Sponsors only) [Zurich municipal - Professional negligence insurance]		09 May 2014
Evidence of Sponsor Insurance or Indemnity (non NHS Sponsors only) [Zurich Municipal - Public liability insurance]		09 May 2014
Notice of Substantial Amendment (non-CTIMP) [147754/648838/13/438/31571]		05 August 2014
Research protocol or project proposal [Changes highlighted]	1.2	22 July 2014

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

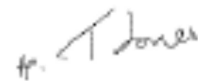
Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

14/EE/0158:	Please quote this number on all correspondence
-------------	--

Yours sincerely



Dr Michael Sheldon
Chair

E-mail: NRESCommittee.EastofEngland-Norfolk@nhs.net

Enclosures: List of names and professions of members who took part in the review

*Copy to: Mr Stephen Kelleher, Cambridge University Hospitals NHS Foundation Trust
Mrs Susan Steel*

APPENDIX S

Cambridge University Hospitals 
NHS Foundation Trust

Research and Development Department

R&D ref: A093293

04/06/2014

Mrs Julie Taylor
Box 230
Addenbrooke's Hospital

Box 277
Addenbrooke's Hospital
Hills Road
Cambridge
CB2 0QQ

Direct Dial: 01223 348492 Ext: 58492

Switchboard: 01223 245151

E-mail: katrina.galley@addenbrookes.nhs.ukr&denquiries@addenbrookes.nhs.ukwww.addenbrookes.org.uk

Dear Mrs Taylor

Re: Breastfeeding expectations and experience. Impact on postnatal mood and well-being.

In accordance with the Department of Health's Research Governance Framework for Health and Social Care, all research projects taking place within the Trust must receive a favourable opinion from an ethics committee and approval from the Department of Research and Development (R&D) prior to commencement.

I am pleased to confirm that Cambridge University Hospitals NHS Foundation Trust has reviewed the above study and agree to act as a **Participant Identification Centre (PIC)** referring potential participants to the relevant research teams based at University of East Anglia.

Please note that as a PIC the Trust does not provide indemnity for this study.

Sponsor: University of East Anglia

Funder: PhD study award

End date: 15/01/2015

Protocol: version 1.1, dated 10/01/2014

The project must follow the agreed protocol and be conducted in accordance with all Trust Policies and Procedures especially those relating to research and data management.

Please ensure that you are aware of your responsibilities in relation to The Data Protection Act 1998, NHS Confidentiality Code of Practice, NHS Caldicott Report and Caldicott Guardians, the Human Tissue Act 2004, Good Clinical Practice, the NHS Research Governance Framework for Health and Social Care, Second Edition April 2005 and any further legislation released during the time of this study.

Members of the research team must have appropriate substantive or honorary contracts with the Trust prior to the study commencing. Any additional researchers who join the study at a later stage must also hold a suitable contract.

Innovation and excellence in health and care

Addenbrooke's Hospital | Rosie Hospital

NIHR – Cambridge Biomedical Research Centre | Academic Health Science Centre – Cambridge University Health Partners

VS Feb 09

If the project is a clinical trial under the European Union Clinical Trials Directive the following must also be complied with:

- the EU Directive on Clinical Trials (Directive 2001/20/EC) and UK's implementation of the Directive: The Medicines for Human Use (Clinical Trials) Regulations 2004;
- the EU Directive on Principles and Guidelines for Good Clinical Practice (EU Commission Directive 2005/28/EC); and UK's implementation of the Directive: The Medicines for Human Use (Clinical Trials) Amendment Regulations 2006;

Amendments

Please ensure that you submit a copy of any amendments made to this study to the R&D Department.

Annual Report

It is obligatory that an annual report is submitted by the Chief Investigator to the research ethics committee, and we ask that a copy is sent to the R&D Department. The yearly period commences from the date of receiving a favourable opinion from the ethics committee.

Please refer to our website www.cuh.org.uk/research for all information relating to R&D including honorary contract forms, policies and procedures and data protection.

Should you require any further information please do not hesitate to contact us.

Yours sincerely



Louise Stockley
Research Governance Manager

V5 Feb 09

Hinchingbrooke Health Care

NHS Trust

Hinchingbrooke Park
Huntingdon
Cambridgeshire
PE29 6NT
Tel: 01480 847512

Mrs Amy Shayle
6 Copse Way
Cambridge CB2 8BJ

21st May 2014

Dear Amy

Re: Breastfeeding Expectations and Experience
REC No: 14/EE/0158
R&D No: 001/MAY14

I am writing to confirm that the above project has been reviewed by the Hinchingbrooke R&D committee and has been approved to proceed as a Patient Identification Centre (PIC). Documents reviewed were those reviewed by the Research Ethics Committee (REC) and are listed in the REC letter dated 16th April 2014. Approval is subject to compliance within the research governance framework.

You are reminded that the study must follow the approved protocol. Please note that any protocol amendments or changes to information provided in your original application form must be submitted to the R&D Steering Group for further review and approval.

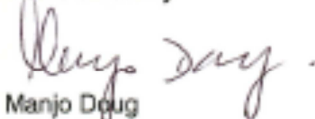
You are also reminded that it is your responsibility to comply with the law and appropriate guidelines relating to the Data Protection Act 1984, Health and Safety Act 1974 and the Caldicott guidelines. You are also asked to comply, in a timely manner, with project monitoring and auditing requirements of the Trust and to notify the R&D Steering Group of any serious adverse events, incidents or near misses involving participants or staff involved in this research project.

It should be noted that data from non medicinal studies will be archived for 7 years and then destroyed and medicinal studies will be archived for 15 years and then destroyed, unless otherwise negotiated with the Trust.

Principle Investigators will be asked to submit to R&D monthly accrual rates or nil records for each study which will be used to complete annual accrual reports.

Thank you for your co-operation.

Yours sincerely



Manjo Doug
R & D Manager

Peterborough and Stamford Hospitals
NHS Foundation Trust



Direct dial: 01733 677914/ 7919/ 7912
E-mail: R&DDepartment@pbh-tr.nhs.uk

Peterborough City Hospital
Edith Cavell Campus
Bretton Gate
Peterborough
PE3 9GZ

Date 11th July 2014

Tel: 01733 678000
(If DDI prefix extension number with 67)

Amy Shayle
Trainee Clinical Psychologist
Cambridge and Peterborough NHS Foundation Trust
Elizabeth House
Fulbourn Hospital
Cambridge
CB21 5EF

Dear Amy,

Ref: R&D/2014/24
Title: Breastfeeding Expectations and Experience.
REC Ref: 14/EE/0158
Sponsor: University of East Anglia

With reference to your completed research application, I am pleased to inform you that the **main research proposal** has been approved by the Peterborough and Stamford Hospitals NHS Foundation Trust.

This approval is subject to compliance with the Research Governance Framework and the Peterborough and Stamford Hospitals NHS Foundation Trust Research Governance Policy and Procedures. Copies of both documents can be found on the R&D intranet site.

You are reminded that the study must follow the approved protocol. Please note that any protocol amendments or changes to information provided in your original application form must be submitted to the R&D Committee for further review and approval.

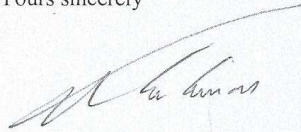
You are also reminded that it is your responsibility to comply with the Law and appropriate guidelines relating to the Data Protection Act 1984 and Health and Safety Act 1974.

You are asked to comply, in a timely manner, with project monitoring and auditing requirements of the Trust and to notify the Trust Research & Development Committee of any unexpected serious adverse events/reactions, incidents or near misses involving participants or staff involved in this research project. You are also required to inform the R&D Department when key milestones are reached in the study (Initiation visit performed, closed-in follow-up, closed to follow-up, and close out underway) and any key changes in personnel.

www.peterboroughandstamford.nhs.uk

Thank you for your co-operation.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Dr M Sivakumaran', with a long, sweeping horizontal line extending from the end of the signature.

Dr M Sivakumaran
Chairman
R&D Committee

APPENDIX T



**Norwich Medical School
Department of Psychological Sciences
Norwich, NR4 7TJ**

Researcher: Amy Shayle

Telephone

07899 666922

Email

a.shayle@UEA.ac.uk

<insert date>

Dear <Insert name of health visitor or GP>

Breastfeeding Expectations and Experience: Impact on postnatal mood and well-being

We wrote to you on <insert date> regarding one of your patient's <insert name> participation in the above named research study being conducted by researchers from the University of East Anglia as part of our Clinical Psychology Doctorate.

Participation in the study comprises two separate stages: questionnaires completed during the prenatal and postnatal periods.

We understand that around 10 weeks have now passed since the Expected Delivery Date (EDD) for <insert participant name>. We are now looking to send them the postnatal set of questionnaires.

Please could we ask you to complete the enclosed form indicating whether you feel it is appropriate for us to make contact with <insert name> based on your records of their pregnancy, birth and their baby's health in the postnatal period. We have enclosed an addressed envelope for the form to be returned in.

If you have any concerns about <insert participant name>'s participation then we will not contact them.

We appreciate your help with this matter. If you have any further questions regarding this please do not hesitate to contact us.

Yours sincerely

Amy Shayle Trainee Clinical Psychologist
Participant number:

Participant number:

Site number:

Postnatal Measures - Contact

Please indicate as appropriate, sign below and return in the enclosed envelope

I feel that it would be appropriate for you to contact <insert name of patient> based on the information I have available regarding their pregnancy, birth and the postnatal health of mother and baby.

☐

I feel that it would **NOT** be appropriate for you to contact <insert name of patient> based on the information I have available regarding their pregnancy, birth and the postnatal health of mother and baby.

☐

Name

Signed

Designation

Date

APPENDIX U

‘No initial milk production and hungry baby, resulted in using formula from day 2. For 8 weeks expressed milk and fed baby with formula’

‘My baby got thrush in her mouth so passed it on to me so I became very sore and had to stop breastfeeding’

‘My father in law died a week after my son was born which meant my husband had to go away for three weeks causing quite a lot of stress making breastfeeding hard’

‘I have hypoplastic/tubular breasts and had cosmetic surgery as one did not develop. Baby had slow initial weight gain, mood and behaviour at breast suggested not getting enough from me. As a newborn he would hardly suck/swallow and go 5 hours without a feed (he probably didn’t have enough energy). Have started supplementing and weight gain normal and he’s happy post feed’

‘I ended up expressing for 7 weeks. I felt I did not get the help with breastfeeding when I got back from hospital. My baby was hungry and just bruised and chewed my breasts. I felt a lot of pressure was placed on breastfeeding’.

‘In the first 6-8 weeks I developed sore cracked nipples which made breastfeeding extremely painful, and also got mastitis but I continued to breastfeed and now have no discomfort at all’

‘As I was diabetic I was forced to give baby top up bottles in hospital for her sugars to be checked. Fighting to breastfeed ever since and now exclusively breastfeeding, also had mastitis’

‘It was difficult for the first week or two. Initially I struggled with her latching on, then I struggled with incredibly sore nipples, but since no problems’

‘High birth weight so needed formula top ups (agreed with midwife) to satisfy hunger while waiting for milk to come in and to ‘flush out’ system as had jaundice. Top ups small. Does now have occasional top up formula, some days none, some days one, occasionally 2’.

‘I had a deep fissure on left nipple which was pulled open on feeding from that side causing a lot of pain. Eventually prescribed Canestan as was diagnosed by Dr as having a fungal infection. Initially had bleeding nipples from not latching on properly’.

‘Severe cracked nipples and mastitis, 4 times so far!’

‘Baby would not latch on, later discovered baby was tongue tied. Baby had tongue tie snipped successfully but refused the breast and was very distressed each time I tried to feed him. I expressed for 2 weeks then got an infection. Took antibiotics which were not

conducive to breastfeeding. Did not find any help in getting baby to latch on despite attempts to seek help and was disappointed by this'

'I breastfed from the start till 7 weeks but always topped up with formula due to jaundice and low baby weight. I stopped breastfeeding after continued pain due to high arched palate and posterior tongue tie'.

'Initial latching difficulties – lack of support from hospital. Thankfully my mum spent an afternoon helping me latch my baby on and hold in different positions (left hospital 12 hours after birth)'

'Tongue tie, sore cracked nipples, strong let down, difficulty maintaining latch (even after tongue tie divided), milk everywhere!!'

'Baby had difficulty latching, posterior tongue tie diagnosed and divided at 10 weeks, low supply of milk as a result. Encouraged to top up at 6 weeks, felt unsupported by HV and GP'

'Anaemic, therefore didn't make enough milk so had to supplement with formula'

'Baby doesn't latch on without breastsheilds. Tongue tie was snipped. I had mastitis'

‘Initial difficulties with latch, a lot of pressure to establish breastfeeding quickly. Baby had jaundice and I had bleeding painful nipples. Lactation consultant diagnosed tongue tie at 10 weeks. Division done privately at 12 weeks. However, due to nipple pain/soreness had to supplement with formula to aid healing. Returned to full breastfeeding but supply had dropped, baby was not happy alternating between bottle and breast so moved to fully bottle feeding’

‘Baby wouldn’t latch on and I got very upset when I tried to breastfeed my baby’

‘Baby did not gain sufficient weight, introduced 2 bottles and eventually baby chose bottles rather than breast. Otherwise no issues’