



**Examining Maternal Anxiety and Infant Feeding from Pregnancy to
Parenthood**

By

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(Volume 1 of 2)

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DEDICATION

I dedicate this thesis to my children; Sophie, Lucy, and Thomas. You were my inspiration to start these pages and my motivation to finish them. Dream big my little ones, and never let your circumstances define you. I will be behind you every step of the way.

Love always,

Mum

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LIST OF DEFINITIONS

UNICEF (2008) and the World Health Organisation (2015) provide the following definitions of infant feeding to be used in research. These definitions are used throughout the thesis:

Breastfeeding initiation: That a breast feed or breast milk is given as the baby's first feed.

Exclusive breastfeeding: The infant has received only breast milk from his/her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

Predominant breastfeeding: The infant's predominant source of nourishment has been breast milk. However, the infant may also have received water and water-based drinks (sweetened and flavoured water, teas, infusions etc.); fruit juice; oral rehydration salts solution; drop and syrup forms of vitamins, minerals and medicines; and ritual fluids (in limited quantities). With the exception of fruit juice and sugar-water, no food-based fluid is allowed under this definition.

Full breastfeeding: This definition includes both exclusive breastfeeding and predominant breastfeeding.

Partial breastfeeding: Partial breastfeeding refers to a situation where the baby is receiving some breastfeeds but is also being given other food or food-based fluids, such as formula milk or weaning foods.

Breastfeeding: The child is receiving breast milk, either directly from the breast or expressed. This definition may include exclusive, predominant and partial breastfeeding.

Bottle feeding: The child has received liquid or semi-solid food from a bottle with a nipple/teat. This term applies irrespective of the nature of the liquid or semi-liquid.

Artificial feeding: The baby who is artificially fed receives no breast milk at all.

Formula Feeding: The baby is fed on infant formula, with or without complementary (weaning) foods.

Supplementary feeding: Supplementary feeds are feeds given to a baby under **six** months old to supplement his intake of breast milk, where this is insufficient.

Complementary feeding: Complementary feeding means the introduction of other foods and drinks after six months of age. These foods are in addition to an adequate intake of breastmilk

ABSTRACT

This thesis uses an exploratory sequential design to examine the relationship between maternal anxiety and infant feeding from pregnancy to parenthood. Chapter 1 provides an overview of the thesis and a contextual framework of breastfeeding behaviour. Chapter 2 systematically reviews the literature examining prenatal anxiety and infant feeding, while Chapter 3 systematically reviews the literature examining postpartum anxiety and infant feeding. Chapter 4 uses qualitative, longitudinal methods to explore the impact of pregnancy-specific anxiety on prenatal infant feeding intentions and subsequent postpartum breastfeeding behaviour. Chapters 5 and 6 examine the emotional and practical experiences of breastfeeding and formula feeding women to identify potentially influencing mechanisms within the relationship. Chapter 7 reports the development and validation of a new measure of postpartum-specific anxiety. Chapter 8 then examines whether this measure is a more effective predictor of infant feeding outcomes than a general measure of anxiety. First, the findings reveal that there is insufficient evidence to make firm conclusions regarding the relationship between prenatal anxiety and infant feeding outcomes. However, the thesis finds convincing evidence for the relationship between postpartum anxiety and diverse infant feeding outcomes and behaviours. Second, a qualitative, longitudinal design suggests that pregnancy-specific anxiety may strengthen breastfeeding intentions in pregnancy, but this does not translate into improved breastfeeding outcomes postpartum. Third, the findings provide consistent evidence that failure to adhere to current infant feeding recommendations elicits negative emotional and practical experiences, which may potentially influence the relationship. Finally, the findings reveal new evidence for the efficacy of a validated measure of postpartum specific anxiety, relative to general measures of anxiety and depression, in predicting infant feeding outcomes and behaviours. Collectively, this thesis demonstrates that maternal anxiety, particularly in the months following childbirth is; like depression; an individual-level determinant of breastfeeding. Policy makers should raise awareness of this under-recognised psychological determinant, and distinguish it from depression, and anxiety occurring at other times of life.

DECLARATION

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University or Institute of Learning for the award of any other degree.

Signature: *Miss V.M.Fallon*

CONTRIBUTORS STATEMENT

In accordance with the University of Liverpool's guidelines for submission of thesis by published paper, this thesis conforms to an 'article format' in which Chapters 2, 3, 5, 6, and 7 are submitted as published papers, Chapter 4 is being prepared for resubmission, and Chapter 8 is in preparation for submission. Each chapter is a discrete article and as a result, some literature is replicated. The first and final chapters present an overview and discussion of the field and the research undertaken. In addition, chapter forewords are provided at the beginning of each empirical chapter which state the purpose, aims and justification of the research undertaken and how the work links to the preceding chapters. The published work is referred to using the journal references and Chapter numbers throughout the thesis.

Empirical work in peer reviewed publication form

Chapter 2 is published in Journal of Human Lactation as:

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The author contributions are as follows:

Miss Fallon conceptualised and designed the protocol, conducted comprehensive literature searches and three stages of article screening (titles, abstracts, and full text), independently conducted quality assessment and data extraction of included studies, narratively synthesised the data, drafted the initial manuscript, and approved the final manuscript as submitted. Dr Bennett critically reviewed the protocol, managed discrepancies in the quality assessment and data extraction process, reviewed and revised the manuscript, and approved the final manuscript as submitted. Dr Harrold critically reviewed the protocol, independently conducted quality assessment and data extraction of included studies, reviewed and revised the manuscript, and approved the final manuscript as submitted.

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Miss Fallon and Miss Komninou conceptualised and designed the study, collected the data, and performed the data analysis and interpretation.

Miss Fallon independently drafted the initial manuscript, reviewed and revised the manuscript, and approved the final manuscript as submitted. Miss Komninou reviewed and revised the manuscript and approved the final manuscript as submitted. Dr Bennett, Professor Halford, and Dr Harrold reviewed and revised the manuscript, and approved the final manuscript as submitted.

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Empirical work in preparation for resubmission

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The manuscript was rejected on October 17th 2015. Reviewer's comments have been addressed in the Chapter. It was subsequently presented as a paper at Maternal and Infant Nutrition and Nurture conference (2015). It is now being prepared for resubmission to Journal of Reproductive and Infant Psychology.

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Miss Fallon conceptualised and designed all waves of the study, collected the data, and performed the data analysis and interpretation. Miss Fallon independently drafted the initial manuscript, reviewed and revised the manuscript, and approved the final manuscript. Professor Halford, Dr Bennett, and Dr Harrold reviewed and revised the manuscript and approved the final manuscript.

Chapter 1

Overview of the thesis

1.1 Statement of the problem

1.1.1 Breastfeeding

The World Health Organisation (WHO) and UNICEF recommend initiation of breastfeeding within the first hour after birth, exclusive breastfeeding for the first six months, and continued breastfeeding for two years or more (UNICEF, 2015; WHO, 2015). If every mother-infant dyad followed these recommendations, around 800,000 lives would be saved each year (Black et al., 2013). The multi-faceted advantages of breastfeeding for both mother and infant are well established. The first paper in the recent Lancet Breastfeeding Series (Victora et al., 2016) provides a comprehensive summary of the short-term and long-term associations between breastfeeding and health outcomes in infants or mothers using data from 28 high-quality systematic reviews and meta-analyses.

In relation to the infant, those who are breastfed for longer durations have a reduced risk of mortality (Holman et al., 2006; Ip et al., 2007), diarrhoea, respiratory infections, and poor oral health when compared to those who are breastfed for shorter periods, or not breastfed at all (Horta & Victora, 2013; Peres, Cascaes, Nascimento, & Victora, 2015). These inequalities persist until later in life (Victora et al., 2016). Protective longer-term effects also include a reduction in the risk of childhood cancers and obesity, and an increase in intelligence (Amitay & Keinan-Boker, 2016; Horta, Mola, & Victora, 2015a, 2015b). In terms of maternal health, initiation of breastfeeding immediately after delivery aids the third stage of delivery and reduces postpartum bleeding (Saxton, Fahy, & Hastie, 2016). Advantages of longer breastfeeding duration also include longer birth intervals and a reduced risk of cancer (breast and ovarian), and diabetes later in life (Aune, Norat, Romundstad, & Vatten, 2014; Chowdhury et al., 2015). Many of these maternal and infant health benefits are magnified with breastfeeding predominance or exclusivity indicating a dose-response relationship (Victora et al., 2016).

To achieve these benefits for all mothers and infants, an ongoing global strategy for breastfeeding protection, promotion, and support has been in position for over 25 years (WHO & UNICEF, 1990). The principal aim of the Global Strategy for Infant and Young Child Feeding (GSIYCF) is to create a global environment that empowers women to breastfeed exclusively for the first six months and continue to breastfeed for two years or more (WHO, 2016). The Baby Friendly Hospital Initiative (BFHI) was launched by WHO and UNICEF in 1991 to assist in the implementation of this aim by improving breastfeeding initiation, duration and exclusivity within hospitals and maternity units. To receive “Baby Friendly” accreditation, maternity units must restrict the use of breast milk substitutes in accordance with the International Code of Marketing of Breast-milk Substitutes and implement ten specific interventions to support successful breastfeeding (UNICEF, 2013). Since the inception of BFHI, more than 15,000 facilities in 134 countries have been awarded Baby-Friendly status (UNICEF, 2016b).

Despite these extensive efforts, globally less than 40% of infants aged less than six months of age are exclusively breastfed (Victora et al., 2016). Higher-income countries have even shorter exclusive breastfeeding durations¹ and the UK has the lowest rates in the world (less than one percent at six months) (McAndrew et al., 2012; Victora et al., 2016). This leaves breastfeeding rates far below international targets and the large majority of infants still receiving some formula milk in the first six months of life. In terms of policy and investment, commitment to breastfeeding is in “a state of fatigue” (Victora et al., 2016, p.491). Almost all women are physiologically capable of breastfeeding (except approximately two percent with limiting medical disorders), yet for the majority of women the enabling environment necessary for successful breastfeeding continues to elude them (Brown, Raynor, & Lee, 2011; Neifert & Bunik, 2013). Promotional efforts have been criticised for failing to improve breastfeeding statistics, with some claiming that global policy goals are idealistic (Hoddinott, Craig, Britten, & McInnes, 2012) which may actually

¹ E.g. Sub-optimal exclusive breastfeeding statistics can also be observed in the United States (16%), Canada (25%), and Australia (15%) (Australian Institute of Health and Welfare 2011; Health Canada 2011; Centers for Disease Control and Prevention 2015).

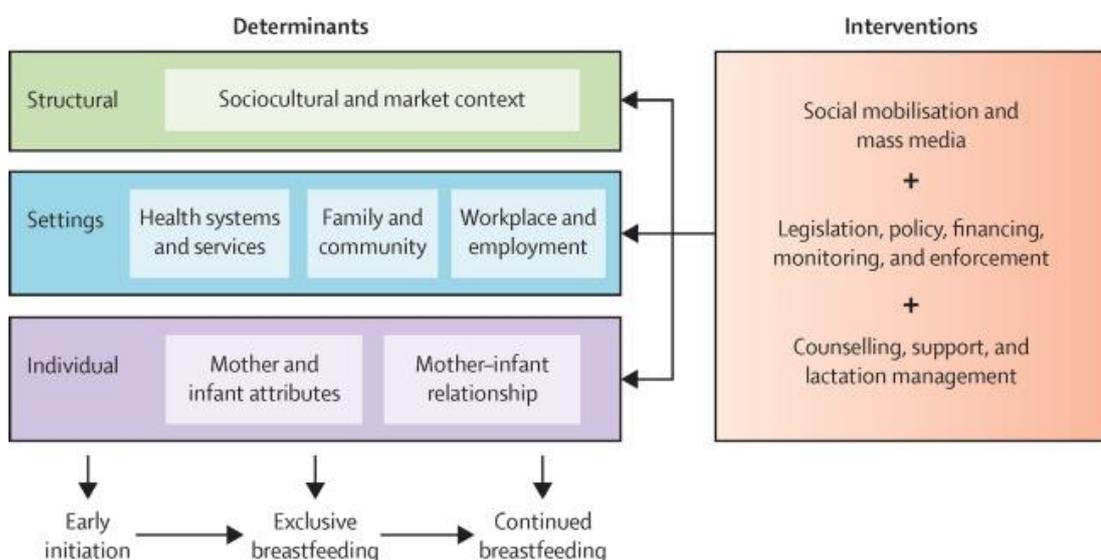
be counterproductive to maternal and infant wellbeing (Brown, 2016; Knaak, 2006, 2010; Lee, 2007; Thomson, Ebisch-Burton, & Flacking, 2015).

In order to understand the lack of uptake to current recommendations, and whether a different approach is needed to tackle low breastfeeding rates, it is crucial to understand the multifaceted determinants of breastfeeding behaviour. This allows isolation of modifiable factors and a comprehensive evidence-base for targeted interventions.

1.2 Determinants of breastfeeding behaviour

The second paper in the Lancet Breastfeeding Series proposes a conceptual model of the determinants of breastfeeding based on a large integrative review of previous conceptualisations (Rollins et al., 2016). The authors' link breastfeeding decisions and behaviours that function at multiple levels and influence the initiation, continuation, and exclusivity of breastfeeding over time (see Fig 1.1). The model proposes three distinct yet inter-related sets of components; structural, settings, and individual level factors. Although this thesis focuses on one specific individual level variable, a brief overview of each component is provided to give a contextual framework of breastfeeding behaviour which is taken into account throughout the chapters.

Figure 1.1: *The components of an enabling environment for breastfeeding (Rollins et al., 2016, p. 492)*



1.2.1 Structural determinants

The structural context for breastfeeding is shaped by market factors and social and cultural attitudes that affect the whole population. Structural determinants include factors such as social trends, advertising, media, and consumer products (Rollins et al., 2016). Generationally, formula feeding has become the cultural norm (Thomson & Dykes, 2011). However, in recent years, there has been a dominant discourse associating breastfeeding as the nutritional ideal for babies and formula feeding as a “risky” alternative (Knaak, 2006, 2010; Murphy, 1999). The sexualisation of breasts in western cultures undermines breastfeeding further and underpins the engrained social attitudes towards women who breastfeed in public (Bailey, Pain, & Aarvold, 2004). The explosion of social media over the last decade ensures that these contradictions are visible to the whole population and internalised by the childbearing woman (Rollins et al., 2016; UNICEF, 2013). The formula milk industry is a 45 billion dollar business which is resilient to market downturns (Rollins et al., 2016). The International Code of Marketing of Breast milk Substitutes has helped to stem the advertisement of formula milk products, but formula companies still spend ten times more money marketing formula milk than the UK government spends supporting breastfeeding (UNICEF, 2016a). For women living with these structural barriers, breastfeeding is very challenging (UNICEF, 2013). However, although structural level determinants are crucial in contextualising breastfeeding practices, they are distal, unidirectional, and difficult to modify (Rollins et al., 2016).

1.2.2 Settings determinants

There are three main areas which confer unique influences on breastfeeding behaviour at a settings level; health systems and services, family and community, and workplace and environment (Rollins et al., 2016). Health systems and service determinants include knowledge and skills of healthcare providers (Levinien, Petrauskienė, Tamuleviciene, Kudzyte, & Labanauskas, 2009), hospital practices (McAllister & Bradshaw, 2009), and maternal (Kozhimannil, Jou, Attanasio, Joarnt, & McGovern, 2014) or infant medical problems (Lee, Jegatheesan, Gould, & Dudley, 2013). Advances in knowledge to improve breastfeeding support within health systems and services are continuously being made but substantial gaps in evidence-

based practice remain and affect breastfeeding intention, initiation, and duration (Rollins et al., 2016). Hospital practices such as separation of mother and infant at birth (Kennell, 1994) and the use of breast milk substitutes prior to discharge (Thurston, Bolin, & Chezem, 2013) have been reduced by the BFHI (UNICEF, 2013) but still regularly undermine breastfeeding initiation. Medical barriers to successful breastfeeding including high-risk pregnancies (Kozhimannil et al., 2014), assisted delivery (Hobbs, Mannion, McDonald, Brockway, & Tough, 2016), maternal illness (Morrison, Collins, Lowe, & Giglia, 2015), and preterm (McDonald et al., 2013), ill (Wight, 2015), or low birth weight new-born babies (Lee et al., 2013) are also common negative influences.

The practices and experiences of female relatives and friends, societal norms, and the attitudes and preferences of fathers form the family and community determinants (Rollins et al., 2016). Mothers who have a partner who is supportive and encouraging are more likely to intend to breastfeed (Persad & Mensinger, 2008), and continue to breastfeed (Brown & Davies, 2014). However, fathers and other family members can also form a barrier if they have a strong desire to share feeding responsibilities with the mother (Dunn, Kalich, Henning, & Fedrizzi, 2015). A sharp increase in the acceptability and use of formula in the 1970's has meant that a generation of grandmothers and aunts to help support and manage breastfeeding has been lost (Sriraman & Kellams, 2016). The likelihood of breastfeeding success is enhanced for those with female relatives and friends who currently breastfeed or have prior breastfeeding experience (Dunn et al., 2015). However, this chain of experience has not yet been restored and has resulted in a large proportion of society that do not consider breastfeeding as the "norm" (Sriraman & Kellams, 2016). Despite the 2010 Equality Act, which makes it unlawful for businesses to discriminate against breastfeeding women, feeding in public has also been cited by mothers as a crucial factor in their decision to initiate and continue breastfeeding (Morris, Zaraté, Fuente, Williams, & Hirst, 2016). Peer-to-peer mother groups, children's centres, and breastfeeding friendly facilities are essential community lactation support systems which counteract negative public attitudes towards breastfeeding and improve breastfeeding duration (Gregg, Dennison, & Restina, 2015).

Women's workplace and employment practices are also key influences of breastfeeding behaviour, including the increasing number of women in the workplace, the provision of maternity leave, and the standard of breastfeeding policies and facilities within the workplace (Rollins et al., 2016). There has been a rise in the percentage of childbearing women in employment over the past 40 years (Office for National Statistics, 2013). However, mothers who return to work often find it difficult to breastfeed because of an unsupportive work environment (Escobar-Zaragoza, Rivera-Pasquel, & Gonzalez de Cosio, 2015). Appropriate maternity leave policies are effective at increasing exclusive breastfeeding yet hundreds of millions of women have inadequate or non-existent maternity protection (Rollins et al., 2016). Key barriers within the workplace include a lack of privacy, insufficient time to express milk, and working full-time (Johnston & Esposito, 2007). Lactation facilities at work, work-time breaks, and flexible or non-formal employment opportunities can offset these work-oriented challenges and facilitate breastfeeding continuation after a period of maternity leave (Escobar-Zaragoza et al., 2015; Rollins et al., 2016).

1.2.3 Individual determinants

At an individual level, breastfeeding behaviour is influenced by maternal and infant attributes, proximal breastfeeding experiences, and the mother-infant relationship (Rollins et al., 2016). Socio-demographic influences include age (Kitano et al., 2016), marital status (Clifford, 2006), level of education (Van Rossem et al., 2009), socio-economic status (Ahluwalia, Morrow, & Hsia, 2005), and parity (Zanardo et al., 2009). Environmental stressors (Groer & Wilkinson Davis, 2002), weight (Mehta, Siega-Riz, Herring, Adair, & Bentley, 2011, 2012) and smoking status (Forster, McLachlan, & Lumley, 2006) are key lifestyle determinants. Psychosocial attributes include maternal confidence (Blyth et al., 2002; Dennis, 2002), prenatal education (Forster et al., 2006), breastfeeding intentions (Donath & Amir, 2003), subjective norms (Swanson & Power, 2005) and prior breastfeeding experience (Britton, 2007). In terms of the infant, characteristics such as sex (Rollins et al., 2016), wellbeing (Entwistle, 2014), and temperament (Lauzon-Guillain et al., 2012) have all been noted as common influences in the breastfeeding literature.

Early, individual breastfeeding experiences can also have a profound influence on breastfeeding outcomes (Rollins et al., 2016). In the immediate postpartum, inaccurate advice and sub-optimal breastfeeding practices such as poor breastfeeding positioning and latching (Brown et al., 2011) can undermine early breastfeeding continuation. Nipple and breast pain, mastitis, and engorgement are common early physical problems which can also influence breastfeeding maintenance (Thomson & Dykes, 2011). Perceptions of insufficient milk (Gatti, 2008), excessive hunger (McCann, Baydar, & Williams, 2007), and excessive crying (Savage, Fisher, & Birch, 2008) or diminished sleep (Brown & Harries, 2015) also frequently precede supplementation with formula milk.

Breastfeeding is a reciprocal behaviour that entails a relationship between mother and baby (Rollins et al., 2016). Responsive feeding is central to the mother-infant interaction and achieved by the mother providing guidance, recognizing the infant cues of hunger and satiety, and responding in an age appropriate and nurturing manner (Hurley, Black, Papas, & Caulfield, 2008). Breastfeeding continuation is governed by an infant-led, responsive feeding style, which follows the infant's cues closely to promote milk supply (Brown & Arnott, 2014). This can be time-intensive (Brown et al., 2011) and difficult to maintain alongside other competing demands such as older children (Symon, Whitford, & Dalzell, 2013) or the return to work (Johnston & Esposito, 2007). Furthermore, responsive feeding is influenced heavily by the mother's internalisation of the influences at the level of structural and settings determinants (Rollins et al., 2016).

Many of the determinants at the individual-level demonstrate the influence of socio-demographic factors on breastfeeding behaviour; however, these factors are not easily modified and offer limited opportunity to increase breastfeeding rates (O'Brien, Buikstra, & Hegney, 2008). As a result, recommendations have been put forward for infant feeding researchers to focus on identifying alternative factors which may be more receptive to modification (e.g. Blyth et al., 2002). One research area with the potential to identify modifiable factors involves the study of maternal psychological state and its impact on breastfeeding behaviour.

1.3 Psychological factors

1.3.1 Maternal depression

The only psychological determinant of breastfeeding behaviour identified by Rollins et al. (2016) was maternal depression. Maternal depression is an umbrella term for a spectrum of depressive conditions that can occur during pregnancy (i.e. prenatal depression) and up to 12 months after birth (i.e. postpartum depression) (Shidhaye & Giri, 2014). Between 10 and 20 percent of women experience depression across the transition from pregnancy to parenthood (Gavin et al., 2005). Symptoms include low mood, diminished interest and pleasure, feelings of worthlessness, and suicidal ideation (APA, 2016). Maternal depression has received much attention on several fronts in recent years; including research, policy, and media focus (National Institute for Health Care Management, 2010). It is now recognised as a worldwide public health issue with well-documented, suboptimal health outcomes for both mother and infant, including reduced breastfeeding (Dennis & McQueen, 2009; National Institute for Health Care Management, 2010).

A systematic review conducted in 2009 provides a comprehensive summary of 49 studies which found that women in the perinatal period who experience depressive symptoms were at increased risk for negative infant feeding outcomes including decreased breastfeeding initiation, duration, and exclusivity (Dennis & McQueen, 2009). Another, more recent systematic review of 48 studies with separate syntheses for prenatal and postpartum depression found that breastfeeding continuation was influenced by depression at both stages of childbearing (Castro Dias & Figueiredo, 2015). The studies included in these reviews have informed the development of effective psychological interventions to treat maternal depression without medically compromising breastfeeding (e.g. Milgrom, Negri, Gemmill, Mcneil, & Martin, 2005; Stephens, Ford, Paudyal, & Smith, 2016). Despite this encouraging progress, the evidence base is not yet as sophisticated for the impact of other maternal affective disorders on breastfeeding outcomes.

1.3.2 Maternal anxiety as a “hidden element” of maternal depression

The earliest description of depression in new mothers was described as “atypical”, which encompassed a combination of depressive and anxiety symptoms (Pitt, 1968).

Pitt later conceptualised symptoms of depression occurring postpartum as “a state of weary, irritable despondence....(with) much anxiety over the baby” (Pitt, 1985, p.109). At a similar time, Margison (1982) described the depressed mother as “highly anxious...with mild depressive symptoms and intense fears of not coping” (p.207). A later conceptualisation of postpartum depression also contains similar references to “intense anxiety” (Stuart, Couser, Schilder, O’Hara, & Gorman, 1998) In all of these descriptions, anxiety accompanied by depression has clearly been classified as depression (Matthey, Barnett, Howie, & Kavanagh, 2003). In the same manner, depressive criteria have formed the “gold standard” method to detect and diagnose negative mood in perinatal research and clinical practice. Clinicians tend to use depression modules above anxiety modules during diagnostic interviews (Matthey et al., 2003), and the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) is the most widely used screening and research tool for negative mood across the childbearing period (Miller, Pallant, & Negri, 2006). Even when anxiety symptoms are a key component of overall affective state, depression as a label, takes precedence (Matthey et al., 2003). As a consequence, symptoms of anxiety have been obscured within measurement of depression, which has resulted in anxiety being minimised and overlooked in the absence of depression (Matthey et al., 2003; Miller et al., 2006).

It is well-established that maternal depression and anxiety are highly comorbid (Falah-Hassani, Shiri, & Dennis, 2016), both as affective states and clinical diagnoses (Miller et al., 2006). However, the importance of distinguishing anxiety from depression is becoming increasingly recognised (Matthey et al., 2003; Miller et al., 2006; Phillips, Sharpe, & Matthey, 2007; Phillips, Sharpe, Matthey, & Charles, 2009). Recent studies which focus specifically on maternal anxiety reveal incidence estimates between 3% and 43%, with evidence that it may occur independently and at a higher rate than maternal depression (Britton, 2008; Glasheen, Richardson, & Fabio, 2010; Muzik et al., 2000; Paul, Downs, Schaefer, Beiler, & Weisman, 2013; Wenzel, Haugen, Jackson, & Brendle, 2005). The long-standing under-representation of anxiety is now being recognised in the maternal and infant health literature but substantial gaps in evidence surrounding maternal anxiety remain. There is convincing evidence for the impact of maternal anxiety on somatic and psychological outcomes in infants and children (Glasheen et al., 2010). However, a

research area yet to be fully elucidated is the relationship between maternal anxiety and infant feeding. Given the established benefits of breastfeeding and the known impact of maternal depression on infant feeding outcomes (Dennis & McQueen, 2009), clarifying this relationship is timely and important.

1.4 Definition of maternal anxiety

Anxiety is defined as a subjective state of fear, apprehension, or tension (Hartmann, 2017). Anxiety as an adaptive response is a natural emotion that occurs in response to danger and prepares an organism to cope with the environment, playing a critical role in its survival (Spielberger et al., 1970). Childbearing, as a period of substantial biological and psychosocial change, can be expected to elicit some anxiety (Lonstein, 2007). This can serve to protect one's baby and help a mother to cope with the unpredictable nature of childbearing. However, when anxiety is irrational or excessive, it is thought of as abnormal and pathological (Hartmann, 2017). There are several forms of pathological anxiety, known collectively as the anxiety disorders, all of which result in a deterioration in performance and in emotional and physical discomfort (Hartmann, 2017). Spielberger and others have further described different elements of anxiety, which includes an individual's dispositional tendency to experience anxiety or "trait anxiety", and a more acute emotional arousal in response to a perceived stressful, dangerous, or threatening situation; "state anxiety" (Paul et al., 2013). More recently, a body of literature has identified a third component of anxiety known as "pregnancy specific anxiety" which is embedded in concerns amongst pregnant women in the context of their pregnancies (Guardino & Schetter, 2014). These definitions of anxiety will be taken into account throughout the thesis.

1.5 Summary of the thesis

This thesis aims to examine the relationship between maternal anxiety and infant feeding outcomes from pregnancy to parenthood using a sequential-exploratory mixed-methods framework. The works included make original contributions to the literature in terms of evidence synthesis, research methodology, theoretical development, and psychometric measurement. First, two systematic reviews are conducted which provide comprehensive syntheses of the existing literature examining maternal anxiety and infant feeding outcomes. This approach allowed the

limitations of the existing evidence base to be taken into account in the subsequent empirical elements. Second, qualitative and quantitative methods are used to explore maternal anxiety and infant feeding outcomes longitudinally, as well as examine other emotional and practical mechanisms which may impact on this relationship. Third, qualitative and quantitative methods facilitate the development and validation of a novel measure of postpartum anxiety, which is then used to examine associations with infant feeding outcomes and behaviours. Finally, the research findings are synthesised and applications, outstanding issues, and future directions of the research are considered. See Figure 1.2 for a diagrammatic representation of the thesis structure.

1.6 Methodological considerations

Mixed-methods research is an approach focusing on research questions that call for real-life contextual understandings, and multi-level perspectives (Larkin, Begley, & Devane, 2014). Mixed-methodologies are becoming increasingly recognised for several reasons; they allow the researcher to simultaneously address a range of confirmatory and exploratory questions, they provide stronger inferences, and they allow opportunity for a richer variety of different views (Teddlie & Tashakkori, 2009). They are particularly useful in health sciences research as they allow deeper understanding of complex individual experiences which are central to the study of health behaviour (Larkin et al., 2014). A holistic theoretical perspective which encompasses both positivist and naturalistic epistemologies is necessary to blend the methods together effectively (Teddlie & Tashakkori, 2009). The author was supervised by highly experienced academics from both schools of thought in order to achieve this balance.

1.7 Structure of the thesis

1.7.1 Part One: Introduction to the thesis

The thesis opens with two systematic reviews of the literature before introducing the research questions. Chapter 2 synthesises the available evidence examining prenatal anxiety and infant feeding while Chapter 3 reviews literature examining postpartum anxiety and infant feeding. In combination, these chapters highlight the limitations

of the existing evidence base from pregnancy to parenthood and provide a rationale for the empirical work detailed in the subsequent chapters.

1.7.2 Part Two: Maternal anxiety, infant feeding, and influencing mechanisms

There are numerous accounts of women's emotional responses to infant feeding which suggests that the association between maternal anxiety and infant feeding is bidirectional in nature (e.g. Lakshman, Ogilvie, & Ong, 2009; Lee, 2007; Taylor & Wallace, 2012; Thomson & Dykes, 2011; Thomson et al., 2015). The second part of the thesis presents three chapters examining the relationship between maternal anxiety and infant feeding and exploring emotional and practical mechanisms which may influence this relationship. Part one highlights the need for more longitudinal cohort designs using temporally specific measures. To address this, data from the initial two phases of a qualitative, longitudinal study (see figure 1.2), explores the impact of pregnancy specific anxiety on prenatal breastfeeding intentions and postpartum breastfeeding behaviour (Chapter 4). Themes generated from this work informed the quantitative, cross-sectional survey studies detailed in Chapters 5 and 6. These studies examine emotional and practical experiences associated with infant feeding in large, online samples of both breastfeeding (Chapter 5) and formula feeding (Chapter 6) women.

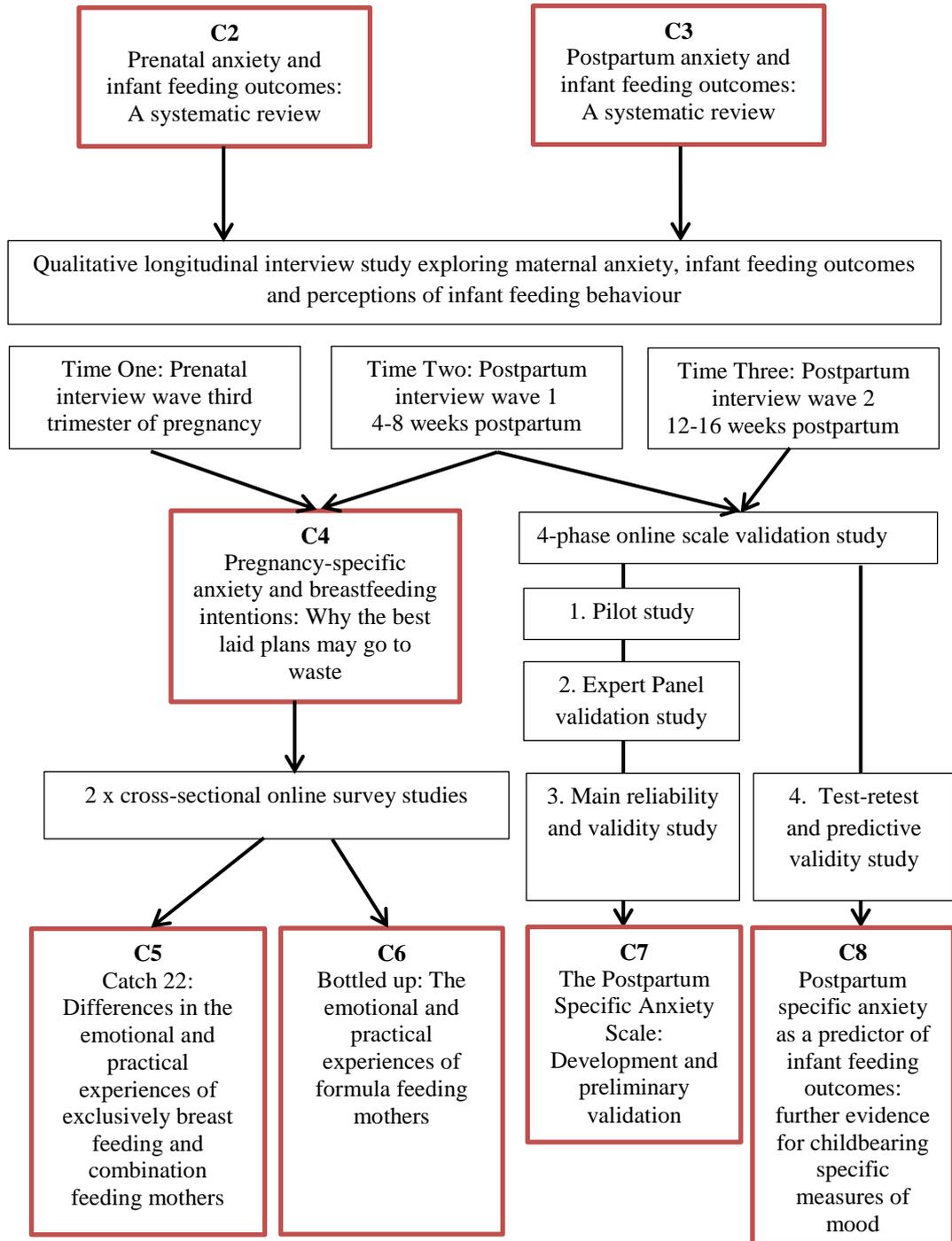
1.7.3 Part Three: Overcoming measurement issues to predict the relationship between maternal anxiety and infant feeding

Part one of the thesis revealed that there was no temporally specific measure of anxiety validated for use in the postpartum period. To address this, the third part of the thesis utilises data from the final two phases of a qualitative, longitudinal interview study (see figure 1.2) to inform the development of a novel measure of postpartum-specific anxiety. Chapter 7 details the generation of items within the scale, the role of an expert panel to refine the measure, a pilot study, and a large online reliability and validation study which examined the psychometric potential of the scale. Chapter 8 then draws on prospective data to consider the predictive relationship between postpartum specific anxiety and infant feeding outcomes and behaviours using this new measure.

1.7.4 Part Four: Discussion and conclusion

The thesis concludes with a synthesis of the main findings in light of the research questions. Chapter 9 provides an overview and theoretical implications of the findings, considers the applied relevance and limitations of the research, provides future research directions, and draws conclusions.

Figure 1.2 Diagrammatic representation of the interrelationship between the research undertaken and the manuscripts produced²



² C = Chapter; A black outline represents the studies conducted; a red outline represents the manuscripts produced

PART ONE

INTRODUCTION TO THE THESIS

Chapter 2

Prenatal anxiety and infant feeding outcomes: A systematic review³

2.1 Foreword

Although maternal anxiety is often regarded as a singular entity encompassing both pregnancy and the postpartum period (Heron, O'Connor, Evans, Golding, & Glover, 2004), there are many transitions across unique stages of childbearing which bring about distinct changes and novel concerns for the woman (Huizink, Mulder, Robles de Medina, Visser, & Buitelaar, 2004). The most dramatic of these changes is the transition across childbirth from pregnancy to parenthood. Anxieties experienced in pregnancy may differ widely in nature from those experienced after childbirth (Ohman, Grunewald, & Waldenström, 2003; Phillips et al., 2009). As such, the prenatal and postpartum anxiety literature requires disentangling in order to fully understand any specific associations with infant feeding outcomes. Systematic reviews are considered as the “gold standard” method of evidence synthesis (Boland, Cherry, & Dickson, 2014). This systematic review uses a narrative synthesis approach to provide a comprehensive summary of the relationship between prenatal anxiety and infant feeding outcomes while accounting for the wide variation in research approach.

2.2 Introduction

Pregnancy has frequently been described as a time of emotional well-being for prospective mothers (Furber, Garrod, Maloney, Lovell, & McGowan, 2009), but for some women the prenatal period can lead to elevated levels of distress and an impaired quality of life (Zelkowitz & Papageorgiou, 2012). Novel concerns arise during this period, primarily surrounding the health of the individual and her unborn child (Ohman et al., 2003; Rini, Dunkel-Schetter, Wadhwa, & Sandman, 1999). Changes in lifestyle, relationships and appearance may also elicit unwelcome apprehension in this population (Devine, Bove, & Olson, 2000; Huizink et al., 2004).

³ Chapter 2 is published in the Journal of Human Lactation as:

Fallon, V., Bennett, K.M., & Harrold, J.A. (2016). Prenatal anxiety and infant feeding outcomes: A systematic review. *Journal of Human Lactation*, 32 (1), 53-66.

Although many women are able to manage these additional stressors effectively, some are susceptible to heightened levels of anxiety.

Since the pregnant woman is the sole environment for the developing foetus, psychological alterations during pregnancy may uniquely affect infant outcomes (Huizink et al., 2004). A 2005 review of the literature presents evidence spanning two decades which consistently reports associations between prenatal anxiety and adverse pregnancy outcomes (Van den Bergh, Mulder, Mennes, & Glover, 2005). More recently, a number of prospective studies have observed a relationship between prenatal anxiety and more distal cognitive, behavioural and emotional problems in the infant or child after controlling for established confounders (Brouwers, Van Baar, & Pop, 2001; Davis et al., 2004; Huizink, Robles de Medina, Mulder, Visser, & Buitelaar, 2003; Huizink, Robles De Medina, Mulder, Visser, & Buitelaar, 2002; Laplante et al., 2004; Loomans et al., 2011; O'Connor et al., 2007; Rieger et al., 2004). These include a difficult infant temperament (Huizink et al., 2002), negative behavioural reactivity (Davis et al., 2004), and irregular sleeping patterns (O'Connor et al., 2007); all particularly pertinent factors given their relationship with breastfeeding (Gray, Miller, Philipp, Blass, & Hospital, 2002; Lauzon-Guillain et al., 2012; Mindell, Du Mond, Tanenbaum, & Gunn, 2012). There is increasingly robust evidence to support the enduring effects of prenatal anxiety on aspects of infant development, although the notion of anxiogenic foetal programming within the context of infant feeding remains unclear.

To highlight the biologically plausible relationship between prenatal anxiety and infant feeding (Adedinsowo, Fleming, Steiner, Meaney, & Girard, 2014; Mezzacappa & Katkin, 2002), the multifaceted nature of anxiety must first be taken into account. As defined by Spielberger, anxiety refers to an unpleasant emotional state or condition (Spielberger, Gorsuch, & Lushene, 1970). Spielberger and others have further described different components of anxiety, which includes an individual's dispositional proneness to anxiety or "trait anxiety", and a more acute emotional arousal in response to a perceived stressful, dangerous, or threatening situation; "state anxiety" (Paul et al., 2013). Prenatal anxiety is highly correlated with anxiety symptoms in the postpartum period (Heron et al., 2004). The enduring nature of trait anxiety may interfere with the release of oxytocin; a hormone which

stimulates the milk-ejection reflex (Adedinsewo et al., 2014). Repeated inhibition of this reflex renders women physiologically less capable of producing breast milk (Mezzacappa & Katkin, 2002). Furthermore, acute emotional stress (i.e. state anxiety) is known to produce elevated levels of cortisol and glucose which have been implicated in delaying breast fullness and decreasing milk volume in the immediate postpartum (Chen, Nommsen-rivers, Dewey, & Lönnerdal, 1998). More recently, a body of literature has identified a third component of anxiety which is embedded in concerns amongst pregnant women in the context of their pregnancies (Guardino & Schetter, 2014). Pregnancy-specific anxiety is akin to state anxiety and may undermine breastfeeding via similar physiological mechanisms. However, psychometric studies have revealed that this type of anxiety predicts perinatal outcomes more effectively than general measures of anxiety and therefore may be a more useful method of measurement within the context of infant feeding (Rini et al., 1999; Wadwha, Sandman, Porto, Dunkel-Schetter, & Garite, 1993).

Despite these associations, methodological limitations have delayed a clear understanding of the relationship between prenatal anxiety and infant feeding. Inconsistencies in definitions of anxiety plague the literature, and high comorbidity with prenatal depression generates further uncertainty (Zelkowitz & Papageorgiou, 2012). These ambiguities are mirrored in prevalence studies of prenatal anxiety with incongruent frequencies ranging between six and 54% (Berle et al., 2005; Lisspers, Nygren, & Söderman, 1997; Marc et al., 2011; Rubertsson, Hellström, Cross, & Sydsjö, 2014; Zelkowitz & Papageorgiou, 2012). However, the Cochrane Pregnancy and Childbirth Group maintain that prenatal anxiety remains under-researched irrespective of evidence suggesting that its subclinical form is highly prevalent and more frequent than depression in all trimesters of pregnancy (Marc et al., 2011). Given the widely researched and well-established benefits of recommended infant feeding practices, clarifying this relationship is necessary for all those working towards improving maternal and child health outcomes.

To date, research interest has focused instead on the apparent changes in mental health following delivery, rather than on psychological states during pregnancy (Huizink et al., 2004). Comparably, the majority of research on the relationship between maternal mental health and infant feeding has been driven by postpartum

depression. Prenatal anxiety is known to be a robust predictor of postpartum depression (Van den Bergh et al., 2005; Zekowitz & Papageorgiou, 2012), which was systematically reviewed by Dennis and McQueen as an established indicator of infant feeding outcomes (Dennis & McQueen, 2009). Their narrative synthesis found women with depressive symptoms may be at increased risk of negative infant feeding outcomes, with heightened susceptibility to decreased breastfeeding initiation, duration and self-efficacy. However, no such summary of the literature concerning prenatal anxiety and infant feeding outcomes has been completed. Current UK policies recommend exclusive breastfeeding for the first six months of life, yet less than one percent of mothers adhere to these guidelines (McAndrew et al., 2012). A better understanding of potentially modifiable psychological factors and their effect on infant feeding could lead to clinical and policy changes, which may help to improve this statistic. This review will draw on similar techniques utilised effectively by Dennis and McQueen to provide a comprehensive overview of the literature whilst acknowledging the existing heterogeneity in methodologies, measures and analyses.

2.3 Methods

2.3.1 Eligibility criteria

Published and unpublished studies were considered provided they detailed information specifically related to intended or actual infant feeding practices, and examined anxiety during pregnancy. The operational definition of prenatal anxiety utilised in this review was any sub-clinical, self-reported symptoms of anxiety or clinical diagnosis of an anxiety disorder occurring at any point during the gestational period. This definition allowed identification of studies which assessed anxiety in pregnancy using both general and pregnancy-specific measures. Studies which focused on women with anxiety symptoms (sub-clinical or clinical) identified pre-pregnancy were not deemed eligible. Other mental health conditions occurring during and/or after pregnancy (i.e. postpartum anxiety, prenatal or postpartum depression, postpartum blues, and puerperal psychosis) were also ineligible. However, due to well-established high comorbidity rates with depression and a lack of studies focusing solely on prenatal anxiety, studies that focused on prenatal depression were examined if the measures used contain an anxiety subscale with

analyses reported separately. Studies that incorporated measures of postpartum anxiety were examined if prenatal anxiety was also assessed. However, studies that focused on anxiety experienced during labour or delivery were excluded due to the unique situational anxieties experienced by women when giving birth (Cheung, Ip, & Chan, 2007). Studies that assessed labour anxiety during pregnancy were, however, eligible for inclusion as this is a previously validated dimension of pregnancy-specific anxiety (Levin, 1991). Samples that included both primiparous and multiparous participants and failed to adjust their analyses for parity were not deemed eligible for inclusion. Between group differences in anxiety levels (Dipietro, Costigan, & Sipsma, 2008; Maes & Ombelet, 2004; Peñacoba-Puente, Monge, & Morales, 2011; Teixeira, Figueiredo, Conde, Pacheco, & Costa, 2009; Tu, Lupien, & Walker, 2006) and lactation (Bourgoin & Lahaie, 1996; Ford & Lobbok, 1990; Piper & Parks, 1996; Zanardo et al., 2009) are prevalent in the literature and parity was consequently expected to confound results. Table 2.1 provides a summary of inclusion/exclusion criteria. It is recognised that there are other socio-cultural confounders which have been shown to affect prenatal anxiety and infant feeding. However, these do not appear to be as closely associated with both variables of interest. Furthermore, the exclusion of all potential determinants is deemed overly rigorous and may limit findings within an already sparse research area. Instead, a discussion of those relevant to the review will be provided. For the purpose of this review, breastfeeding was defined as any intended, current or previous breastfeeding behaviour at any intensity (i.e. exclusive, partial, any). No language restrictions were placed upon eligibility of studies. A full copy of the review protocol can be accessed by emailing the authors.

2.3.2 Information sources

The research team sought to systematically review both published and unpublished articles, reviews and doctoral theses targeting academic research, conference proceedings, and local and central government studies. The information sources were broad to ensure that as many studies as possible were assessed for their relevance. The initial search strategy was limited to the inception year of each database to March 2014. Databases searched were: Medline (1966-2014), Global Health (1910-2014), Cumulative Index to Nursing and Allied Health Literature

(CINAHL) (1982-2014), PsycInfo (1887-2014), PsycArticles (varies by title), Proquest (varies by database), AMED (1985-2014), Cochrane Library (varies by database), Scopus (1823-current), and Google Scholar (varies by title).

Table 2.1 *Inclusion and exclusion criteria*

Inclusion Criteria

- Published or unpublished literature
- Sub-clinical, self-reported symptoms or clinical diagnosis of anxiety occurring during pregnancy
- General (state-trait) and pregnancy-specific measures of anxiety
- Studies examining prenatal depression which use an anxiety subscale and report analyses for anxiety separately
- Postpartum anxiety if prenatal anxiety was also assessed
- Anxieties about labour or delivery during pregnancy

Exclusion Criteria

- Historical literature
 - Sub-clinical or clinical diagnosis of anxiety occurring pre-pregnancy
 - Other mental health conditions occurring during/after pregnancy
 - Anxiety experienced during labour or delivery
 - Primiparous and multiparous women with no statistical adjustment for parity
-

Key words used in various combinations included “prenatal anxiety,” “antenatal anxiety,” “maternal anxiety,” “pregnancy specific anxiety,” “breastfeeding,” “infant feeding,” “formula feeding,” and “bottle feeding”. Boolean operators were used to combine the key words and truncation was applied to retrieve variants of the search

terms. Controlled vocabulary (MeSH) was used to search the Medline database. An example of a full electronic search strategy can be found in Appendix 1. Tables of contents for key journals were hand searched from 2011 to 2014. A manual search of reference lists of included articles was then conducted followed by correspondence to experts in the field to identify data sources not yet found through previous methods. No limits were applied to sources identified through manual searching.

2.3.3 Study selection

A three-stage screening process was utilised. Titles were initially assessed and any articles that were evidently unsuitable were excluded at this early stage. The remaining abstracts were then screened and excluded where appropriate. The full text of each eligible article was then read by two authors (VF and JH) in its entirety to determine inclusion in the systematic review.

2.3.4 Data extraction

For eligible studies, two review authors (VF and JH) independently extracted data. Discrepancies were resolved by discussion or, if required, KB was consulted. For each included study, information collected included study design, participants (sample size and characteristics), measures taken, and results. Correspondence to relevant authors was then conducted to identify/confirm any necessary data. The Newcastle-Ottawa Quality Assessment Scale (NOS) was then completed independently for each included study by VF and JH to aid methodological discussion. This is a risk of bias assessment tool that is recommended by the Cochrane Collaboration to assess the quality of observational studies in a systematic review (Higgins & Green, 2011). The scale has established content validity and inter-rater reliability based on previous applications in women's health studies (Shea, Robertson, Peterson, Welch, & Losos, 2012).

2.4 Results

The search strategy identified 99 studies, of which six presented information specifically related to prenatal anxiety and infant feeding outcomes [see Figure 2.1 and Table 2.2] (Adedinsewo et al., 2014; Fairlee, Gillman, & Rich-Edwards, 2009;

Insaf et al., 2011; Mehta, Siega-Riz, Herring, Adair, & Bentley, 2011, 2012; Sherr, 1989). Studies included were published between 1989 and 2014 with sample sizes ranging from 88 to 1436 (N=3185) from the United Kingdom, United States, and Canada. Due to the heterogeneity of both outcome variables and methodologies in the studies included, a meta-analysis was not deemed appropriate. Instead, data was narratively synthesised according to infant feeding outcome: breastfeeding intention; breastfeeding initiation; exclusive breastfeeding, and “any” breastfeeding activity.

2.4.1 Prenatal anxiety and breastfeeding intentions

Two US studies with samples drawn from highly dissimilar populations examined the relationship between levels of prenatal anxiety and prospective mothers intention to breastfeed their baby in pregnancy (Fairlee et al., 2009; Insaf et al., 2011). Insaf et al. (2011) used the STAI to assess trait anxiety at 13 week’s gestation and state anxiety in mid-pregnancy (24-28) weeks in a sub group of 424 Hispanic women identified as high-risk for perinatal mood and anxiety disorders. Breastfeeding intention was extracted from medical records before or immediately after delivery. A complete case method was used to extract prevalence risk ratios (PRR) and 95% CI’s. In age adjusted analyses women in the highest quartile of trait anxiety in early pregnancy were 34% less likely to breastfeed than women in the lowest quartile (PRR: 0.66; 95% CI: 0.54, 0.80; $p<.001$). Findings were marginally significant for high levels of state anxiety in mid pregnancy (PRR: 0.81; 95% CI: 0.65, 1.00; $p=.05$). In final adjusted models, these findings were virtually unchanged. This study benefited from examination of self-report anxiety levels at two separate time points in pregnancy, although susceptibility to social desirability is increased within vulnerable populations (Guest, Bunce, Johnson, Akumatey, & Adekun, 2005).

In a US study, Fairlee and colleagues (2009) administered the Pregnancy Specific Anxiety Scale (PSAS) to 1436 women (mainly Caucasian, high SES) in the first trimester of pregnancy. In the second trimester, mothers were then asked to report whether they intended to use all or mostly formula or breast milk in the first week postpartum. In unadjusted analyses women with high pregnancy related anxiety were no more likely to plan to formula feed prenatally than those with low to moderate anxiety (OR: 1.40; 95% CI: 0.84, 2.33). However, adjustment for education, household income and pre-pregnancy BMI significantly increased the

effect estimate (OR: 1.99; 95% CI: 1.12, 3.54). Further adjustment for prenatal depression lowered this slightly (OR: 1.87; 95% CI: 1.04, 3.34). Reliance on cross-sectional data in early pregnancy for the variables considered resulted in inability to assess if feeding intention changed throughout the course of pregnancy.

In summary, both of these studies found that women with high levels of prenatal anxiety in early pregnancy were more likely to express intentions to formula feed after accounting for a range of established confounders. Significant results were observed in highly heterogeneous populations using both general (Insaf et al., 2011), and pregnancy-specific anxiety measures (Fairlee et al., 2009).

2.4.2 Prenatal anxiety and breastfeeding initiation

Four studies examined the relationship between prenatal anxiety and breastfeeding initiation (Adedinsewo et al., 2014; Fairlee et al., 2009; Mehta et al., 2011; Sherr, 1989). Fairlee et al. (2009) utilised the PSAS in the first trimester of pregnancy to prospectively follow 1436 women. The study had a low follow-up rate of 67% due to ineligibility or withdrawal. The outcome measure “failure to initiate breastfeeding” was ascertained in post-delivery interviews. After adjustment for multiple covariates women with high prenatal anxiety were no more likely to initiate formula feeding than women with low-moderate anxiety (OR: 1.28; 95% CI: 0.74, 2.20). These findings were paradoxical in relation to their formula feeding intention results and could be explained via a change in mood or intention that occurred since the single measurement taken in early pregnancy (Fairlee et al., 2009).

A small UK study (Sherr, 1989) administered the State Trait Anxiety Inventory (STAI) to 88 mothers at 38 weeks of pregnancy and found that there was no significant difference in state or trait anxiety between mothers who initiated breastfeeding and mothers who initiated formula feeding (State: $t=0.70$, $p>.05$; Trait: $t=0.18$, $p>.05$). The researcher’s intended outcome of interest was infant feeding method; however, this was inappropriately measured via a single question assessing breastfeeding initiation within 48 hours of delivery.

Fig 2.1 *Prisma flow diagram*

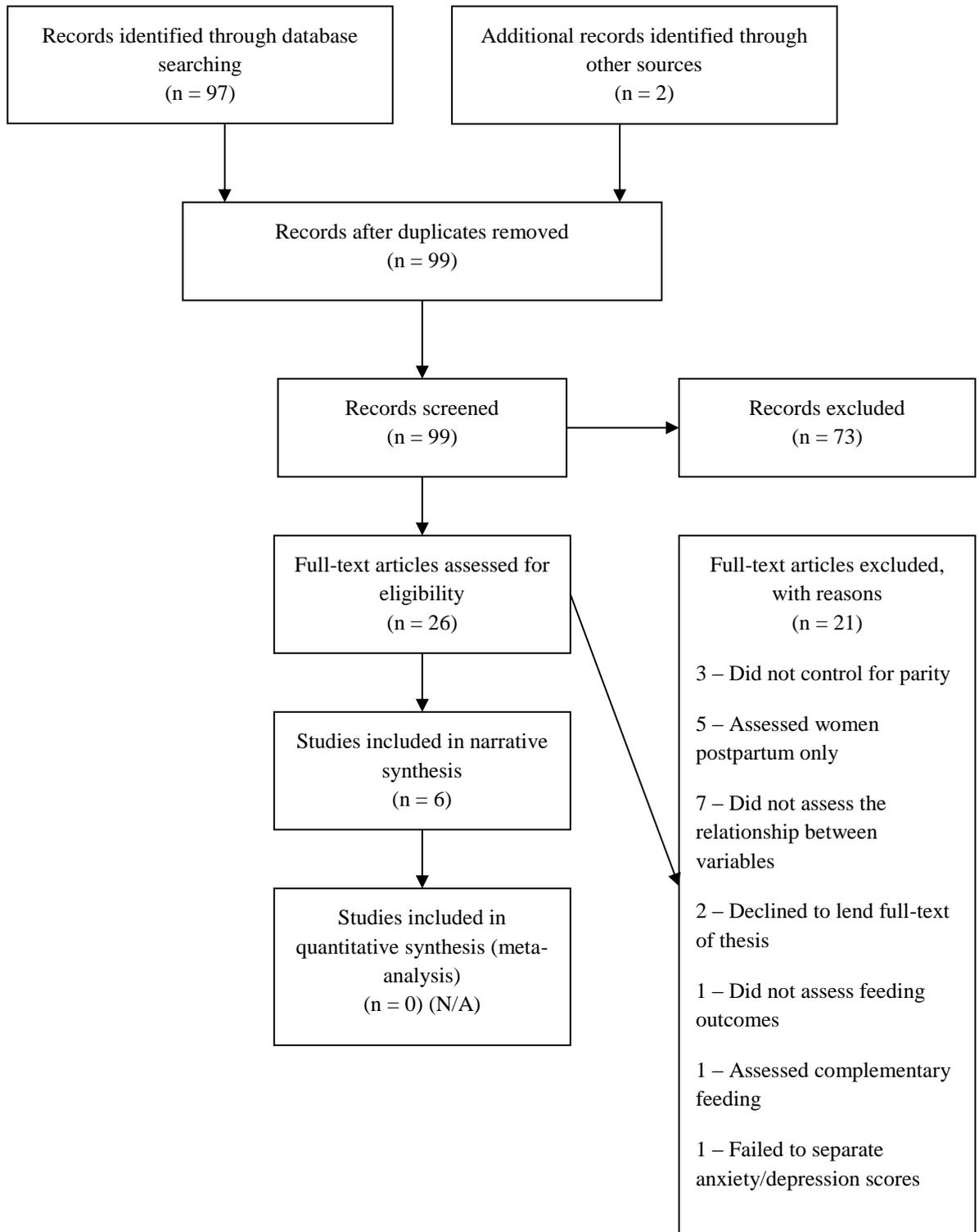


Table 2.2 *Studies included that examined the relationship between prenatal anxiety and infant feeding outcomes*

Principal Outcome	Authors	Study Design	Sample	PA Outcome	Infant Feeding Outcome	Summary of Results	Methodological Comment
PA and BF Intention	Fairlee et al (2009)	Prospective cohort study using an anxiety questionnaire in early pregnancy and a written infant feeding question in the second trimester of pregnancy	2670 pregnant US women recruited from eight obstetric offices in Eastern Massachusetts as part of a larger prospective study. 1436 women analysed	7 questions from the 10 item PSAS were used in the first trimester of pregnancy -mean gestational age of administration 10.4 weeks, High pregnancy related anxiety was defined as "very much" responses to three or more questions	Intention to breastfeed ascertained via written question between 26-28 wks gestation. Asked if intention was to feed infant "breast milk only, mostly breast milk, some breast milk, formula only or uncertain". Only or mostly breast milk categorised as "planned to breastfeed", those who indicated mostly or exclusively formula categorised as "planned to formula feed"	Women with high pregnancy related anxiety were more likely to plan to formula feed prenatally than those with low-moderate anxiety	Healthcare setting highly supportive of breastfeeding. Mainly Caucasian, well-educated sample - more likely to intend to breastfeed. High attrition rate (33% lost to follow-up). Range of confounders accounted for. Anxiety measure did not utilise full scale. Study relied on cross sectional data to examine anxiety and feeding intention in the second trimester of pregnancy so unable to assess if this changed throughout the remainder of the pregnancy. Imprecise definition of breastfeeding and formula feeding.
	Insaf et al (2011)	Prospective cohort study using anxiety questionnaires administered at two time points in pregnancy and infant feeding medical record abstraction at delivery	424 Hispanic women from state-wide obstetric practices in Western Massachusetts as part of a larger ongoing prospective study	STAI used to assess trait anxiety at baseline (mean 13.6 weeks gestation) and re-administered in mid pregnancy to assess state anxiety (either taken at 24 weeks gestation or 28 weeks gestation, if women attended both times, mean scores were utilised so all women had one mid-pregnancy score)	Prenatal breastfeeding intention was abstracted from medical records before or immediately after delivery. Categorised as intending to breastfeed if they reported exclusive or mixed feeding intentions. Categorised as formula feeding only if intending to exclusively formula feed	Women in the highest quartile of both trait and state anxiety were less likely to intend to BF compared to women in the lowest quartile	Comparable anxiety and breastfeeding intention levels to other studies. Examined anxiety at two pregnancy time points. Comprehensive range of confounders accounted for. Imprecise definition of breastfeeding. Self-report measures of anxiety, minority women of low SES susceptible to social desirability. Sole outcome was prenatal intention, unable to predict whether women with breastfeeding intent will initiate and continue breastfeeding after delivery.
PA and BF Initiation	Adedinsowo et al (2014)	Prospective cohort study using anxiety questionnaires at two time-points in pregnancy and breastfeeding questions at 3,6 or 12 months postpartum	306 pregnant Canadian women recruited from maternity hospitals in Hamilton. 255 women analysed	STAI and HAM-A. Data collection occurred twice during pregnancy, 18-23 wks gestation and 24-26 wks gestation for HAM-A and once at 18-23 weeks for STAI. Analysed as continuous variables	Self-report question administered at 3 months postpartum. Women provided with the option of responding that they never breastfed or provided breast milk to their baby	94.2% of women initiated breastfeeding meaning there was insufficient variance in initiation of breast feeding to assess differences across anxiety measures	Included women from socio-demographically disadvantaged populations and women who screened positively for antenatal anxiety. Procedures in place to minimise recall and reporting errors. Small sample with potentially insufficient power. Imprecise definition of breastfeeding. Did not utilise clinical cut-offs for anxiety measures.

Table 2.2 Continued

Principal Outcome	Authors	Study Design	Sample	PA Outcome	Infant Feeding Outcome	Summary of Results	Methodological Comment
PA and Breastfeeding Initiation Continued	Fairlee et al (2009)	Prospective cohort study using an anxiety questionnaire in early pregnancy and an infant feeding post-delivery interview	2670 pregnant US women recruited from eight obstetric offices in Eastern Massachusetts as part of a larger prospective study. 1436 women analysed	7 questions from the 10 item PSAS were used in the first trimester of pregnancy -mean gestational age of administration 10.4 weeks, High pregnancy related anxiety was defined as "very much" responses to three or more questions	Post-delivery interviews asked "Have you breastfed your baby? By breastfeeding, we mean that you have put your baby to the breast whether or not your baby actually received breast milk, or that you have fed your baby your breast milk". Failure to initiate was defined as a response of "No"	Women with high-pregnancy-related anxiety were no more likely to initiate breastfeeding than women with low to moderate pregnancy-related anxiety	Unusually high prevalence of breastfeeding initiation. Imprecise definition of breastfeeding. Outcome measure does not provide proof of actual transfer of milk from mother to infant. High attrition rate (33% lost to follow-up). Range of confounders accounted for. Self-report anxiety measure although bias precautions were taken. Anxiety measure did not utilise full scale
	Mehta et al (2011)	Prospective cohort study using anxiety questionnaires at two time points in pregnancy and infant feeding interview at 3 months postpartum	688 pregnant US women recruited from University of North Carolina Hospitals as part of a larger ongoing prospective study. 1169 women originally recruited, 480 excluded or refused. Analysed 546 due to missing data	State dimension of STAI taken at 15-20 weeks gestation and 24-29 weeks gestation. Analysed as categorical variable with 3 levels.	Breastfeeding initiation was assessed at 3 months postpartum with the question "Did you ever breastfeed this baby?"	State anxiety was not related to BF initiation at either of the measured time points	One component of a wider mediation analysis assessing pre-gravid BMI and psychological factors on infant feeding behaviours. The 480 women lost to follow up had significantly higher levels of anxiety. Anxiety measures used could not clinically diagnose therefore may not be sensitive enough. Range of confounders accounted for.
	Sherr (1989) Doctoral thesis	Prospective cohort study using an anxiety questionnaire at 38 wk gestation and infant feeding hospital follow-up interview 48 hrs after delivery	88 primiparous UK women from 2 hospitals of at least 38 wk gestation (N=44 from each hospital)	STAI at 38 wk gestation. Analysed as a linear variable	Whether mothers chose to initiate breast or formula feeding. Ascertained via single question in hospital interview within 48 hrs of delivery	Neither state or trait anxiety was significantly different in breast and formula feeding mums	Small sample size. No definition of breastfeeding. Unequal feeding groups. Anxiety grouping method did not utilise full sample. No confounders or effect modifiers accounted for. Potentially inadequate follow-up period. No depression measure taken

Table 2.2 Continued

Principal Outcome	Authors	Study Design	Sample	PA Outcome	Infant Feeding Outcome	Summary of Results	Methodological Comment
PA and Exclusive Breastfeeding							
	Adedinsewo et al (2014)	Prospective cohort study using anxiety questionnaires at two time-points in pregnancy and self-report breastfeeding questions at 3 and 6 months postpartum	306 pregnant Canadian women recruited from maternity hospitals in Hamilton. 255 women analysed	STAI and HAM-A. Data collection occurred twice during pregnancy, 18-23 weeks gestation and 24-26 weeks gestation for HAM-A and once at 18-23 weeks for STAI. Analysed as continuous variables	Self-report question at 3 and 6 months postpartum asking the age of the baby (in weeks) when she or he was fed for the first time with something other than breast milk. Variable dichotomised at each time-point	STAI and HAM-A anxiety scores were not associated with exclusive breastfeeding at either time point.	Included women from socio-demographically disadvantaged populations and women who screened positively for antenatal anxiety. Procedures in place to minimise recall and reporting errors. Small sample with potentially insufficient power. 51 women lost to follow-up. Imprecise definition of breastfeeding. Did not utilise clinical cut-offs for anxiety measures.
	Mehta et al (2012)	Prospective cohort study using anxiety questionnaire in mid pregnancy and infant feeding interview at 3 and 12 months postpartum	688 pregnant US women recruited from University of North Carolina Hospitals as part of a larger ongoing prospective study. 1169 women originally recruited, 480 excluded or refused. Analysed 436 due to missing data	State dimension of STAI at 24-29 weeks gestation. Analysed as categorical variable with 3 levels	Exclusive breastfeeding duration was collected at infant feeding interviews at 3 and 12 months postpartum. Calculated by comparing duration with the age of introduction of formula and complementary foods. For each postpartum month women, women reported breast milk, breast milk substitutes and other foods. Analysed as categorical variable with 3 levels	High anxiety during pregnancy was associated with exclusive breastfeeding duration of <1 month but not 1 to <4 months.	One component of a wider mediation analysis assessing pre-gravid BMI and psychological factors on infant feeding behaviours. WHO definition of breastfeeding applied. Women who did not initiate included in analysis. Study population different from the US population as BF initiation and exclusive duration rates were much higher. The 480 women lost to follow up had significantly higher levels of anxiety and possessed other factors predictive of breastfeeding. Inability to examine potential effect measure modification by race due to small sample size. Anxiety measures used could not clinically diagnose therefore may not be sensitive enough.

Table 2.2 Continued

Principal Outcome	Authors	Study Design	Sample	PA Outcome	Infant Feeding Outcome	Summary of Results	Methodological Comment
PA and “Any Breastfeeding”	Adedinsowo et al (2014)	Prospective cohort study using anxiety questionnaires at two time-points in pregnancy and self-report breastfeeding questions at 3, 6 and 12 months postpartum	306 pregnant Canadian women recruited from maternity hospitals in Hamilton. 255 women analysed	STAI and HAM-A. Data collection occurred twice during pregnancy, 18-23 wks gestation and 24-26 wks gestation for HAM-A and once at 18-23 wks for STAI. Analysed as continuous variables	Self-report question at 3, 6 and 12 months postpartum. Asked the age of the baby (in weeks) when mothers stopped giving breast milk	No associations were found between STAI and HAM-A scores and “any” breastfeeding at 3, 6 or 12 months.	Included women from socio-demographically disadvantaged populations and women who screened positively for antenatal anxiety. Procedures in place to minimise recall and reporting errors. Small sample with potentially insufficient power. 51 women lost to follow-up. Imprecise definition of breastfeeding. Did not utilise clinical cut-offs for anxiety measures
	Mehta et al (2012)	Prospective cohort study using anxiety questionnaire in mid pregnancy and infant feeding interview at 3 and 12 months postpartum	688 pregnant US women recruited from University of North Carolina Hospitals as part of a larger ongoing prospective study. 1169 women originally recruited, 480 excluded or refused. Analysed 470 due to missing data	State dimension of STAI at 24-29 wks gestation. Analysed as categorical variable with 3 levels	Any breastfeeding duration was collected at 3, 12 and 36 month infant feeding interviews. If women reported having stopped breastfeeding at any interview, they were asked how old the infant was when they stopped (reported in days/weeks/months). Categorised as < 4months, 4-7 months, 7-12 months and < 12 months. Included exclusive breastfeeding as well as mixed feeding with formula or complementary foods.	STAI scores were not associated with any breastfeeding duration at any of the categorised time periods (<4 months, 4-6 months, and 7-12 months).	One component of a wider mediation analysis assessing pre-gravid BMI and psychological factors on infant feeding behaviours. Imprecise definition of breastfeeding. Women who did not initiate included in analysis. Study population different from the US population as breastfeeding initiation rates were much higher.

PA indicates Prenatal Anxiety; STAI, State Trait Anxiety Inventory; PSAS, Pregnancy Specific Anxiety Scale; HAM-A, Hamilton Anxiety Inventory; SES, Socio-economic Status; BMI, Body Mass Index

The small sample size coupled with unequal feeding groups (62 breast feeders, 21 formula feeders) may have limited the parametric analysis, with insufficient power to detect an association. Furthermore, no confounders or effect modifiers were accounted for in the analysis

Mehta et al. (2011) also assessed the association between prenatal anxiety and breastfeeding initiation. Their regression analyses were part of a wider study assessing the impact of BMI in pregnancy on breastfeeding behaviours with anxiety, amongst other mental health indicators, as potential mediators. The state dimension of the STAI was administered to 688 women at both 15-20 week's gestation and 24-29 week's gestation. Breastfeeding initiation was assessed at three months postpartum with the question "Did you ever breastfeed this baby?". State anxiety did not predict breastfeeding initiation at either of the measured time points.

Finally, a Canadian based research team assessed prenatal anxiety in 255 women, as measured by the Hamilton Anxiety Scale (HAM-A) and the STAI in mid pregnancy (Adedinsewo et al., 2014). Breastfeeding initiation data were established at three months postpartum with a single self-report question. 94.2% of women initiated breastfeeding leaving insufficient variance to assess differences across anxiety indicators. This is a surprisingly high initiation rate given that oversampling for low-income women, and women undergoing treatment for anxiety or depression were factored into their recruitment protocol.

In conclusion, three of the four studies found no relationship between prenatal anxiety and breastfeeding initiation (Fairlee et al., 2009; Mehta et al., 2011; Sherr, 1989). The fourth study was unable to perform the proposed analysis due to disproportionate breastfeeding initiation data (Adedinsewo et al., 2014). An unusually high breastfeeding initiation rate was observed in two of the studies (Adedinsewo et al., 2014; Fairlee et al., 2009). Finally, the majority of studies used the STAI yet the timing of anxiety measurements varied widely across samples (Adedinsewo et al., 2014; Mehta et al., 2011; Sherr, 1989).

2.4.3 Prenatal anxiety and exclusive breastfeeding

Two studies (Adedinsewo et al., 2014; Mehta et al., 2012) assessed the association between prenatal anxiety and exclusive breastfeeding. Adedinsewo et al. (2014)

compared HAM-A scores obtained twice in mid-pregnancy and a single STAI score taken at 18-23 weeks between mothers who were exclusively breastfeeding at both three and six months postpartum and mothers who were not. In crude analyses, mothers who were not exclusively breastfeeding their infants at three months had significantly higher HAM-A scores, indicating higher anxiety at both time points in pregnancy compared to those providing only breast milk (18-23 weeks: 7 vs 4, $p=.02$; 24-26 weeks: 7 vs 5, $p=.02$). However, exclusive breastfeeding at three months was not related to state or trait anxiety scores taken at 18-23 weeks prenatally. In adjusted multivariate models, no associations remained significant. Furthermore, neither crude nor adjusted analyses showed an association between prenatal anxiety scores and exclusive breastfeeding at six months postpartum. However, the small sample size ($n=255$) may have had insufficient power to detect associations where they may have existed. Moreover, it may have contributed to the researchers utilising continuous anxiety scores with diagnostic measures which limits clinical relevance, rather than categorising them based on preferred clinical thresholds.

In Mehta's et al. (2012) study, 436 women completed STAI state anxiety scores at 27-30 week's gestation. Exclusive breastfeeding status at less than one month, and one to less than four months was ascertained via self-report at three, six, and 12 months postpartum. High state anxiety was predictive of exclusive breastfeeding duration of less than one month (OR: 1.90; 95% CI: 1.03, 3.53) but not one to less than four months (OR: 1.65; 95% CI: 0.91, 2.96). This analysis was unique in that it included those who did not initiate breastfeeding therefore minimising selection bias. However, the researchers were unable to examine potential effect measure modification by ethnicity due to their small and mainly Caucasian sample. The sample recruited also had much higher rates of exclusive breastfeeding duration (50% at four months and over) than the US population (30.2% at three months) it was drawn from.

In summary, only one study found a relationship between high levels of prenatal anxiety and a reduction in exclusive breastfeeding in the early postpartum (Mehta et al., 2012). Both studies provided clear definitions of exclusive breastfeeding since birth and accounted for a range of confounders. Both studies used the STAI to examine anxiety, yet timings of measurements varied (Adedinsewo et al., 2014;

Mehta et al., 2012). Similarly, timings of measurements for breastfeeding exclusivity varied, although both studies benefitted from multiple postpartum assessments. Both studies were subject to high attrition rates and predominately Caucasian samples.

2.4.4 Prenatal anxiety and “any” breastfeeding

Both studies examining prenatal anxiety in relation to exclusive breastfeeding also assessed the relationship between prenatal anxiety and breastfeeding in any quantity in the postpartum period. Adedinsewo et al. (2014) collected HAM-A scores and STAI scores from 255 women (as described above) in mid-pregnancy and collected breastfeeding data at three, six, and 12 months postpartum. A self-report question was used at each time point querying the age of the baby (in weeks) when mothers stopped providing breast milk. In unadjusted analyses, no associations were found at three or six months, however, mothers who were not breastfeeding at 12 months postpartum had significantly higher levels of anxiety on both scales (HAM-A: 6 vs 4, $p=.02$; STAI State: 35 vs 28, $p=.03$; STAI Trait: 43 vs 38, $p=.01$) when compared to women who were still providing breast milk. In multivariate models, no associations remained significant. Again, the small sample size ($n=255$) may have attenuated associations, especially when accounting for multiple covariates in adjusted models.

In Mehta’s et al. (2012) study, state anxiety data collected in mid-pregnancy from a larger sample of 470 women were assessed against breastfeeding duration data collected at 3, 12 and 36 months postpartum. Duration of any breastfeeding ranged from zero to 38.6 months with a median duration of 7.9 months. Any breastfeeding included exclusive breastfeeding as well as combination feeding with formula or complementary foods. STAI scores were not predictive of breastfeeding duration at any of the categorised time periods (<4 months, 4-6 months, and 7-12 months). Again, this analysis included those who chose not to initiate breastfeeding, although a higher prevalence of breastfeeding when compared to national rates somewhat limits generalizability.

In conclusion, neither study found an association between prenatal anxiety and breastfeeding in any quantity (Adedinsewo et al., 2014; Mehta et al., 2012).

Similarities and differences between studies were synonymous to those discussed in the previous section.

2.5 Discussion

Although anxiety during pregnancy may impair postpartum maternal and child outcomes in multiple domains, the relationship between prenatal anxiety and infant feeding outcomes is not well understood. The primary objective of this review was to evaluate the evidence relating to these variables. To date, six studies with 3185 participants are available for review (Adedinsewo et al., 2014; Fairlee et al., 2009; Insaf et al., 2011; Mehta et al., 2011, 2012; Sherr, 1989). Among these studies, three examined multiple infant feeding outcomes (Table 2.2) resulting in 10 overall analyses examining the relationship between prenatal anxiety and infant feeding (Adedinsewo et al., 2014; Fairlee et al., 2009; Mehta et al., 2012).

Of the 10 reported analyses, seven found no relationship between prenatal anxiety and infant feeding outcomes, namely breastfeeding initiation and “any” breastfeeding activity. Of the four studies assessing breastfeeding initiation (Adedinsewo et al., 2014; Fairlee et al., 2009; Mehta et al., 2011; Sherr, 1989), one was conducted in the 1980s with various methodological and analytical weaknesses meaning results should be approached with caution (Sherr, 1989). Another two studies were subject to an unusually high prevalence of initiation which limits the generalisability of results (Adedinsewo et al., 2014; Fairlee et al., 2009).

Both studies assessing how women intend to feed their baby reported a significant relationship between high levels of prenatal anxiety and formula feeding intentions (Fairlee et al., 2009; Insaf et al., 2011). This suggests that women who experience high levels of anxiety in pregnancy are more likely to choose not to breastfeed prenatally. These effects were observed within two diverse samples and remained after controlling for a range of confounders and effect modifiers. Previous research has found that breastfeeding intention is a strong and potentially modifiable predictor of breastfeeding behaviour, showing significant associations with both exclusive breastfeeding and prolonged breastfeeding duration (Kim, Hoetmer, Li, & Vandenberg, 2013; Linares, Rayens, Gomez, Gokun, & Dignan, 2014). However, Insaf and colleagues (2011) sole outcome was feeding intention and Fairlee’s (2009) findings did not translate into reduced breastfeeding initiation.

One study also found that state anxiety was predictive of reduced exclusive breastfeeding duration (Mehta et al., 2012). Given the recognised benefits of exclusive breastfeeding to six months, it is evident that future studies are warranted in this area before assumptions are made (Kramer & Kakuma, 2012). However, it could be argued that women with state anxiety in pregnancy who choose to breastfeed may also be more likely to provide a formula supplement in the early postpartum. This may be explained via the inverse relationship between state anxiety and breast milk volume noted in the introduction (Chen et al., 1998). This argument is further supported by two related studies which also found that prenatal anxiety was related to early breastfeeding cessation (Kehler, Chaput, & Tough, 2009; Ystrom, 2012). These studies were not included in this review as one failed to explore anxiety independently from depression (Ystrom, 2012), and one failed to control for the effects of parity (Kehler et al., 2009). Various measurement issues hindered the comparability of findings between studies. There was limited agreement on exposure and outcome measures with only two studies from the same author providing recognised definitions of breastfeeding (Mehta et al., 2011, 2012) and one study using an anxiety measure specific to pregnancy (Fairlee et al., 2009). Although the majority of studies administered the STAI, none utilised clinical thresholds for anxiety, despite using a diagnostic measure (Adedinsewo et al., 2014; Insaf et al., 2011; Mehta et al., 2011, 2012; Sherr, 1989). Some studies benefited from multiple prenatal anxiety assessments; however, inconsistent timing of data collection across studies coupled with natural fluctuations in anxiety over the course of pregnancy make comparisons between these studies problematic (Adedinsewo et al., 2014; Insaf et al., 2011; Mehta et al., 2011). Some studies also used retrospective, self-report methods to assess feeding outcomes which may have led to recall or reporting bias (Adedinsewo et al., 2014; Mehta et al., 2011, 2012). Similar limitations were prevalent in a review assessing postpartum depression and infant feeding outcomes (Dennis & McQueen, 2009) and suggest a need for researchers in this area to standardise methods of measurement to aid comparability.

Sampling limitations were also prevalent. Three of the studies included were restricted by self-admittedly small sample sizes despite using multivariate models which may necessitate larger numbers for sufficient power (Adedinsewo et al., 2014; Mehta et al., 2011, 2012). Furthermore, none of the studies included reported a

power calculation which may further limit the interpretation of study results. Attrition related bias was also a concern with four studies reporting rates of over 20% (Adedinsewo et al., 2014; Fairlee et al., 2009; Mehta et al., 2011, 2012). Finally the homogenous nature of some samples limited the generalizability of findings (Fairlee et al., 2009; Insaf et al., 2011; Mehta et al., 2011, 2012). Five of the six studies included in the review used analyses which accounted for a range of potential confounders (Adedinsewo et al., 2014; Fairlee et al., 2009; Insaf et al., 2011; Mehta et al., 2011, 2012). Maternal educational attainment was observed as a significant confounder and adjusted for in all five of these studies. Level of education is established as a strong influence on breastfeeding status and is robust to influence from other socio-demographic and psychosocial characteristics (van Rossem et al., 2009). This is therefore essential to take into consideration in future research. Pre-pregnancy BMI was also found to be a key variable impacting exposure and outcome variables in three studies (Fairlee et al., 2009; Mehta et al., 2011, 2012). This adds to a growing body of research linking pre-pregnancy weight status to breastfeeding outcomes (Guelinckx, Devlieger, Bogaerts, Pauwels, & Vansant, 2012; Hauff, 2014), strongly supporting consideration of this variable in future research. The decision to exclude studies which failed to control for parity was warranted with four studies making adjustments based on the number of previous pregnancies (Fairlee et al., 2009; Insaf et al., 2011; Mehta et al., 2011, 2012). The only study which did not find parity to be associated with either exposure or outcome variables was subject to a small sample size which “may have had insufficient power to detect associations where they may have existed (Adedinsewo et al., 2014, p.107). Ultimately, it is recognised that both anxiety during pregnancy and breastfeeding behaviour are multi-faceted phenomena which perhaps cannot be fully explicated with quantitative methodologies such as those reviewed. Future research may benefit from more creative, qualitative or mixed methodology approaches providing a rich and complex understanding of factors affecting infant feeding outcomes.

2.6 Conclusion

In contrast to Dennis and McQueen’s (2009) review assessing postpartum depression and infant feeding outcomes there is insufficient evidence to make firm conclusions regarding the impact of prenatal anxiety on infant feeding outcomes. This is

concerning given the acknowledged correlations between prenatal anxiety and other indices of maternal mental health, the growing body of literature concerning the impact of anxiety in other areas of infant development, and the well-established benefits of breastfeeding. Future studies which take into consideration the limitations of the existing evidence base are urgently needed so policy makers can reliably identify what is needed to support those experiencing anxiety during pregnancy and further promote recommended feeding practices.

Chapter 3

Postpartum anxiety and infant feeding: A systematic review⁴

3.1 Foreword

This systematic review uses an identical methodology and synthesis approach to the previous chapter to provide a comprehensive summary of the relationship between postpartum anxiety and infant feeding outcomes while acknowledging the wide variation in research approach.

3.2 Introduction

Childbirth is a major life event and the abrupt change in life roles and responsibilities in the postpartum period represents a time of risk for the development of anxiety (Paul et al., 2013). Prevalence studies of postpartum anxiety (PPA) reveal estimates of its incidence ranging from 3% to 43%, with evidence that it may occur independently and at a higher rate than postpartum depression (PPD) (Britton, 2008; Glasheen et al., 2010; Paul et al., 2013; Wenzel et al., 2005). However, PPA has received limited attention despite evidence linking anxiety with a range of adverse infant health outcomes (Glasheen et al., 2010; Lonstein, 2007; Paul et al., 2013). Even at subclinical levels and independent of comorbidity of depression, PPA has been linked to insecure attachment behaviours (Manassis, Bradley, Goldberg, Hood, & Swinson, 1994), delayed cognitive development (Galler, Harrison, Ramsey, Forde, & Butler, 2000), negative temperament (Coplan, O'Neil, & Arbeau, 2005), and low social engagement (Feldman et al., 2009) - all relevant outcomes given their relationship with infant feeding (Lauzon-Guillain et al., 2012; Mortensen, 2015; Tharner et al., 2012).

Maternal symptoms of PPA have also been independently implicated in infant feeding outcomes. These include low self-efficacy in the parenting role (Porter &

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Hsu, 2003), diminished maternal reactivity/sensitivity, and decreased coping capability (Mertesacker, Bade, Haverkock, & Pauli-Pott, 2004). There is strong evidence that low self-efficacy and reduced confidence are key variables influencing breastfeeding initiation and duration (Blyth et al., 2002; Dennis, 2002; Ystrom, Niegel, Klepp, & Vollrath, 2008). Associations between maternal sensitivity and breastfeeding initiation, duration and exclusivity have also been repeatedly identified (Britton, Britton, & Gronwaldt, 2006; Else-Quest, Hyde, & Clark, 2003; Kim et al., 2011).

The neurobiological literature provides two fundamental associations between PPA and lactation. Firstly, PPA may negatively influence breastfeeding and the composition of breast milk through physiological stress responses (Dewey, 2001; Stuebe, Grewen, Pedersen, Propper, & Meltzer-Brody, 2012; Zanardo et al., 2001). General (i.e. trait) anxiety disrupts the release of oxytocin and prolactin; hormones which promote the milk ejection reflex (Dewey, 2001; Lonstein, 2007; Stuebe et al., 2012)⁵. Frequent inhibition of this reflex may cause a physiological reduction in breast milk production (Chen et al., 1998; Dewey, 2001). Furthermore, acute emotional stress (i.e. state anxiety) is associated with elevated cortisol and glucose levels. These hormones have been implicated in delaying breast fullness and decreasing milk volume in the immediate postpartum (Chen et al., 1998). The second position provides evidence that lactation results in endocrinological alterations that buffer symptoms of anxiety (Lonstein, 2007). This may simply be through anxiolytic contact with infants (Lonstein, 2007), or the physical act of breastfeeding (Groer, 2005). Animal models have shown hormones produced during lactation can moderate environmental stimuli and subsequent stress responses (Groer & Wilkinson Davis, 2002; Tu, Lupien, & Walker, 2005). Despite some unclear results in lactating women (Groer & Wilkinson Davis, 2002; Groer, 2005; Heinrichs, 2001; Heinrichs, Neumann, & Ehlert, 2002), it is theorised that similar processes occur in humans (Groer & Wilkinson Davis, 2002).

Finally, there is evidence linking suboptimal infant feeding outcomes with other indices of maternal mental health. A systematic review examining the relationship

⁵ A contextual description of the multifaceted nature of anxiety, i.e. state, trait can be found in Chapter 2

between postpartum depression and infant feeding outcomes found that women with depressive symptoms are at an increased risk of experiencing reduced breastfeeding initiation, duration and self-efficacy (Dennis & McQueen, 2009). A similar review by Fallon, Bennett, & Harrold (2016; Chapter 2) found that women with high levels of prenatal anxiety were more likely to express intentions to formula feed and may be less likely to exclusively breastfeed. Given high rates of sequential and concurrent comorbidity between PPA and other indices of maternal mental health, and a lack of studies controlling for these key confounds (Fallon, Bennett, & Harrold, 2016 [Chapter 2]), it is conceivable that PPA may also undermine recommended feeding practices via these processes.

While there is increasingly robust evidence to suggest a relationship between PPA and infant feeding outcomes, no such summary of the literature has been completed. As such, this research aims to provide a comprehensive systematic review of all existing studies which examine the relationship between PPA and infant feeding outcomes. Similar to other reviews of this nature (Dennis & McQueen, 2009; Fallon et al., 2016 [Chapter 2]), a narrative synthesis will be applied to account for the heterogeneity in methodologies, measures, and analyses found in the field. Given the well-established benefits of recommended infant feeding practices, and the substantial lack of uptake to these recommendations globally (Australian Institute of Health and Welfare, 2011; Bolling, Grant, Hamlyn, & Thornton, 2005; Centers for Disease Control and Prevention, 2015; Health Canada, 2011), clarifying this relationship is vital for all those working towards improving maternal and infant health.

3.3 Methods

This systematic review of the literature used a narrative synthesis methodology. Included studies were initially grouped according to infant feeding outcome (sub-group). Each study within a sub-group was then described in a commentary reporting on study characteristics including design, sample, measures, results, and methodological issues. Differences and similarities among study results were then synthesised to draw conclusions within and between sub-groups.

3.3.1 Eligibility criteria

Published and unpublished studies were eligible if they collected data relating to current or previous infant feeding attitudes, behaviour or biological sequelae (i.e. breast milk composition), and examined anxiety in the postpartum. Given high variability in breastfeeding definitions, for the purpose of this review, breastfeeding behaviour was defined as any current or previous breastfeeding activity at any intensity (i.e. exclusive, any). The operational definition of PPA utilised was any sub-clinical, self-reported symptoms or clinical diagnosis of anxiety occurring during the first year postpartum. This liberal time interval was allowed to account for varying methodologies in the literature. Studies which examined women with anxiety symptoms (sub-clinical or clinical) identified pre-pregnancy or during pregnancy were not deemed eligible. Other mental health conditions occurring during pregnancy or the postpartum (i.e. prenatal anxiety, prenatal or postpartum depression, postpartum blues, and puerperal psychosis) were also ineligible. However, due to recognised high comorbidity rates with postpartum depression, research that focused on postpartum depression were examined if the measures used contain an anxiety subscale with analyses for PPA reported separately. Prospective designs that examined prenatal anxiety were also examined if PPA was subsequently measured. Studies of mothers with premature (<37 weeks) or very low birth weight (VLBW; <1500g) infants, or those in Special Care Baby Units or Neonatal Intensive Care Units at the time of study were not deemed eligible. Psychological distress is common in these populations (Holditch-Davis et al., 2015; Moran, Polanin, Segre, & Wenzel, 2015; Zerkowitz et al., 2008) and inclusion was expected to confound results. Mothers of infants with specific medical problems known to affect feeding (e.g. cerebral palsy, cleft lip or palate, gastrointestinal disorders, severe allergies) were also excluded due to the high risk of confounding. Table 3.1 provides a summary of inclusion/exclusion criteria. No language restrictions were placed upon eligibility of studies. Two studies required translation from international academics (Aragaki, 2002; Courtois, Lacombe, & Tyzio, 2014). The review protocol can be obtained from the authors.

Table 3.1 *Inclusion and exclusion criteria*

Inclusion Criteria

- Published or unpublished literature in any language
 - Sub-clinical, self-reported symptoms or clinical diagnosis of anxiety occurring during the first year postpartum
 - Any current or previous infant feeding attitude, behaviour or biological sequelae (i.e. breast milk composition)
 - Studies examining postpartum depression which use an anxiety subscale and report analyses for anxiety separately
 - Prenatal anxiety if postpartum anxiety was also assessed and analyses were reported separately
-

Exclusion Criteria

- Historical literature (> 100 years)
 - Sub-clinical or clinical diagnosis of anxiety occurring pre-pregnancy
 - Other mental health conditions (i.e. postpartum blues, postpartum psychosis, prenatal depression, prenatal anxiety*, prenatal depression, postpartum depression*) occurring during pregnancy or the postpartum
 - Mothers of infants in SCBU or NICU at time of study
 - Mothers of premature (<37 weeks) or VLBW (<1500g) infant
 - Mothers of infants with specific health problems known to affect feeding
-

*excluded if they did not also examine and provide separate analyses for postpartum anxiety

3.3.2 Information sources

Scoping searches were initially conducted by a perinatal researcher and psychology librarian. The search strategy involved systematically reviewing both published and unpublished articles and theses targeting academic research, conference proceedings, and local and central government studies. The information sources were broad to ensure that a comprehensive range of studies were assessed for their relevance. The

initial search strategy was limited to the inception year of each database to August 2015. Databases searched were: Medline (1966-2014), Global Health (1910-2014), Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1982-2014), PsycInfo (1887-2014), PsycArticles (varies by title), Proquest (varies by database), AMED (1985-2014), Cochrane Library (varies by database), Scopus (1823-current), and Google Scholar (varies by title). Key words used in various combinations included “postpartum anxiety,” “postnatal anxiety,” “maternal anxiety,” “breastfeeding,” “infant feeding,” “formula feeding,” and “bottle feeding”. Boolean operators were applied to blend the key words and truncation was used to retrieve variants of each key word. Controlled vocabulary (MeSH) was applied when searching the Medline database.

3.3.3 Study selection

An example of a full electronic search strategy can be found in Appendix 3. Tables of contents for key journals were hand searched from 2012 to 2015. A manual search of reference lists of included articles and relevant reviews was undertaken alongside correspondence to experts in the field to identify any data sources not yet found via previous methods. A three-stage screening protocol was followed. Titles were assessed and any articles that were evidently unsuitable were excluded at this preliminary stage. Abstracts were then screened and excluded where appropriate. Finally, the full text of each eligible article was read thoroughly by two authors (VF and JH) to determine inclusion in the synthesis.

3.3.4 Data extraction

Two review authors (VF and JH) independently extracted data from the included studies. Any inconsistencies were resolved by discussion or, where necessary, KB was consulted. For each study, data extracted included study design, participants (sample size and characteristics), measures taken, results, and pertinent methodological details. Where necessary, authors were contacted to identify/confirm any missing or ambiguous data. The Newcastle-Ottawa Quality Assessment Scale (NOS) was then applied independently to each included study by VF and JH to generate methodological discussion within and across studies. The NOS is quality assessment tool which detects risk of bias. It is recommended by the

Cochrane Collaboration to examine the quality of observational studies in a systematic review (Higgins & Green, 2011). A modified version of the NOS, previously applied in health research, was used for cross-sectional designs (Shea et al., 2012).

3.4 Results

The search strategy identified 102 studies, of which 33 offered information specifically related to PPA and infant-feeding outcomes (Fig 3.1 and Table 3.2). Some studies reported multiple outcomes (e.g. breastfeeding initiation and duration) yielding 45 different analyses. Studies included were published between 1959 and 2014 with sample sizes ranging from 32 to 186,452 (N = 194,402). Samples were derived from 11 countries (Australia, Barbados, Brazil, Canada, France, Germany, Italy, Japan, Turkey, United States, and the United Kingdom). Similar to other reviews in the area (Dennis & McQueen, 2009; Fallon et al., 2015 [Chapter two]), heterogeneity in measures, methods, and timing of outcome assessments meant a meta-analysis was not statistically feasible. Instead, data was narratively synthesised according to infant-feeding outcome: breastfeeding initiation; exclusive breastfeeding; any breastfeeding; breastfeeding attitudes; maternal/infant breastfeeding behaviour; and breast milk composition. Where multivariate analyses were conducted to adjust for confounds, they were given reporting precedence over bivariate analyses.

3.4.1 PPA and breastfeeding initiation

Nine studies examined the association between PPA and breastfeeding initiation (Adedinsewo et al., 2014; Britton, 2007; Brown & Arnott, 2014; Call, 1959; Gagnon, Leduc, Waghorn, Yang, & Platt, 2005; Hellin & Waller, 1992; Taylor, 1987; Turner & Papinczak, 2000; Xu et al., 2014). Two, using diagnostic criteria, found a positive relationship (Call, 1959; Xu et al., 2014). In a dated US cross-sectional study, primiparous (n=50) and multiparous (n=54) mothers who initiated breastfeeding were more likely to be categorised as ‘anxious’ than ‘calm’ pre-discharge by a trained psychiatrist (Call, 1959).

Figure 3.1 *Prisma flow diagram*

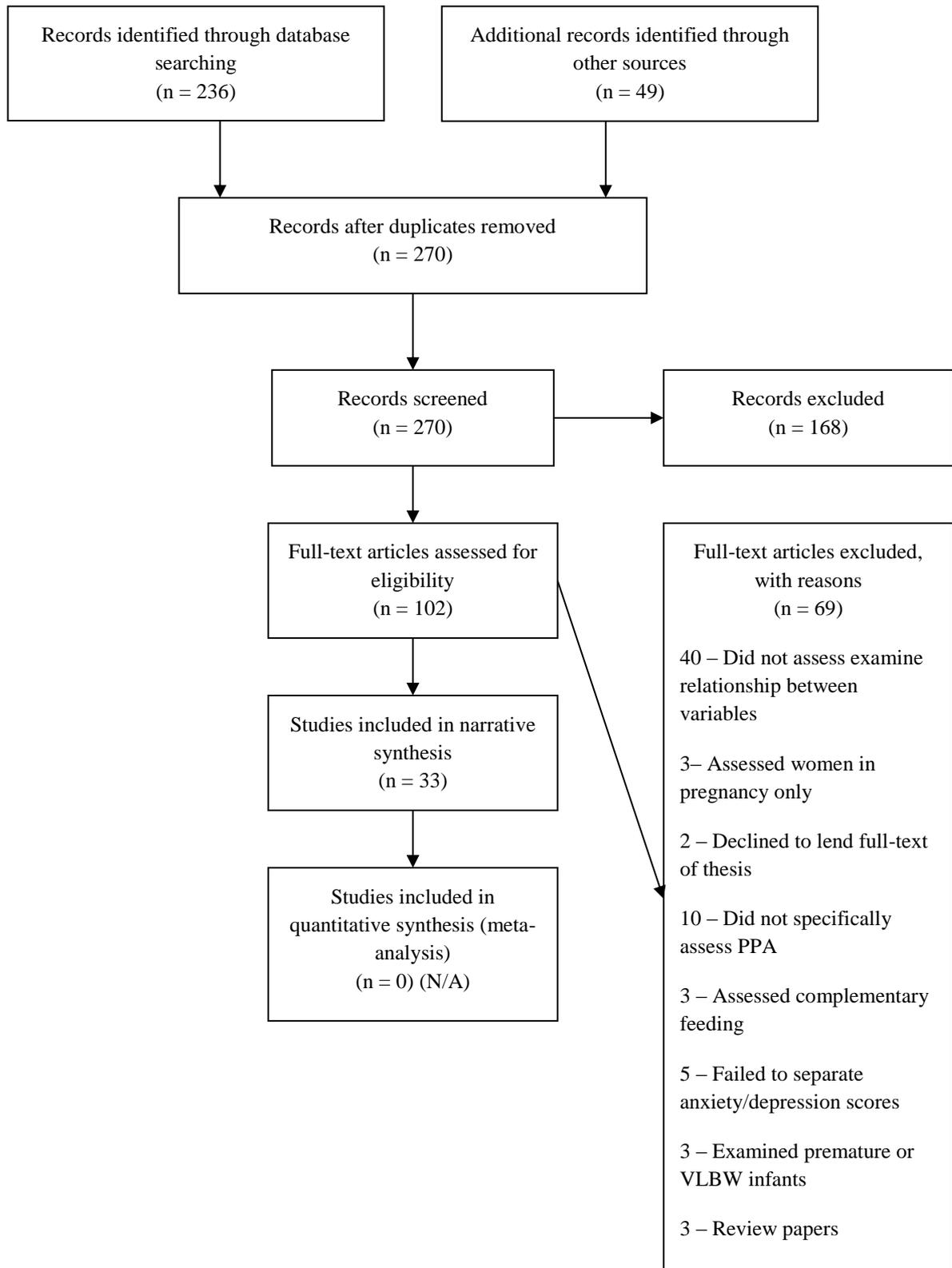


Table 3.2: Manuscripts included that examined the relationship between postpartum anxiety and infant feeding outcomes

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and Breastfeeding Initiation	Adedinsewo et al. (2014)	Prospective cohort study	306 Canadian women recruited from maternity hospital in Hamilton. Included women from socio-demographically disadvantaged population and women who screened positively for antenatal anxiety	HAM-A 3 months PP, STAI at 3 and 6 months postpartum	Self-report question administered at 3 months PP with option of responding that they never BF or provided BM for their baby	94.2% of women initiated BF meaning there was insufficient variance to assess differences across anxiety levels	Unusually high prevalence of BF initiation. No depression measure included. Did not use clinical cut-offs for anxiety measures. Comprehensive range of confounders accounted for.
	Britton (2007)	Prospective cohort study	973 US women university medical centre, 422 completed pre-discharge survey	STAI (state) administered at hospital discharge	BF initiation immediately after delivery and in hospital formula supplementation	Mothers who BF immediately after birth and did not supplement with formula during their hospital stay had significantly lower anxiety scores than those who did not.	Bivariate analyses only. Clear definition of BF initiation. No depression measure included. Results were significant when anxiety was analysed categorically and continuously.
	Brown & Arnott (2014)	Cross sectional survey (paper based and online)	508 UK mothers with an infant aged between 0-12 months located in areas of varying deprivation to encourage a wide demographic group	4 item anxiety subscale of the Infancy Parenting Styles Questionnaire (IPSQ)	Self-report question retrospectively enquiring whether participants had BF, fed EBM, or FF at birth	Mothers who initiated BF had significantly lower anxiety levels when compared to mothers who fed EBM or FF. No difference was found between those who fed EBM or FF	Postpartum specific measure of anxiety, although only a subscale. No depression measure included. Included those who fed EBM in analysis. Comprehensive range of confounders accounted for.
	Call (1959)	Cross sectional study	104 mothers from a single US hospital - split into 50 primiparous and 54 multiparous and analysed separately	Group/single observations in hospital PP by one interviewer trained in paediatrics and psychiatry – categorised as either anxious/calm	Self-report question – categorised as those who EFF from birth and those who initiated BF in hospital	Primiparous and multiparous mothers who initiate BF are more anxious in the very early PP than those who initiate FF	Dated manuscript. No inferential statistics conducted. Large potential for interviewer bias when categorising anxiety. No depression measure taken.
	Gagnon et al. (2005)	Cross sectional study	564 Canadian women recruited from university hospital as part of wider RCT - representative sample. All initiated BF, all highly motivated to BF with partners supportive of BF.	STAI measured at two weeks PP and dichotomised into high/low	Initial formula supplementation in hospital abstracted from medical records	High maternal trait anxiety was predictive of up to 2.5 times more supplementation in hospital. No significant relationship between state anxiety and supplementation	Reverse causality bias - could be that supplementation led to an increase in trait scores (trait scores taken after hospital stay). Justified sample size. Comprehensive range of confounders accounted for. No depression measure taken.

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and BF initiation							
	Hellin & Waller (1992)	Prospective cohort study	145 UK women recruited from district hospital. 76 women completed measures at 1 week, 111 completed measures at 5 months	STAI (state and trait) at 1 week and 5 months PP	Women were asked if they had BF at all or not (BF not defined) some months after delivery (actual time PP not specified)	No significant difference in anxiety (state or trait) at 1 week or 5 months between those who had initiated BF and those who had not	Antenatal anxiety measurement also collected. Depression measure taken. Multiple anxiety assessments
	Papinczak & Turner (2000)	Prospective cohort study	159 Australian mothers recruited from a group of 210 from a women's hospital in Brisbane. 30 controls randomly selected from this group were not interviewed at 3 months to measure the effect of interview or bias on BF outcomes, no difference between control and study group.	Duke Health Profile (anxiety subscale) self-report at 3 months PP	BF initiation defined as one successful BF before hospital discharge	No significant difference in anxiety scores at 3 months PP between those who initiated BF in hospital and those who did not	Low loss to follow-up at 3 months. Subscale used to measure anxiety. Depression subscale also used. Small sample size had capacity to reduce power in multivariate analyses. Comprehensive range of confounders accounted for.
	Taylor (1987)	Cross sectional study	36 primiparous women from US hospital. Sampled for women with no maternal and infant complications	STAI-S (state only) administered during hospital stay, trait anxiety data collected but analysed as covariate	Self-report question regarding feeding method during hospital stay collected post-delivery	With trait anxiety controlled, there was no difference in state anxiety levels between participants who initiated BF and those who did not.	Dated thesis. Aside from trait anxiety, no confounders accounted for. Potentially inappropriate parametric analysis given small sample size and no mention of parametric assumptions. No depression measure taken. No definitions of BF provided.
	Xu et al. (2014)	Population-based longitudinal cohort study	186452 Australian women- all mothers who gave birth in NSW, Australia between 2007/8.	Hospital admission for anxiety disorders in the first 12 months PP coded according to ICD-10. Ascertained via record linkage	Feeding status on discharge (BF, EBM, FF) ascertained via record linkage	Mothers who were FF at discharge were less likely to be admitted to hospital within 12 months after birth with a diagnosis of anxiety disorders	Only accounts for cases of anxiety that result in hospital admission. Clinical diagnostic measure of PPA. Depression admissions also analysed. No antenatal psychiatric history. Comprehensive range of confounders accounted for.
PPA and EBF duration							
	Adedisewo et al. (2014)	Prospective cohort study	306 Canadian women recruited from maternity hospital in Hamilton. Included women from socio-demographically disadvantaged population and women who screened positively for antenatal anxiety	HAM-A 3 months PP. STAI at 3 and 6 months postpartum	EBF at 3 and 6 months PP ascertained via self-report question querying the age of the baby when fed with something other than breast milk.	A single point increase in HAMA at 3 months was associated with an 11% reduction in EBF at 6 months. No other effects found for STAI or EBF at 3 months.	No depression measure included. Did not use clinical cut-offs for anxiety measures. Comprehensive range of confounders accounted for.

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and EBF duration							
	Akman et al. (2008)	Prospective cohort study	60 Turkish mothers from University hospital. Homogenous sample.	STAI in the 1st month postpartum	EBF status at 4 months abstracted from perinatal records	No significant differences between state or trait anxiety scores at 1 month and EBF status (yes/no) at 4 months PP	Part of a wider study examining feeding and attachment. Small, homogenous sample. NP test. No definition of EBF provided. Very high EBF rates in the overall sample. Comprehensive range of confounders accounted for. EPDS also administered.
	Britton (2007)	Prospective cohort study	973 US women university medical centre, 422 completed pre-discharge survey, 265 completed 1 month survey (only BF mothers at time of hospital discharge were included)	STAI (state) administered at hospital discharge and 1 month PP	EBF at 1 month (as defined by Labbok & Krasovec, 1990)	Women with higher state anxiety both pre-discharge and 1 month (measured either categorically or dimensionally) were less likely to practice full EBF at 1 month.	Clear definition of EBF. Multiple anxiety assessments. Comprehensive range of confounders accounted for. No depression measure included.
	Clifford et al. (2006)	Prospective cohort study	856 Canadian women from 2 Ontario hospitals. 560 completed 6 month questionnaire. Participants were more likely to be married, well educated, better income, older and more likely to have continued BF than those who dropped out	STAI state and trait at 1 week and 6 months PP - dichotomised into high/low anxiety using 75th percentile	EBF at 1 week and 6 months PP (no definition)	Trait anxiety at 1 week PP was a significant risk factor for ceasing EBF in the first 6 months PP. No other associations found.	EPDS also administered. Comprehensive range of confounders accounted for. Clear description of those lost to follow up. No definition of EBF provided
	Groer (2005)	Cross sectional study	183 US mothers recruited from US hospital and physician offices. 300 initially recruited but mothers who had supplemented were excluded. 33 controls (non-postpartum student nurses) also recruited	POMS (anxiety subscale) at 4-6 weeks PP	Feeding method at 4-6 weeks PP (EBF - never supplemented, EFF - never BF & control)	Participants who EBF to 4-6 weeks had significantly lower levels of anxiety when compared to EFF and a non-postpartum control group	Anxiety subscale used. Depression subscale also used. Comprehensive range of confounders accounted for. Only study to use a non-postpartum control group.
	O'Brien et al. (2008)	Prospective cohort study	657 eligible women from large regional centre in Queensland - inc 2 maternity units (1 private, 1 public). 375 returned questionnaires within 14 days PP (T1), 15% attrition rate between T1 and T2 (6 months PP)	Depression, Anxiety and Stress Scale 21 - DASS 21 (anxiety subscale) returned within 2 weeks PP	EBF at 26 weeks PP ascertained via telephone interview	Anxiety in the first two weeks PP was not significantly associated with EBF at 26 weeks	Subscale used to measure PPA. Comprehensive range of confounders accounted for. Depression subscale also used. No comparison between responders or non-responders although attrition was low. Current Australian guidelines used to define BF.

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and EBF duration	Virden (1988)	Cross sectional study	60 primiparous US women recruited from two hospitals (one private, one public). Ethnically diverse sample.	Maternal Attitude Scale (MAS) - 14 item anxiety subscale administered between 4-6 weeks PP	Feeding method at 4-6 weeks postpartum (EBF EFF, combination of breast and bottle)	Main effect of feeding method on anxiety levels. No post-hoc tests conducted but EBF mothers had clear lower mean anxiety than the other two groups (Combi, EFF)	Anxiety subscale used. Postpartum specific measure. No depression measure taken. No definitions of BF provided. Homogeneity of variance violated due to high dispersion of scores in FF group. Inappropriate analyses therefore reported and findings should be viewed accordingly. May be due to small sample size. Some confounders accounted for.
	Zanardo et al. (2009)	Prospective cohort study	204 (101 primiparous, 103 multiparous) Italian mothers from general hospital in Veneto	STAI at 3-4 days postpartum - researcher administered during interview	EBF success for longer than 3 months ascertained via telephone call	Primiparous women with higher state anxiety levels in the immediate postpartum are less likely to EBF for longer than 3 months. No difference between trait anxiety and EBF for longer than 3 months. No analyses for multiparous group	High rates of BF initiation. Used WHO criteria for BF. Only age, education, and type of delivery controlled for. No depression measure taken.
PPA and any BF duration	Adedinsawo et al. (2014)	Prospective cohort study	306 Canadian women recruited from maternity hospital in Hamilton. Included women from socio-demographically disadvantaged population and women who screened positively for antenatal anxiety	HAM-A 3 months PP. STAI at 3 and 6 months postpartum	Any BF at 6 and 12 months. Self-report question asking the age of baby (in weeks) when mothers stopped providing any breast milk	A single point increase in STAI (state and trait) scores at 3 months was associated with a 4% and 7% reduction in the odds of any BF at 12 months respectively. No differences found for HAM-A at 3 months or STAI at 6 months	Different anxiety scales found different results. No depression measure taken. Small sample size may have had insufficient power. Did not utilise clinical cut-off points. Oversampling for low income and maternal adversity allows greater generalisation to high-risk populations. Comprehensive range of confounders accounted for
	Britton (2007)	Prospective cohort study	973 US women university medical centre, 422 completed pre-discharge survey, 265 completed 1 month survey (only BF mothers at time of hospital discharge were included)	STAI (state) administered at hospital discharge and 1 month PP	Any BF termination at 1 month (as defined by Lobbok & Krasovec, 1990)	Women with higher state anxiety both pre-discharge and 1 month (measured either categorically or dimensionally) were more likely to have terminated any BF at 1 month	Multiple anxiety assessments. Comprehensive range of confounders accounted for. No depression measure taken

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and any BF duration							
	Brown & Arnott (2014)	Cross sectional survey (paper based and online)	508 UK mothers with an infant aged between 0-12 months located in areas of varying deprivation to encourage a wide demographic group. At each feeding duration stage the sample was reduced in size to infants that age or older (n= 289 at 6 months)	4 item anxiety sub-scale of the Infancy Parenting Styles Questionnaire (IPSQ)	Self-report question asking mothers duration of BF if they had stopped. Analysed as any BF (or no BF) at 2, 6, 12, and 26 weeks	Mothers who were still BF at 2 and 6 weeks had a reduction in anxiety when compared to those that FF or use EBM. No reduction found at 12 or 26 weeks.	Postpartum specific measure of anxiety, although only a subscale. No depression measure included. Multiple feeding outcome time-points. No definitions of BF provided. Comprehensive range of confounders accounted for.
	Buckner (1987) Doctoral Thesis	Prospective cohort study	60 primiparous women who initiated BF from 2 urban US hospitals.	STAI (state) at 48-72 hours post delivery	BF continuation at 2 and 4 weeks PP ascertained via follow up phone interview. Dichotomised for each time point (1= BF with no more than 4oz of formula and milk a day, 0 = >4oz food or formula)	State anxiety post-delivery was significantly lower among mothers continuing BF at 4 weeks PP when compared to those who choose to supplement more than 4oz per day. No difference found at 2 weeks PP	Imprecise definition of BF. No depression measure taken. Small sample size for analyses conducted. Comprehensive range of confounders accounted for. Did not compare demographics across anxiety, only feeding.
	Cooke et al. (2007)	Prospective cohort study	365 Australian women from 3 public hospitals. 78% (n = 284) returned the 2- week survey, 73% (n = 268) returned the 6-week survey and 70% (n = 255) returned the 3-month survey.	STAI (state) 3 months PP	BF cessation (exclusive, predominant, partially, token grouped together) < 2 weeks, 2-6 weeks, >6 weeks to 3 months, >3 months. Breast feeding cessation was defined as 'Not breast feeding and do not plan to breast feed this baby in the future'	There were no difference in state anxiety levels at 3 months PP and time of any BF cessation (< 2 weeks, 2-6 weeks, >6 weeks to 3 months)	Antenatal trait anxiety data also collected. EPDS data also collected. Bivariate analyses only. Clear description of response rate.
	Courtois et al. (2014)	Prospective cohort study	247 mothers who initiated BF recruited from 1 Paris maternity hospital.	STAI at PP discharge	Self-report BF continuation (EBF and partial grouped together) at 6 months PP.	Higher levels of state anxiety at discharge were associated with reduced odds of BF continuation at 6 months	Low anxiety levels overall in the sample. Sample size justified. Comprehensive range of confounders accounted for. Adequate retention rate. No depression measure taken. Imprecise definitions of BF
	Dusdieker et al. (1985)	Cross sectional survey	145 primigravida women from 4 paediatric practice sites in Iowa, US. Diverse SES. Excluded women who initiated BF but discontinued early	Infant Feeding Questionnaire - various constructs ascertained via FA which related to postpartum anxiety - worries about health, BF worries, anxiety before BF, worries of lack of support.	BF duration at 6-8 weeks (defined as BF if <1 bottle of formula per day).	Specific postpartum breastfeeding worry is negatively associated with decision to continue predominant (<1 FF per day) BF for 6-8 weeks. Anxiety before breastfeeding (i.e. early non-specific anxiety may heighten BF convictions and reinforce specific concerns about BF.	Small sample size for analyses conducted. No indication of when the survey was completed postpartum - may contribute to recall bias. Postpartum specific measure of anxiety, although only subscales. Age, education and income controlled for. Imprecise definitions of BF. No depression measure taken.

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and any BF duration							
	Hellin & Waller (1992)	Prospective cohort study	145 UK women recruited from district hospital. 76 women completed measures at 1 week, 111 completed measures at 5 months. Only analysed those who BF their babies at least once (N=65)	STAI (state and trait) at 1 week and 5 months PP	Any BF continuation 2 months PP (divided by median split)	State and trait anxiety at 1 week PP but not 5 months PP was predictive of BF discontinuation at 2 months	Antenatal anxiety measurement also collected. Depression measure taken. Multiple anxiety assessments. No confounders accounted for in analysis
	Mezzacappa & Katkin (2002)	Cross-sectional study	55 US mothers recruited for wider study examining maternal cognitions (28 BF/27 FF)	State Trait Personality Inventory (STPI) at any time between 1-12 months PP. Examined trait anxiety subscale	Feeding method (breast/bottle) between 1-12 months. BF defined as either EBF or with any amount of formula supplementation. FF defined as never BF or no BM at time of data collection but may have BF in the past	Trait anxiety in the first year postpartum does not differ between breast and bottle feeders	Anxiety subscale. No depression subscale used. Poor categorisation of BF/FF. Small sample size for multivariate analyses. Does not state if parametric assumptions met for analyses conducted. Some known confounders not controlled for.
	O'Brien et al. (2008)	Prospective cohort study	657 eligible women from large regional centre in Queensland - inc 2 maternity units (1 private, 1 public). 375 returned questionnaires within 14 days PP (T1), 15% attrition rate between T1 and T2 (6 months PP)	Depression, Anxiety and Stress Scale 21 - DASS 21 (anxiety subscale) returned within 2 weeks PP	Any BF at 26 weeks PP ascertained via telephone interview	Anxiety in the first two weeks PP was not significantly associated with any BF at 26 weeks	Subscale used to measure PPA. Comprehensive range of confounders accounted for. Depression subscale also used. No comparison between responders or non-responders although attrition was low. Current Australian guidelines used to define BF.
	Papinczak & Turner (2000)	Prospective cohort study	159 Australian mothers recruited from a group of 210 from a women's hospital in Brisbane. 30 controls randomly selected from this group were not interviewed at 3 months to measure the effect of interview or bias on BF outcomes, no difference between control and study group.	Duke Health Profile (anxiety subscale) self-report at 3 and 6 months PP	Any BF duration to 6 months (whether partial or exclusive)	Lower anxiety at 3 months PP was significantly associated with any BF at 6 months. Levels of anxiety at 6 months were not significantly associated with any BF at 6 months.	Imprecise definition of BF. Depression subscale also used. Comprehensive range of confounders accounted for. Small sample size had capacity to reduce power in multivariate analyses.
	Paul et al. (2013)	Prospective cohort study	1154 US mothers taken from wider longitudinal study, 15 excluded because of twin delivery, 16 excluded because of missing EPDS/STAI data. Final sample of 1123. Mainly Caucasian, middle/high income.	STAI (state) administered via interview during hospital stay. A score > 40 served as a positive screen	BF duration assessed via telephone interview at 2 weeks, 2 months, and 6 months PP – measured using questions adapted from the Infant Feeding Practices study	A positive STAI score during the maternity stay was associated with reduced BF duration during the first 6 months after childbirth. Analyses stratified by parity show that a positive screen was significantly associated with reduced BF in primiparous but not multiparous women.	Only used women who intended to BF. Despite collecting data on exclusivity, this was not analysed. No definition of BF provided. Despite collecting data at multiple time points for STAI the analysis only used baseline screen. Comprehensive range of confounders accounted for. EPDS measure taken.

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and any BF duration							
	Tinkle (1985) Doctoral Thesis	Prospective cohort study	204 primiparous married women from 3 private hospitals in Texas, middle to upper income, 177 analysed (86% response rate)	STAI (state and trait) administered in the postpartum hospital stay	Successful BF at 4 months PP determined by converting each subjects score on BF duration and satisfaction (ascertained via Infant Feeding Inventory mailed Qs) to z scores, summing and then median split	State anxiety was not a significant predictor of successful BF, however trait anxiety was negatively associated with successful BF group membership	Unusual definition of successful BF. Multicollinearity noted between predictors may have caused issue with analysis. No depression measure taken. Comprehensive range of confounders accounted for.
	Wiesenfeld et al. (1985)	Cross sectional study	48 US mothers recruited via birth announcements, area paediatricians and word of mouth (24 breast/ 24 bottle)	Single 10 point Likert-scale question examining anxiety after 3 videotape stimuli of own infant (smiling, neutral, crying)	Feeding method - breast or bottle. No definition provided (Infants between 90-194 days)	Anxiety levels after viewing infant emotion videotapes did not differ between breast and bottle feeding mothers	Single, unvalidated question used to examine anxiety. No description of how BF was defined. Small sample size for analyses conducted - no indication of whether parametric assumptions were met. Only controlled for parity and age of infant
PPA and BF Attitudes							
	Britton (2007)	Prospective cohort study	973 US women university medical centre, 422 completed pre-discharge survey, 265 completed 1 month survey (only BF mothers at time of hospital discharge were included)	STAI (state) administered at hospital discharge	Breastfeeding Confidence Scale (BCS) at hospital discharge	Pre-discharge state anxiety was negatively correlated with breastfeeding confidence	Bivariate analyses only. Validated exposure and outcome measures. No depression measure included.
	Dennis (2006)	Cross sectional study	522 Canadian mothers. Predominately married and well educated. All initiated BF	STAI (state) at 1 week PP	Breastfeeding Self-Efficacy Scale (BSES) at 1 week PP	High state anxiety was negatively associated with breastfeeding self-efficacy at 1 week PP	Comprehensive range of confounders accounted for. Validated exposure and outcome measures. EPDS measure also used.
	Galler et al. (1999)	Prospective cohort study	226 Barbadian mothers, low middle class from main maternity hospital. Follow ups: 158 (69%) at 7 weeks, 168 (74%) at 3 months, and 209 (92%) at 6 months.	Zung Anxiety Scales at 7 weeks	Preference for BF factor on feeding practices interview at 7 weeks PP, 3 months PP, and 6 months PP - items included number of BF/FF in last 24 hours, satisfaction after BF and quality of BF suck	Women with early anxiety had a lower preference for breastfeeding at 3 months PP	Depression measure also taken. Researcher developed feeding practices instrument. Range of environmental factors controlled for.
	Galler et al. (2006)	Prospective cohort study	226 Barbadian mothers, low middle class from main maternity hospital. Follow ups: 158 (69%) at 7 weeks, 168 (74%) at 3 months, and 209 (92%) at 6 months.	Zung Anxiety Scales at 7 weeks	Feeding attitudes questionnaire at 7 weeks PP- researcher developed	Early anxiety was associated with some negative early feeding attitudes, namely the belief that BF is restrictive and should be private	Depression measure also taken. Researcher developed feeding attitudes instrument. Range of environmental factors controlled for

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and Maternal/Infant Feeding Behaviours							
	Aragaki (2002) MSc Thesis	Prospective cohort study	168 BF mothers sampled from University hospital in Brazil. Split into primiparous and multiparous (42 primiparous normal lactation, 42 insufficient milk production).	STAI: state anxiety at 10 days PP and 30 days PP; trait anxiety at 10 days PP	Milk production - split into normal and abnormal. Ascertained via physical breast examination and mothers complaints of infant behaviour or BF problem.	No relationship between postpartum state or trait anxiety and milk production in the first month postpartum in primiparous or multiparous women.	100% follow up rate as part of nursing consultation. Unusual method of defining abnormal milk production. No confounders accounted for. No depression measure taken
	Blank (1986)	Cross sectional study	65 US mother infant couples (59 Black) from Alabama university hospital. Only FF mothers included	STAI (state and trait) between 48-72 hours PP. State scale given pre-feed and during feed, trait given post feed	Infant satiety defined as pre-feed and post-feed serum glucose levels, and amount of formula consumed	Formula consumption difference scores varied by in-feed state anxiety scores. Infants of slightly anxious mothers consumed more formula than those with extremely low anxiety.	Bivariate analyses only. Unable to conduct analyses on serum glucose levels due to high chance of Type 1 error. No depression measure taken.
	Richter & Reck (2013)	Cross sectional survey	57 German women taken from wider longitudinal study. Recruited from psychiatry ward to gain sub sample of clinically anxious mothers (n=21, 36.8%)	STAI (state and trait) administered to mothers of infants aged between 2.5 and 4.3 months	Crying, Feeding and Sleeping Inventory for infant regulatory problems. Feeding subscale has 13 items about feeding difficulties	Higher levels of state and trait anxiety were associated with feeding difficulties between 2 and 5 months PP.	Feeding difficulties subscale only. No depression measure taken. Range of confounders accounted for.
	Hart et al. (2011)	Cross sectional study	50 BF US women from university hospital. 196 recruited, high attrition mainly due to exclusion of those who had supplemented with formula in last 24 hours	STAI between 9-16 days (second week PP) at home visit	Latch quality (first 2 mins of feeding session, 3 point scale). Milk intake (subtracted prefeed from postfeed weights). Sensitive positioning (3 point scale). Frequency of touch (5 point scale). Frequency of vocalisation (5 point scale). Duration of feeding (in mins). All scales researcher developed.	STAI scores in BF mothers were positively associated with frequency of touch during a feeding session in the second week PP. No other associations.	Trained coders. Good inter-rater reliability. Depression measure also taken. Clear analyses with range of confounders accounted for. Small sample size may have lacked adequate power.
	Hellin & Waller (1992)	Prospective cohort study	145 UK women recruited from district hospital. 76 women completed measures at 1 week, 111 completed measures at 5 months. Only analysed those who BF their babies at least once (N=65)	STAI (state and trait) at 1 week and 5 months PP	Feeding difficulties – researcher developed VAS scales. Physical problems with breastfeeding – researcher developed checklist. Both maternal self-report at 5 months PP	High state anxiety at 5 months was associated with infant reflux concerns. High trait anxiety at 1 week PP was associated with food fussiness. High trait anxiety scores at 5 months was associated with hungeriness and demanding behaviour	Antenatal anxiety measurement also collected. Depression measure taken. Multiple anxiety assessments. No confounders accounted for in analysis

Table 3.2 Continued

Principal Outcome	Authors	Study Design	Sample	PPA Measure	Infant Feeding Outcome	Summary of Results	Methodological Comment
PPA and Breast Milk Composition	Hart et al. (2004)	Cross sectional study	32 EBF US mothers recruited from university hospital. 150 recruited but only 40 EBF at 1 week PP. Only 32 eligible to schedule appt. Strict exclusion criteria used to avoid breast milk confounds	STAI (state) and POMS (anxiety subscale) between 7-11 days PP	Cortisol and Secretory Immunoglobulin (Sig A) assay levels in breast milk. Milk collection took place after 2 hours of not BF to control for diurnal variations	Anxiety levels in the first two weeks PP as assessed by two measures were not associated with cortisol or Sig A levels in breast milk in EBF women	Small sample size for parametric analyses. Range of confounders accounted for. Multiple measures of anxiety taken. Depression measures also taken. Interestingly, SigA was associated with depression.
	Kawano & Emori (2015)	Cross sectional study	101 EBF Japanese mothers recruited from Tokyo urban hospital. 81 eligible to participate at 2 weeks PP. Strict exclusion criteria used to avoid breast milk confounds	STAI (state and trait) and POMS (anxiety subscale) at 2 weeks PP	Breast milk Sig A assay levels in milk taken 2 weeks PP and immediately after BF	Moderate inverse correlations were found between early anxiety (as measured on three scales) and levels of SigA in BM in the early PP.	Clear justification of statistical analysis. Justified sample size when compared to other breast milk composition studies included. Only parity and age assessed as confounders. Depression measures taken and also significant.
	Ozbek et al. (2008)	Prospective case-control study	64 EBF women from 1 urban Turkish hospital. 21 cases, 43 controls recruited over 3 years.	STAI (state and trait) before 10 days PP	Elevated breast milk sodium (BMS) (cases) or not (controls) examined using ion selective method. Medical and physiological measures used to ascertain hypernatraemic dehydration with associated elevated breast milk sodium in cases	Mothers with elevated BMS (cases) had significantly higher state anxiety scores compared with controls. No differences found for trait anxiety.	Depression measure also taken. Comprehensive range of demographics accounted for. Clear definition of cases and controls.
	Zanardo et al. (2001)	Cross sectional study	42 EBF Italian women (14 of these delivered preterm infants and were excluded from the review). 14 vaginal delivery, 14 c-section (analysed separately). Strict exclusion criteria used to avoid breast milk confounds.	STAI (state and trait) at 4 days PP	Colostrals milk beta-endorphin concentrations (β assay levels extracted using RIA kit. Collected in the morning on day 4 PP after overnight bed rest	In mothers presenting increased colostrals milk b-EP galactopoiesis, after vaginal delivery, there was a significant negative correlation between state and anxiety and colostrals milk β -EP. No other associations present.	Bivariate analyses only. Small sample size for subgroup analyses. No depression measure taken.

PPA indicates Postpartum Anxiety; PP, Postpartum; BF, Breastfeeding; FF, Formula Feeding; EBF, Exclusively Breastfeeding; EFF, Exclusively Formula Feeding; EBM, Expressed Breast milk;

In an Australian population-based longitudinal cohort study, mothers who did not initiate breastfeeding in the hospital (i.e. exclusively formula fed) were less likely to be admitted to hospital with an ICD-10 diagnosis of anxiety disorders in the first year postpartum (ARR: 0.6; 95% CI: 0.5, 0.9) (Xu et al., 2014). However, formula feeding initiation in the hospital was associated with earlier hospital admission (41 days) in those that presented with such a diagnosis (n=585, $p<.05$).

Two studies found an inverse relationship between breastfeeding initiation and levels of PPA (Britton, 2007; Brown & Arnott, 2014). In a US study, 422 women completed the STAI-state scale pre-discharge (Britton, 2007). Participants who initiated breastfeeding immediately after the birth had significantly lower anxiety scores than those who did not ($p<.05$). Similarly, a cross sectional UK survey of 508 women using a postpartum specific anxiety subscale found that mothers who initiated breastfeeding had significantly lower levels of anxiety ($p<.006$) than those who fed expressed breast milk or initiated formula feeding (Brown & Arnott, 2014). Interestingly, there was no difference between the latter two categories.

Two studies also found a positive association between PPA and pre-discharge formula supplementation (Britton, 2007; Gagnon et al., 2005). In the study described above, Britton (2007) found that mothers who supplemented with formula in the hospital had significantly higher pre-discharge state anxiety scores ($p<.005$). In a Canadian, cross-sectional study, using a representative sample of 564 women, high maternal trait anxiety at two weeks postpartum was a positive predictor of supplementation in hospital (HR: 1.61, 95% CI: 1.01, 2.59). No such relationship was observed between state anxiety and supplementation (Gagnon et al., 2005).

Three studies found no relationship between PPA and breastfeeding initiation (Hellin & Waller, 1992; Taylor, 1987; Turner & Papinczak, 2000). In a UK cohort study of 145 women, there was no significant difference in state or trait anxiety scores at one week or five months postpartum between those who had initiated breastfeeding and those who had not (Hellin & Waller, 1992). An Australian cohort study (n=159) found no significant difference in Duke Health Profile (anxiety subscale) scores at three months postpartum between those who initiated breastfeeding in the hospital and those who did not (Turner & Papinczak, 2000). In a cross-sectional study of 36

primiparous US women, there were no difference in post-delivery state anxiety levels between breastfeeding initiators and non-initiators (Taylor, 1987). Finally, a Canadian cohort study examined PPA in 306 women using the HAM-A at three months and the STAI at three and six months postpartum (Adedinsewo et al., 2014). Due to an unusually high prevalence of breastfeeding initiation (94.2%), there was insufficient variance to assess differences.

3.4.2 PPA and exclusive breastfeeding

Eight studies assessed the relationship between PPA and exclusive breastfeeding (Adedinsewo et al., 2014; Akman et al., 2008; Britton, 2007; Clifford, 2006; Groër, 2005; O'Brien, Buikstra, & Hegney, 2008; Virden, 1988; Zanardo et al., 2009). Six found an inverse relationship between levels of PPA and exclusive breastfeeding using both cross-sectional (Groër, 2005; Virden, 1988) and prospective cohort designs (Adedinsewo et al., 2014; Britton, 2007; Clifford, 2006; Zanardo et al., 2009).

In a Canadian cohort study of 306 women, a single point increase in HAM-A scores at three months postpartum was associated with an 11% reduction in the odds of exclusive breastfeeding at six months (AOR: 0.89; 95% CI: 0.80, 0.99) (Adedinsewo et al., 2014). However, results did not persist when measured with a different anxiety scale (STAI state and trait at three and six months postpartum) or when examining exclusive breastfeeding at three months. Another Canadian cohort study measured state and trait anxiety and exclusive breastfeeding status at one week and six months postpartum in a sample of 856 women (Clifford, 2006). Multivariate analyses revealed that high trait anxiety at one week postpartum was a significant risk factor for ceasing exclusive breastfeeding during the first six months postpartum (CPH: 1.43 95% CI: 1.18, 1.74). No associations were present for state anxiety at either time point or trait anxiety at six months.

In a US cohort study, state anxiety at hospital discharge and one month postpartum was measured in a sample of mothers who were breastfeeding at discharge (n=356) (Britton, 2007). Regression analyses revealed that women with higher state anxiety at discharge were less likely to practice exclusive breastfeeding at one month (AOR: 0.96; 95% CI: 0.93, 0.98). These results persisted for women with higher anxiety at

one month postpartum (AOR: 0.97; 95% CI: 0.95, 0.99). In an Italian cohort study, primiparous women (n=101) with higher state anxiety levels in the immediate postpartum were less likely to exclusively breastfeed for longer than three months (AOR: 0.93; 95% CI: 0.88, 0.98) (Zanardo et al., 2009). No such association was observed for trait anxiety levels.

In a cross-sectional study of 183 US mothers, lower POMS (anxiety subscale) scores were observed in participants who exclusively breastfed to 4-6 weeks when compared to exclusively formula feeding women and a non-postpartum control group, $F(2,166) = 3.88, p < .05$ (Groër, 2005). Post hoc analyses revealed that the difference lay between the exclusive breastfeeding and formula feeding groups ($p = .01$). In a similar cross-sectional study of 60 primiparous US women, MAS (anxiety subscale) scores were significantly different among participants who exclusively breastfed, exclusive formula fed or combination fed $F(2,57) = 4.8, p < .01$ (Virden, 1988). Exclusively breastfeeding mothers had lower mean anxiety, but no post-hoc analyses were conducted.

Two studies found no relationship between PPA and exclusive breastfeeding (Akman et al., 2008; O'Brien et al., 2008). A Turkish cohort study of 60 mothers measured state and trait anxiety at one month postpartum and found no significant differences between levels of anxiety and exclusive breastfeeding status at four months postpartum (Akman et al., 2008). A much larger Australian cohort study mailed the DASS-21 to 657 mothers in the first two weeks postpartum and followed up with a telephone interview at 26 weeks postpartum (O'Brien et al., 2008). Anxiety subscale scores were not associated with exclusive breastfeeding status at 26 weeks.

3.4.3 PPA and "any" breastfeeding

14 studies examined the relationship between PPA and breastfeeding duration in any quantity. Of these, 10 found an inverse relationship (Adedinsewo et al., 2014; Britton, 2007; Brown & Arnott, 2014; Buckner, 1987; Courtois et al., 2014; Dusdieker, Booth, Seals, & Ekwo, 1985; Hellin & Waller, 1992; Paul et al., 2013; Tinkle, 1985; Turner & Papinczak, 2000). Findings are synthesised into breastfeeding of less than or more than three months.

PPA and any breastfeeding duration less than three months

In a cross-sectional study of 508 UK mothers, those who were still breastfeeding in any quantity at both two weeks and six weeks postpartum had a reduction in anxiety (IPSQ subscale) when compared to formula feeding mothers and those who fed expressed breast milk (two weeks: $F(1,472) = 6.63, p=.01$; six weeks: $F(1, 409) = 5.48, p=.02$) (Brown & Arnott, 2014). In a US cohort study of 356 breastfeeding mothers, state anxiety at hospital discharge and one month postpartum was measured (Britton, 2007). Regression analyses revealed that women with higher state anxiety at discharge and one month were more likely to have terminated breastfeeding in any quantity by one month (AOR: 1.07; 95% CI: 1.03, 1.12; AOR: 1.07; 95% CI: 1.03, 1.11) respectively. In a US cohort study of 60 primiparous women, state anxiety post-delivery was significantly lower among mothers continuing predominant breastfeeding at four weeks postpartum when compared to those who choose to supplement more than 4oz formula per day ($p=.04$) (Buckner, 1987). No difference was found at two weeks postpartum. In a US cross sectional study of 145 primiparous women, specific postpartum breastfeeding worry was negatively associated with the decision to continue predominant breastfeeding (less than one formula feed per day) for six to eight weeks ($\beta=-.12; p<.01$) (Dusdieker et al., 1985). In a UK cohort study of 145 women, state and trait anxiety at one week postpartum were predictive of breastfeeding discontinuation at two months $F(2,28) = 3.99, p<.03$ (Hellin & Waller, 1992). No associations were present at five months.

PPA and any breastfeeding duration over three months

In a US cohort study of 204 primiparous mothers, trait anxiety (but not state) pre-discharge scores were negatively associated with successful breastfeeding (combination of any breastfeeding and satisfaction with breastfeeding) at four months postpartum ($r=-.29, p<.001$) (Tinkle, 1985). In a French cohort study of 247 mothers who initiated breastfeeding, higher levels of state anxiety at discharge were associated with reduced odds of any breastfeeding continuation at six months postpartum (AOR: 1.18, 95% CI: 1.06, 1.32) (Courtois et al., 2014). In an Australian cohort study of 159 women, lower Duke Health Profile (anxiety subscale) scores at three months (but not six months) postpartum were associated with any breastfeeding continuation at six months postpartum ($F = 3.61; 95\% \text{ CI: } 17.27,$

25.73; $p=.02$) (Turner & Papinczak, 2000). In a cohort study of 1123 US mothers, a positive STAI state screen (score >40) during the maternity stay was associated with reduced breastfeeding duration in any quantity during the first six months postpartum ($p=.003$) (Paul et al., 2013). In a Canadian cohort study of 306 mothers, a single point increase in STAI (state and trait) scores at three months was associated with a 4% (AOR = 0.96; 95% CI: 0.92, 0.99) and 7% (AOR = 0.93; 95% CI: 0.86, 1.00) reduction in the odds of any breastfeeding at 12 months respectively (Adedinsewo et al., 2014). No differences were found for HAM-A scores at three months or STAI scores at six months.

Four studies found no relationship between PPA and any breastfeeding activity (Cooke, Schmied, & Sheehan, 2007; Mezzacappa & Katkin, 2002; O'Brien et al., 2008; Wiesenfeld, Malatesta, Whitman, Granrose, & Uili, 1985). In an Australian cohort study of 365 women, state anxiety at three months postpartum was not related to breastfeeding cessation at various postpartum time periods (less than 2 weeks, two to six weeks, less than six weeks to three months, over three months) (Cooke et al., 2007). Another Australian cohort study of 657 women measured PPA in the first two weeks postpartum using the DASS-21 (anxiety subscale) and found no association with any breastfeeding activity at 26 weeks (O'Brien et al., 2008). A cross-sectional study of 55 US mothers found no difference in State-Trait Personality Inventory (anxiety subscale) scores between women providing any breast milk and those providing no breast milk in the first year postpartum (Mezzacappa & Katkin, 2002). Another cross-sectional study of 48 US mothers found that anxiety ratings after viewing emotive videotapes of their infants did not differ between breast and formula feeding mothers of infants aged between three and six months (Wiesenfeld et al., 1985).

3.4.4 PPA and breastfeeding attitudes

Four studies collected data relating to PPA and maternal attitudes to breastfeeding. In a US cohort study of 422 women, state anxiety scores were negatively correlated with breastfeeding confidence scores prior to hospital discharge ($r = -.27, p<.001$) (Britton, 2007). Similarly, in a cross-sectional study of 522 Canadian mothers at one week postpartum, state anxiety was one of eight variables predicting breastfeeding self-efficacy scores ($\beta=-.15; p<.001$) (Dennis, 2006). In two studies reporting data

collected from the same Barbadian cohort (Galler, Harrison, Biggs, Ramsey, & Forde, 1999; Galler, Harrison, Ramsey, Chawla, & Taylor, 2006), high Zung Anxiety Scale scores at seven weeks postpartum were associated with negative feeding attitudes at seven weeks (the belief that breastfeeding is restrictive: $r=.17$; $p<.05$; and should be private: $r=.17$; $p<.05$) (Galler et al., 2006) and a lower preference for breastfeeding at three months postpartum ($r=-.24$; $p<.05$) (Galler et al., 1999).

3.4.5 PPA and maternal/infant feeding behaviours

Five studies examined the relationship between PPA and various maternal and infant-feeding behaviours (Aragaki, 2002; Blank, 1986; Hart, Jackson, & Boylan, 2011; Hellin & Waller, 1992; Richter & Reck, 2013). Two assessed PPA in relation to infant-feeding difficulties (Hellin & Waller, 1992; Richter & Reck, 2013). In a UK cohort study of 145 women, state and trait anxiety scores at one week and five months postpartum were collected alongside researcher-developed scales of feeding difficulties and physical problems with breastfeeding at five months (Hellin & Waller, 1992). At one week postpartum, high trait anxiety was associated with food fussiness ($t=3.35$, $p<.01$), and at five months postpartum was associated with hungriness and demanding behaviour ($t=2.53$, $p<.05$). High state anxiety at five months postpartum was associated with infant reflux concerns ($t=2.75$; $p<.01$). State anxiety levels at one week postpartum and infant-feeding difficulties were not related. Anxiety (state, trait at both time points) and physical breastfeeding problems were also not associated. In a cross sectional study of 57 German women, state and trait anxiety was measured alongside the Crying, Feeding and Sleeping Inventory when the infants were aged between two and five months old (Richter & Reck, 2013). State and trait anxiety were positively associated with the 13-item infant-feeding difficulty subscale ($\beta = .41$; $p<.001$; $\beta = .48$, $p<.001$) respectively.

Two studies examined the relationship between PPA and maternal breastfeeding behaviours (Aragaki, 2002; Hart et al., 2011). In a Brazilian cohort study of 168 breastfeeding mothers, state and trait anxiety were measured at 10 days postpartum, and state anxiety data collection was repeated at 30 days postpartum (Aragaki, 2002). No relationship was found between state or trait anxiety and milk production in the first month postpartum. In a US cross-sectional study of 50 breastfeeding

mothers in the second week postpartum, state anxiety was measured alongside scales examining latch quality, milk intake, sensitive positioning, frequency of touch, frequency of vocalisation and duration of feeding (Hart et al., 2011). Anxiety was positively associated with frequency of touch during a feeding session $F(1,49) = 5.67, p < .05, \eta^2 = .11$). No other associations were present.

Finally, a dated US cross-sectional study examined PPA in relation to infant satiety and formula consumption in a sample of 65 exclusively formula feeding women (Blank, 1986). State anxiety was measured pre-feed and in-feed; trait anxiety was measured post-feed. Infants of slightly anxious mothers consumed more formula than those with extremely low anxiety ($t=2.05, p < .05$). Infant satiety analyses could not be performed.

3.4.6 PPA and breast milk composition

Four studies examined the relationship between PPA and breast milk composition in samples of exclusively breastfeeding mothers (Hart et al., 2004; Kawano & Emori, 2015; Ozbek et al., 2008; Zanardo et al., 2001). In a US cross-sectional study, 32 mothers completed state anxiety and POMS (anxiety subscale) measures between seven and eleven days postpartum (Hart et al., 2004). Milk samples were collected two hours post-feed to examine levels of cortisol and secretory immunoglobulin (Sig A). No associations were found. In a similar cross sectional design, a larger sample of 101 Japanese mothers completed the STAI (state and trait) and POMS (anxiety subscale) at two weeks postpartum (Kawano & Emori, 2015). Breast milk Sig A levels were examined immediately after breastfeeding. Inverse correlations were found between state, trait and POMS anxiety scores and levels of Sig A in milk samples ($r = -.33, p = .004$; $r = -.43, p < .001$; $r = .33, p < .05$). Another cross-sectional study of 42 Italian women collected STAI (state and trait) data alongside colostrum milk beta-endorphin (β -EP) concentrations at four days postpartum (Zanardo et al., 2001). In mothers that delivered vaginally ($n=14$), there was a significant negative correlation between state anxiety and colostrum milk β -EP ($r = -.40, p = .03$). Finally, in a prospective case-control study, 64 Turkish women completed STAI (state and trait) measures (Ozbek et al., 2008). Cases were defined as having elevated breast milk sodium levels with associated hypernatraemic dehydration ($n=21$). These mothers

had significantly higher state (but not trait) anxiety scores when compared to controls ($p=.04$).

3.5 Discussion

The aim of this review was to examine the relationship between PPA and infant-feeding outcomes. Of the 45 included analyses from 33 studies, nine (20%) analyses from eight (24%) studies reported no relationship between these variables (Akman et al., 2008; Cooke et al., 2007; Hellin & Waller, 1992; Mezzacappa & Katkin, 2002; O'Brien et al., 2008; Taylor, 1987; Turner & Papinczak, 2000; Wiesenfeld et al., 1985). Among these, two were conducted in the 1980's (Taylor, 1987; Wiesenfeld et al., 1985), four had small sample sizes that may have lacked sufficient power (Akman et al., 2008; Mezzacappa & Katkin, 2002; Taylor, 1987; Wiesenfeld et al., 1985) and only three controlled for a range of established socio-demographic confounders (Akman et al., 2008; O'Brien et al., 2008; Turner & Papinczak, 2000).

Despite these results, the synthesis identified clear trends in the research findings with 36 (80%) analyses from 25 (76%) studies demonstrating findings. Six studies found an inverse relationship between PPA and exclusive breastfeeding (Adedinsewo et al., 2014; Britton, 2007; Clifford, 2006; Groër, 2005; Virden, 1988; Zanardo et al., 2009). Four cohort studies revealed that higher levels of PPA were associated with a reduction in exclusive breastfeeding in the first six months postpartum (Adedinsewo et al., 2014; Britton, 2007; Clifford, 2006; Vincenzo Zanardo et al., 2009). Findings from two cross sectional studies also observed that PPA is lower among those that practice exclusive breastfeeding (Groër, 2005; Virden, 1988). Despite variation in measurement tools and timings, these results were apparent in all of the studies after controlling for a range of confounders.

Furthermore, ten studies found a negative relationship between PPA and breastfeeding in any quantity. Five of these reported associations between PPA and reduced breastfeeding activity in the early postpartum (<3 months) (Britton, 2007; Brown & Arnott, 2014; Buckner, 1987; Dusdieker et al., 1985; Hellin & Waller, 1992), while five more provided evidence for the impact of anxiety on continued breastfeeding (>3 months and <12 months) (Adedinsewo et al., 2014; Courtois et al.,

2014; Paul et al., 2013; Tinkle, 1985; Turner & Papinczak, 2000). Only one of these studies failed to control for socio-demographic confounders (Hellin & Waller, 1992).

Despite clear trends for breastfeeding exclusivity and duration, there was mixed evidence for the association between PPA and breastfeeding initiation. Some studies found that higher anxiety was associated with reduced breastfeeding initiation and increased formula supplementation in hospital (Britton, 2007; Brown & Arnott, 2014; Gagnon et al., 2005). Others found that a diagnosis of immediate or later clinical anxiety was more likely in women who initiated breastfeeding (Call, 1959; Xu et al., 2014). Xu's (2014) population-based study indicates a clear directional effect of breastfeeding initiation on anxiety-related hospital admissions (Xu et al., 2014). However, Call's (1959) work was dated and at risk of bias; additional research using clinical diagnostic measures is warranted to clarify this relationship.

Four studies found that PPA was associated with negative maternal attitudes, specifically lower confidence (Britton, 2007; Dennis, 2006), lower preference for breastfeeding, and the belief that breastfeeding is restrictive and should be private (Galler et al., 1999, 2006). Both studies examining maternal self-efficacy used the state anxiety scale in the early postpartum (Britton, 2007; Dennis, 2006) indicating that mothers with early situational anxiety are less confident in their ability to breastfeed. As mentioned in Dennis's (2009) review of PPD and infant feeding, this is particularly significant given the well-established relationship between breastfeeding self-efficacy and breastfeeding initiation, duration and exclusivity (Blyth et al., 2002; Dennis & McQueen, 2009; Ystrom et al., 2008). Two pilot intervention studies to increase breastfeeding self-efficacy have been conducted recently showing good feasibility (Mcqueen, Dennis, Stremmer, & Norman, 2011; Perez-Blasco, Viguier, & Rodrigo, 2013) and an inverse relationship between self-efficacy and anxiety (Perez-Blasco et al., 2013). Replication on a larger scale is necessary while accounting for postpartum differences in mood.

Diverse evidence for the relationship between PPA and maternal and infant-feeding behaviours was found. Two studies found a positive association between PPA and infant-feeding difficulties (Hellin & Waller, 1992; Richter & Reck, 2013). This relationship may occur via two pathways: (1) anxiety induces biased cognitive processes (Maloney, Sattizahn, & Beilock, 2014) which influence maternal

perceptions of feeding difficulties; or (2) PPA affects early mother-infant interactions (Nicol-Harper, Harvey, & Stein, 2007) which may subsequently bring about the onset of actual feeding difficulties. Two studies in the review highlighted an immediate impact of state anxiety during feeding sessions on feeding behaviours (Blank, 1986; Hart et al., 2011) which provides further evidence for the latter argument.

Finally, there is emerging evidence for the relationship between PPA (particularly state anxiety) and levels of specific breast milk components, namely a reduction in Sig A which provides infants with immunity against common pathogens (Kawano & Emori, 2015), β -EP, an opioid analgesic implicated in attachment formation (Zanardo et al., 2001) and elevated levels of sodium which are linked to impaired lactation and neonatal weight loss (Manganaro et al., 2007; Morton, 1994; Ozbek et al., 2008). Heterogeneity in outcomes limits their comparability. However, the relationship between PPA and breast milk composition remains relatively unexplored and the evidence presented highlights that PPA may affect breast milk components which are important in predicting breastfeeding success (Ozbek et al., 2008) and infant health outcomes (Kawano & Emori, 2015; Zanardo et al., 2001). More work is needed in this area.

Although the synthesis provides strong evidence for the relationship between PPA and a range of negative infant-feeding outcomes throughout the postpartum period and across diverse populations, methodological limitations were prevalent and comparable to those noted in similar reviews (Dennis & McQueen, 2009; Fallon et al., 2016, Chapter 2). Definitions of breastfeeding were disparate among studies with few using established classifications (Britton, 2007; Groër, 2005; Zanardo et al., 2009). Only six studies examining feeding methods provided confirmation of whether women actually initiated breastfeeding (Britton, 2007; Buckner, 1987; Courtois et al., 2014; Dusdieker et al., 1985; Gagnon et al., 2005; Hellin & Waller, 1992). Failure to do this may confound results by combining women who discontinued breastfeeding early, and those who exclusively formula fed from birth. Sample sizes were small (<100) in 13 studies and may have lacked sufficient power (Akman et al., 2008; Blank, 1986; Buckner, 1987; Hart et al., 2011; Hart et al., 2004; Kawano & Emori, 2015; Mezzacappa & Katkin, 2002; Ozbek et al., 2008; Richter &

Reck, 2013; Taylor, 1987; Virden, 1988; Wiesenfeld et al., 1985; Zanardo et al., 2001). In addition, many of the samples were homogenous in terms of nationality, ethnicity, and hospital of delivery (Akman et al., 2008; Aragaki, 2002; Blank, 1986; Call, 1959; Galler et al., 1999, 2006; Hart et al., 2004; Kawano & Emori, 2015; Ozbek et al., 2008; Taylor, 1987; Tinkle, 1985; Wiesenfeld et al., 1985; Zanardo et al., 2001) which may limit the generalizability of findings. Other samples were much more diverse with regards to these characteristics (Adedinsewo et al., 2014; Brown & Arnott, 2014; Cooke et al., 2007; Gagnon et al., 2005; O'Brien et al., 2008; Xu et al., 2014), but comparing results across sample attributes was unfeasible due to differences in methodology, exposure and outcome.

In terms of measurement, all of the studies used self-report tools, with only three using diagnostic criteria for anxiety (Call, 1959; Paul et al., 2013; Xu et al., 2014). However, unlike the PPD review which predominately reported findings using the EPDS, there was vast heterogeneity in measures of PPA across studies; many of which were subscales (Brown & Arnott, 2014; Dusdieker et al., 1985; Groër, 2005; Hart et al., 2004; Kawano & Emori, 2015; Mezzacappa & Katkin, 2002; O'Brien et al., 2008; Turner & Papinczak, 2000; Wiesenfeld et al., 1985) and not validated in perinatal populations (Meades & Ayers, 2011). Despite many studies utilising the STAI (Adedinsewo et al., 2014; Akman et al., 2008; Aragaki, 2002; Blank, 1986; Britton, 2007; Buckner, 1987; Clifford, 2006; Cooke et al., 2007; Courtois et al., 2014; Dennis, 2006; Gagnon et al., 2005; Hart et al., 2011; Hart et al., 2004; Hellin & Waller, 1992; Paul et al., 2013; Richter & Reck, 2013; Taylor, 1987; Tinkle, 1985; Zanardo et al., 2009) which may be the most useful tool for research purposes (Meades & Ayers, 2011), a widely accepted perinatal measurement tool to screen for PPA is needed. Furthermore, there were some studies excluded from the review which failed to separate anxiety from depression (Ali, Ali, & Azam, 2009; Forster et al., 2006; Micali, Simonoff, Stahl, & Treasure, 2011; Taj & Sikander, 2003; Ystrom, 2012). The three-item EPDS anxiety subscale has been identified as a valid and reliable short scale (Matthey, 2008) but was not analysed separately in any of the studies; it is suggested that researchers utilise this in future PPD research to simultaneously expand the existing evidence base for anxiety. The methodological variability noted across studies meant examining patterns of results according to

design or measurement was unviable and suggests a need for standardisation in the field to aid comparability of findings.

Despite these limitations, the review provides evidence to suggest that women with PPA are less likely to breastfeed exclusively, and more likely to terminate breastfeeding earlier. There is also some evidence to suggest that those with high levels of anxiety are less likely to initiate breastfeeding and more likely to supplement with formula in the hospital. In those that do breastfeed, PPA reduces self-efficacy, increases breastfeeding difficulties, and may negatively affect breastfeeding behaviours and breast milk composition. From a clinical perspective, PPA remains among the most under-diagnosed, and undertreated complications of childbirth (Smith & Kipnis, 2012). This is largely due to the ‘shadowing effect’ of PPD. Despite high comorbidity, a patient who is anxious and depressed will be labelled depressed as depression supersedes anxiety diagnostically (Matthey et al., 2003). Given the diverse evidence base linking PPA with maternal and infant health outcomes (Glasheen et al., 2010; Lonstein, 2007), assessment of both disorders is warranted when examining the mental health of new mothers (Matthey et al., 2003; Ross, Evans, Sellers, & Romach, 2003). Non-pharmacological, postpartum-specific anxiety management strategies such as cognitive and behavioural therapies, routine management guidance, and maternal and infant self-care advice may be preferable for breastfeeding mothers given their low acceptability of pharmacologic interventions (Dennis & McQueen, 2009). Sensitive, non-judgemental support for those who discontinue breastfeeding prematurely is necessary to minimise further maternal distress. Interventions to support breastfeeding mothers experiencing anxiety have not been conducted and may help to minimise PPA and the potential for subsequent negative infant-feeding outcomes.

3.6 Conclusions

The review findings suggest that women in the postpartum period who experience symptoms of anxiety are at an increased risk of suboptimal infant-feeding outcomes. Improving identification and treatment of PPA is critical for maternal and infant health. In combination with the evidence linking PPD with poorer infant-feeding outcomes (Dennis & McQueen, 2009), there is evidence to support intervention studies of breastfeeding mothers with negative postpartum mood states.

3.7 Thesis research aims and questions

The work so far highlights a number of broad limitations in the existing literature surrounding maternal anxiety and infant feeding. Chapter 2 demonstrates that conflicting evidence was present in the six studies synthesised and there was a lack of prospective studies which examine prenatal anxiety and infant feeding outcomes and behaviours. Chapter 3 exposed issues with breastfeeding operationalization and observed little control for potentially influencing mechanisms in the studies synthesised. Both reviews highlight deficiencies in measurement, particularly in the development and use of childbearing specific measures of anxiety, which may be more effective predictors of infant health outcomes, including infant feeding. These limitations have been addressed throughout the remaining chapters to answer the following research questions and enhance and extend the existing evidence base:

1. What is the relationship between prenatal anxiety and infant feeding outcomes and behaviours?
2. What is the relationship between postpartum anxiety and infant feeding outcomes and behaviours?
3. What emotional and practical mechanisms may impact on these relationships?
4. Are childbearing-specific measures of anxiety more effective predictors of infant feeding outcomes and behaviours than general measures of anxiety?

Each individual chapter builds on the preceding chapters' work to gain a deeper understanding of the relationship between maternal anxiety and infant feeding from pregnancy to parenthood.

PART TWO

MATERNAL ANXIETY, INFANT FEEDING, AND INFLUENCING MECHANISMS

Chapter 4

Pregnancy specific anxiety and breastfeeding intentions: Why the best laid plans may go to waste

4.1 Foreword

The systematic review in Chapter 2 highlighted a number of shortcomings in the research literature surrounding prenatal anxiety and infant feeding outcomes. Firstly, there is a lack of prospective evidence with only six studies examining the relationship between these variables (Adedinsewo et al., 2014; Fairlee et al., 2009; Insaf et al., 2011; Mehta et al., 2011, 2012; Sherr, 1989). Of these, methodological weaknesses including a lack of uptake to pregnancy specific measures of anxiety meant that firm conclusions regarding this relationship could not be made (Adedinsewo et al., 2014; Insaf et al., 2011; Mehta et al., 2011, 2012; Sherr, 1989). A recommendation for creative, qualitative research using childbearing specific measures was put forward which informed the design of the current study. This chapter reports data from the first two phases of a qualitative, longitudinal study (Figure 1.2). The relationship between pregnancy specific anxiety and infant feeding outcomes across the transition from pregnancy to parenthood is explored using a framework analysis.

4.2 Study introduction

Recommended infant feeding practices, primarily breastfeeding exclusively during the first six months postpartum, has well documented benefits for both mother and infant (Kramer & Kakuma, 2012). These benefits have been heavily promoted in Western countries in recent years. In the UK, new and expectant mothers are guided by advice driven by government health policies, antenatal classes and health professionals, all of which strongly promote breastfeeding as the optimal infant feeding method (Williams, Donaghue, & Kurz, 2012). Although breastfeeding initiation rates have steadily increased in the UK over the past two decades, 62% in 1990 to 81% in 2010 (Bolling et al., 2005; McAndrew et al., 2012), the number of mothers who exclusively breastfeed their infant has failed to rise. In 2010, just 1% of women were exclusively breastfeeding up until the nationally recommended six-month juncture despite 75% expressing intentions to breastfeed in pregnancy. It

appears that although the majority of mothers plan to breastfeed in pregnancy, many do not do so and most provide a formula supplement during the first two months postpartum (McAndrew et al., 2012). Given the well-established benefits of recommended infant feeding practices, exploration of factors which may affect the disparity between prenatal breastfeeding intention and postpartum breastfeeding behaviour is important.

In health behaviour models such discrepancies are typically referred to as the intention-behaviour gap (Sniehotta, Scholz, & Schwarzer, 2005). This reflects the 'black-box' nature of underlying psychological processes that may moderate the intention-behaviour relationship (Allan, 2008). These models have been commonly used to aid understanding of specific action-oriented behaviours such as breastfeeding (Duckett et al., 1998). Studies applying established models such as the theory of reasoned action (TRA; Ajzen & Fishbein, 1977) and the theory of planned behaviour (TPB; Ajzen, 2011) have found that prenatal intention to breastfeed is consistently related to breastfeeding initiation and duration (Duckett et al., 1998; Humphreys, Thompson, & Miner, 1998; Mallan, Daniels, & de Jersey, 2014; Manstead, Proffitt, & Smart, 1983; Swanson & Power, 2005; Wambach, 1997). However, current breastfeeding statistics do not reflect this and suggest the influence of other mechanisms. A major criticism of these models is that they focus too closely on rational decision making alone, ignoring individual differences in cognition (Armitage, Conner, & Norman, 1999). Consideration of potentially biasing factors such as mood may go some way to extending these models beyond the current thinking of the individual as a rational information processor (Ajzen, 2011; Armitage et al., 1999). Given that women are particularly vulnerable to fluctuations in mood during pregnancy and the postpartum period, exploring the influence of psychological factors may help to bridge the breastfeeding intention-behaviour gap.

The majority of research on the relationship between maternal mental health and breastfeeding behaviour continues to be driven by postpartum depression (Dennis & McQueen, 2009). A recent systematic review has provided some evidence for the impact of anxiety in pregnancy on infant feeding outcomes (Fallon et al., 2016 [Chapter 2]). However, there is a paucity of research focusing specifically on

anxiety and the interpretation of evidence is limited by the use of general anxiety measures such as the State Trait Anxiety Inventory [STAI] (Spielberger et al., 1970) which have not been designed to assess anxieties related specifically to pregnancy. More recently, a body of literature has identified a component of anxiety that is embedded in specific concerns among pregnant women in the context of their pregnancies (Huizink et al., 2004). Pregnancy-specific anxiety is akin to state anxiety and may undermine breastfeeding via similar physiological mechanisms. One of the most widely cited measures, the Pregnancy Related Anxiety Questionnaire, contains five sub-scales: fear of giving birth, fear of bearing a physically or mentally handicapped child; fear of changes and disillusion in the partner relationship; fear of general change; and concern about one's mental wellbeing and the mother-child relationship (Van den Bergh, 1990). Psychometric studies using these constructs have revealed that PSA is a relatively distinct entity to anxiety experienced at other times of life (Huizink et al., 2004), and predicts perinatal outcomes more effectively than general measures of anxiety (Rini et al., 1999; Wadwha et al., 1993).

Only two studies to date have examined the relationship between anxiety in pregnancy and breastfeeding intentions (Fairlee, Gillman, & Rich-Edwards, 2009; Insaf et al., 2011). Both of these studies found that women with high levels of anxiety in pregnancy were less likely to intend to breastfeed their infants, providing initial support for an association. Fairlee et al.'s (2009) study of PSA also examined breastfeeding initiation, yet the tendency for reduced breastfeeding intention amongst high-anxiety women did not translate into lower breastfeeding initiation rates. Evidence suggests that the stage of pregnancy in which anxiety is assessed is a potentially confounding factor (Levin, 1991; Reading, 1983). Fairlee's contradictory findings could be explained via a change in mood or intention that occurred since the single measurements taken in the first trimester of pregnancy. Assessing anxiety closer to the commencement of infant feeding may better explain this relationship. Notably, neither of these studies considered breastfeeding behaviour in the early postpartum period. Given the prevalence of breastfeeding cessation in the first two months postpartum, this appears to be the most influential window of time contributing to the intention-behaviour gap and warrants additional enquiry.

The aims of this work were to explore the relationship between PSA, prenatal breastfeeding intentions in the third trimester of pregnancy, and early postpartum breastfeeding behaviour. While it is acknowledged that there are many other socio-demographic variables that are predictive of breastfeeding behaviour, the scope of this study was to provide a rich, in-depth examination of a single psychological factor. To fulfil these aims, a two-phase qualitative, longitudinal methodology was deemed appropriate. Phase one examined the relationship between PSA and infant feeding intentions. The constructs of the Pregnancy Related Anxiety Questionnaire [PRAQ-R] (Van den Bergh, 1990) were used to classify our participants as either “high” in PSA or “low” in PSA. Differences in breastfeeding intentions between these groups were then examined. Phase two explored the relationship between PSA and breastfeeding initiation and duration. The longitudinal approach allowed us to ascertain whether intention to breastfeed amongst women with low or high PSA translated into early breastfeeding behaviour. The first research question asks: How may PSA affect prenatal infant feeding intentions? The second addresses: How may PSA affect breastfeeding initiation and duration postpartum?

4.3 Phase one

4.3.1 Method

4.3.1.1 Participants

Nineteen primagravida women carrying singleton babies were recruited from three NHS Trust sites in the North West of England. Women were recruited between 16-32 weeks of gestation to be interviewed in the final trimester of pregnancy (>28 weeks). Participants’ age ranged from 19-43 (mean = 28.37 ± 6.40). Six participants were married, 11 were co-habiting with a partner, and two were single at the time of interview. Four of the women received high-risk maternity care throughout their pregnancies. Age, marital status, socioeconomic status, and pregnancy risk status distribution of participants were all representative of the British population (Office for National Statistics, 2011). Unfortunately, despite our attempts, the sample did not reflect ethnic diversity. See Table 4.1 for demographic details. Participants were initially identified by midwives during routine antenatal appointments. A member of the midwifery team assessed eligibility to participate before forwarding an expression of interest form back to the research team. Women with a current, clinical diagnosis of anxiety and/or depression were excluded to

ensure that the study focused on anxieties that were specific to pregnancy. Twenty two women originally expressed interest in participating. However, two of these women gave birth before the interview took place, and one woman withdrew when the research team made contact with her.

4.3.1.2 The interview

Semi-structured interviews were conducted and digitally recorded at a location of the participant's choice. Eighteen interviews were conducted at the participant's home; one interview was conducted at the participant's place of work. It is acknowledged that the gender and age of the interviewer may influence the content of the interview given the sensitive nature of the topics discussed. To overcome this, all interviews were conducted by the first author (female, aged 28). The researcher is a mother of three young children with a professional interest in improving maternal and infant health. She has recent, personal experience of both successful exclusive breastfeeding, and exclusive formula feeding which allowed her to remain as impartial as possible throughout the interviews. While, it is acknowledged that her beliefs and values may have influenced the research process, her understanding and shared experience of the research topic allowed a unique rapport to be developed with the participants. Informed consent was gained and confidentiality assured (Appendix 7 and 8). Interviews lasted for between 20 minutes and two hours (see Appendix 9 for interview schedule). The interview began with factual questions (Section A) to obtain age, marital status, educational history, employment status, gestational age of baby, and estimated due date. Section B examined PSA using a chronological, retrospective approach to prompt information on lifestyle and affect by asking what the participants did and how they felt at specific times. Questions were adapted from the five constructs (fear of giving birth, fear of bearing a physically or mentally handicapped child, fear of changes and disillusion in the partner relationship, fear of general change, concern about one's mental wellbeing and the mother-child relationship) of the PRAQ-R (Van den Bergh, 1990) for interview use (e.g. the construct "fear of giving birth" was adapted to "How do you feel about giving birth to your baby?") (see Appendix 9). In the final section of the interview (Section C) participants were asked about their experience, knowledge and

Table 4.1 *Demographic details and pregnancy specific anxiety classification of participants*

Participants (N=19)	Age (Years)	Marital Status	Pregnancy Risk-Status (High/Low)	Low PSA/High PSA*	Feeding Status (Phase 2)
Miss Eb.	24	Cohabiting	High	High	Formula
Mrs At.	29	Married	Low	High	Formula
Mrs Rf.	34	Married	Low	High	Breast
Miss Sh.	21	Cohabiting	Low	High	Formula
Miss Ul.	30	Cohabiting	Low	High	Formula
Miss Ac.	32	Cohabiting	Low	High	Breast
Miss Me.	21	Cohabiting	Low	High	Formula
Mrs Cb.	43	Married	High	High	Formula
Miss Ze.	39	Single/Cohabit ing***	Low	High	Formula
Miss Ej.	24	Cohabiting	Low	Low	Formula
Mrs Ed.	32	Married	Low	Low	Breast
Miss As.	19	Single	Low	Low	Breast
Miss Lo.	21	Cohabiting	Low	Low	Formula
Mrs Li.	28	Married	High	Low	Breast
Miss Ma.	26	Cohabiting	Low	Low	Breast
Mrs Ho.**	28	Married	Low	Low	
Miss Ik.	25	Cohabiting	Low	Low	Breast
Miss Us.	35	Cohabiting	High	Low	Formula
Miss Jes.	28	Cohabiting	Low	Low	Breast

* PSA = Pregnancy Specific Anxiety ** Withdrew from study after prenatal interview

*** Temporarily separated at prenatal interview, living with partner postpartum

opinions of infant feeding. These questions were developed from searches of the infant feeding literature. The same questions were asked twice to obtain detailed information about both breastfeeding and formula feeding (e.g. “What are your views on breastfeeding?” was followed directly by “What are your views on formula feeding?”). The study (all interview phases) received NHS ethical approval from the National Research Ethics Service (NRES; Appendix 11), and all identifying participant features have been anonymised in the quotations used.

4.3.1.3 Method of analysis

A three-stage hybrid method was used to analyse the interview data (see Bennett, 2010; Donnellan, Soulsby & Bennett, 2014). Line by line coding (Bennett & Vidal-Hall, 2000; Charmaz, 1995) was first used to read and code the interviews (step 1). After analysis of fourteen interviews, new themes emerged infrequently and data saturation was achieved. However, recruitment continued to ensure that an adequate sample size for data saturation (Guest, Bunce, & Johnson, 2006) was achieved in the postpartum interviews (phase 2) given the potential for participant attrition over the course of childbirth. The remaining analysis then used a framework approach to identify PSA (step 2) and address how it may impact on infant feeding intentions (step 3).

1. Each transcript was first read in its entirety by the first author to obtain a contextualised impression of the interview. It was then coded line-by-line and focused codes were generated. This process was reflexive so that each developing theme led to recoding. Memo-writing was conducted throughout the coding process. Five of the transcripts were then coded by the second author who was blind to the original coding. Inter-rater reliability was excellent.
2. Next, the interviews were re-read to identify participants as low or high in PSA. The first and second author classified each participant independently using criteria generated from the five constructs from the PRAQ-R. Only participants meeting all of the following criteria were classified as high PSA:

- a. There must be fear of giving birth;
 - b. There must be fear of bearing a physically or mentally handicapped child;
 - c. There must be fear of changes and disillusion in the partner relationship;
 - d. There must be fear of general change;
 - e. There must be concern about one's mental wellbeing and the mother- child relationship.
3. Finally, the coding from stage one was revisited to identify any differences in feeding intentions between participants classified as low or high in PSA. By using an independent classification system (Bennett & Vidal-Hall, 2000; Donnellan et al., 2014) circularity in the findings was avoided.

4.4 Analysis

4.4.1 Classification

Using the criteria outlined, 10 participants were classified as low, and nine were classified as high in PSA. Table 4.2 provides an example of the classification process used to identify participants as low or high in PSA. During the classification process, the authors noted the multi-faceted nature of anxiety occurring at this time; some low PSA participants did meet some (but not all) of the criteria, and at the same time anxieties not identified in the criteria were discussed by participants in both groups. However, participants were only classified as high PSA if all the specified criteria were met. High PSA participants were older (mean = 30.3 years \pm 7.65) than low PSA participants (mean = 26.6 years \pm 4.77). They were also more likely to receive high risk maternity care (3/9) than low PSA participants (1/10). The groups did not differ by marital status.

Table 4.2 *An example of the classification process used to identify low/high PSA in participants*

PSA Criteria (generated from PRAQ-R constructs)	High PSA: Miss Ze (aged 39)	Low PSA: Miss Ed (aged 32)
Fear of giving birth	Giving birth is my main worry, and not dying during the childbirth, not having a dead baby at the end of it.	I am quite looking forward to it cos I've always wanted to experience labour for some reason. I am hoping to have a water birth if it all goes well....
Fear of bearing a physically or mentally handicapped child	It's like what could go wrong cos so many things can. It [baby] might look like a normal child, but then you find out a year later it's got serious difficulties in x, y and z, and is that your fault, did you do something during pregnancy or when your labour happened?	I am quite excited about that as well [meeting baby], I just can't imagine it but I know it will be lovely.
Fear of changes and disillusion in the partner relationship	By the time we got to the 20 week mark I actually thought we were going to get somewhere but he [partner] has just shut down even more emotionally and it's just making me feel bereft, and alone and abandoned and horrendous	How do I relax? Probably just spending time with my partner, you know, that relaxes me, being with him and talking it through.
Fear of general change	I'm absolutely terrified of being restricted. Just the general thinking I am going to have to give everything up, thinking I am going to wreck my body that I have worked quite hard on, in a state about doing nothing, feeling like crap.....	Well nothing's changed cos I'm still doing everything as I was doing before. I don't think it will change massively afterwards either apart from me not working.
Concern about one's mental wellbeing and the mother-child relationship	Now I've got one [baby] coming, I'm not entirely sure that I want it, so it is a bit of a mess. My biggest fear is when he comes. It isn't for everyone, what if I don't love him?	I've been alright, in fact I've really enjoyed it. People say that you get loads of mood swings but I haven't had any. No I have been absolutely fine.

4.4.2 Infant feeding intentions

The first research question aimed to examine whether differences in feeding intentions could be identified amongst those with low or high PSA. All participants intended to breastfeed their infants, which at first glance suggested that levels of PSA have had no impact upon feeding intentions. However, the analysis revealed four feeding intention themes which differentiated those with low or high PSA.

4.4.2.1 Strength of breastfeeding intent

Although all participants intended to breastfeed, members of the high PSA group generally had a much stronger desire to breastfeed than low PSA participants. More specifically, the groups differed in both the strength of intended duration and intended exclusivity of breastfeeding. Here, Miss Eb. (high PSA, aged 24) discusses the importance of exclusively breastfeeding her baby to the nationally recommended six months:

Exclusive breastfeeding is really important to me. I am stuck in the mind-set that I really, really want to just breastfeed until he [baby] is at least six months because it is natural and anything that is natural is right.

Similarly, a strong desire to exclusively breastfeed is evident in the next quotation. Miss Ac's. (high PSA, aged 32) narrative stood out in particular, highlighting that the connection between breastfeeding cessation and negative affect may manifest in pregnancy for some women:

I will feel a bit of a failure if I can't solely breastfeed. Women hundreds of years ago did it, so how can I accept that I won't be able to do so.....I'll be mad if I can't do it and I know I shouldn't, but I would be jealous of other mums that can.

However, for several women in the low PSA group, exclusively breastfeeding was not of paramount importance and in some cases exclusivity intentions were uncertain. Instead, initiation of breastfeeding was sufficient, as Miss Lo. (low PSA, aged 21) notes:

Some people do, some people don't, but I am willing to give it a go, so hopefully it will work out. I have been advised to breast feed, cos it's good for the baby but I will have to see what happens, as long as I try it.

Like these women, both groups were aware of the benefits that breastfeeding provides to the infant. However, high PSA subjects were more familiar with the advantages of exclusive breastfeeding and discussed the national recommendations for breastfeeding more frequently. Correspondingly, the strength of their intentions matched this knowledge.

4.4.2.2 Flexibility of breastfeeding intent

High PSA women were also less flexible with their feeding intentions. These women seemed unwilling to change or compromise their plans:

I have never considered not doing it [breastfeeding], if you know what I mean, despite my Mum not doing it. I really don't want to use formula (Mrs At, High PSA, aged 29)

Mrs Rf echoes this feeling. She describes a conversation with her husband about buying formula in case the need for supplementation arises:

My husband was like shall we get some formula just in case, No I said because if I've got it, I will rely on it and I don't want to (Mrs Rf, High PSA, aged 34)

Conversely, the low PSA participants maintained flexibility in their feeding intentions. Despite breastfeeding being their preferred option, most of the women like Miss Ik. (Low PSA, aged 25) discuss their readiness to use formula if breastfeeding failed:

Erm, if I feel like I can't breastfeed, I am more than happy to use formula. I would prefer to breastfeed if I could, but if I wasn't able to then I wouldn't mind, so long as baby was happy, I am happy.

4.4.2.3 Opinions of formula feeding

A striking difference between the two groups was the opinions they held about formula feeding. A common misconception in the high PSA group was that formula

milk was unhealthy. Miss Ez. (high PSA, aged 39) held particularly negative views about the content of any milk other than breast milk:

I would imagine that they all say it is really, really great [formula feeding], but I am sure they are all full of sugar and crap and the reason why kids grow up with an appetite for sugar, with *shit* teeth, [I am] just not into it. I don't even like cow's milk or follow on milk, I just hope they come up with something soon. I'll just keep breast feeding forever.

Similarly, Miss Ul. (high PSA, aged 30) emphasises the artificial nature of formula milk and metaphorically likens breast milk to healthy eating:

You're eating fresh fruit and veg or you're getting something that has been made in a factory, it's not as good for you, so you know that, I do think it's like, I suppose it's not as healthy regardless of what any research says, to have something that's produced.

These negative views extended to those who choose this method to feed their baby as the following quotation captures (Miss Eb. High PSA, aged 24):

It is something that I feel quite passionate about [breastfeeding]. I wouldn't say it annoys me, but it really does a little bit that Mums don't breast feed, like if they can, I don't understand why, because it is benefitting them and their baby.

By contrast, those assigned to the low PSA group expressed less negative opinions of formula feeding:

If I can't do it [breastfeeding], formula feeding ain't bad, I don't know, I think of both sides, you know formula and breastfeeding (Mrs Ed. Low PSA, aged 32)

Some low PSA participants also mention personal advantages that may be associated with formula feeding. Mrs Us. (low PSA, aged 35) highlights the importance of maintaining her independence and how formula feeding may be favourable in this respect:

It [formula feeding] might give you time to go out as well. I want to still have that bit of freedom as an adult, so yeah there are swings and roundabouts and I suppose ideally I would like to maybe eventually do a bit of both [combination feeding], to have the freedom of both.

4.4.2.4 Awareness of breastfeeding difficulties

Finally, high PSA participants had a heightened awareness of the potential difficulties associated with breastfeeding when compared to low PSA counterparts. A perceived lack of information from healthcare professionals concerning infant feeding meant this knowledge was often sought from internet research or friends and families infant feeding experiences. Breastfeeding cessation stories were recounted frequently and were not always based on accurate infant feeding information. Some of the women had devised strategies to overcome these difficulties before they had even arisen. Again, these strategies were not always conducive with current breastfeeding advice. Miss Ul. (high PSA, aged 30) describes her cousin's experience with breastfeeding:

My cousin she has got two, her first one she said she breastfed for about a week and it was the most painful thing she had ever done. Most of the people I know started and lasted about a week and then they give up. I'll just express if it hurts or use a shield, I won't give up just like that.

Relatedly, Miss Sh. (high PSA, aged 21) refers to a blog she had read on the internet. The emotive significance of breastfeeding difficulties is distinctive in her narrative:

She were going to breast feed, but the baby weren't taking to her and it made her really upset, like she couldn't bond with him because she thought he didn't like her or summat, you know what I mean, she got quite distressed about it.

Consequently, awareness of these difficulties was anxiety provoking for some high PSA participants and led to the belief that breastfeeding was an "ability":

Yeh, I'm worried if it doesn't work, like if I can't get the baby to latch on or if for some reason I don't produce enough milk; that worries me (Miss Me, High PSA, aged 21)

Mrs Cb. (high PSA, aged 43) reiterates these concerns. Like her, a number of high PSA participants seemed to lack confidence in their body's ability to breastfeed:

I want to breastfeed and I worry I might not be able to, or that it will be too hard, but I do want to. The only thing that does really bother me is breastfeeding,

Conversely, these difficulties were rarely mentioned in the dialogues of Low PSA participants.

4.5 Discussion

Despite all participants in the study intending to breastfeed, the results demonstrate that differences in feeding intentions can be observed between low and high PSA women in four domains; strength of intent, flexibility of intent, opinions of formula feeding and awareness of breastfeeding difficulties. High PSA women had a strong, inflexible desire to exclusively breastfeed in pregnancy. This contradicts previous research which found that women with high levels of anxiety in pregnancy were more likely to express intentions to formula feed their infants (Fairlee et al., 2009; Insaf et al., 2011). These studies, similar to the large majority of studies examining breastfeeding intentions, use a dichotomous approach to operationalise feeding intentions. This is a limited method of measurement which fails to incorporate the intended duration of exclusive breastfeeding and the strength of those intentions (Nommsen-Rivers & Dewey, 2009). Phase one of this study adds to a growing body of health behaviour literature which highlights breastfeeding intention as a multi-faceted behavioural phenomenon (Humphreys et al., 1998; Kloeblen, Thompson, & Miner, 1999; Nguyen, Deoisres, & Siriarunrat, 2013; Nommsen-Rivers & Dewey, 2009). In quantitative research, the use of validated tools which account for these complexities such as the Infant Feeding Intentions Scale would be more aligned with exclusive breastfeeding recommendations (Nommsen-Rivers & Dewey, 2009).

Evidence suggests that mood state impacts on individual's information processing capability when making health behaviour decisions (Armitage et al., 1999; Bless et

al., 1996; Bless, Mackie, & Schwarz, 1992; Schwarz, 2012; Schwarz & Clore, 2003). More specifically, negative moods suppress risky decision making and endorse a problem-solving approach when considering a health behaviour (Armitage et al., 1999; Bless et al., 1992). This argument is congruent with the feeding intention themes found in this study when considering UK infant feeding policies. High PSA women had strong, inflexible desires to follow exclusive breastfeeding recommendations. The widely promoted nutritional benefits of breast milk would render a formula alternative 'risky', and a problem solving approach to potential breastfeeding difficulties would help to ensure that their intentions were not jeopardised.

An increased commitment to exclusive breastfeeding should theoretically improve exclusive breastfeeding rates postpartum. However, at a population level this is not the case (McAndrew et al., 2012) and those with mood disturbances are even less likely to exclusively breastfeed (Dennis & McQueen, 2009; Paul et al., 2013). A body of qualitative research has found that the themes identified among the high PSA group are not uncommon and may represent an idealised view of infant feeding (Knaak, 2006, 2010; Murphy, 1999; Taylor & Wallace, 2012; Williams, Donaghue, et al., 2012). Despite the benefits of the pro-breastfeeding discourse, concerns have been raised that it functions more as a vehicle of persuasion than as a vehicle of education (Knaak, 2006). For anxious women, this may be amplified when processing information, leading to a biased representation of the ideal of breastfeeding and the adequacy of formula as an acceptable alternative.

This idealism was woven into high PSA mother's narratives. Breastfeeding was symbolic of a 'good mother' rather than a 'good nutritional practice'. Furthermore their perception of formula was specifically negative, rather than nutritionally inferior. These morals have been linked to an increased pressure in relation to breastfeeding intentions and an emotional burden for those who have difficulties breastfeeding postpartum (Knaak, 2006, 2010; Murphy, 1999; Williams, Donaghue, et al., 2012). These are likely consequences for high PSA women given the intention-behaviour gap and their existing pregnancy-specific anxieties.

A more balanced approach to prenatal breastfeeding education may provide these mothers with a more realistic attitude towards infant feeding in pregnancy. While it

is still very necessary to advocate the benefits of breastfeeding, this should be counterbalanced with information about commonly experienced problems and positioned alongside a frank discussion of the risks and benefits of breastfeeding alternatives.

4.6 Phase 2

4.6.1 Method

4.6.1.1 Participants

All participants gave birth to live, singleton babies at term gestation (14 normal deliveries, four assisted deliveries). Despite the nature of longitudinal research conducted over the course of childbirth, attrition rates were very low (1/19) with all but one woman participating in the second wave of interviews (N=18). One woman returned to live with her partner after the birth of her child. All other demographic information remained the same (see Table 4.1).

4.6.1.2 Postpartum phase of interviews (4-8 weeks after delivery).

The second wave of interviews was conducted between 4-8 weeks postpartum in the same manner as Phase one. Before each interview took place, the research team made contact with the participant's midwife to ensure that the baby had been delivered safely and both mother and baby were in good health. One participant was unable to continue participation due to a suspected mental health problem. This resulted in 18 interviews (17 took place at home, one at work). The interview schedule contained four sections examining postpartum anxiety and infant feeding (Appendix 13); for the purpose of this study only two questions from the infant feeding section of the interview data were analysed (Section C; Appendix 13). These questions enquired how participants chose to feed their baby after birth, and whether their feeding method had changed since then. This provided data on breastfeeding initiation and continuation.

4.6.2 Analysis of postpartum breastfeeding behaviour

The second research question addressed whether differences in postpartum breastfeeding behaviour could be observed between high PSA and low PSA

participants. For the purpose of this study, breastfeeding behaviour is defined as the initiation of breastfeeding and maintenance of breastfeeding.

4.6.2.1 Breastfeeding initiation

All but one participant initiated breastfeeding straight after the birth demonstrating a high association between breastfeeding intention and breastfeeding initiation among both groups of participants. Although a number of high and low PSA participants experienced a difficult birth, Miss Sh. (High PSA, aged 21) found that her labour left her too severely fatigued to even contemplate breastfeeding. This meant her partner gave the first feed which was of formula:

I was that out of it I couldn't even talk, never mind feed. I kept falling asleep, it was a horrible experience. I wanted to give it a go, but I was that tired when I had him, I thought just bottle him, my partner had to do it you know.

The rest of the sample initiated breastfeeding. Both high PSA and low PSA participants spoke positively about their breastfeeding experiences in the hospital. For women in both groups, infant feeding support in the hospital enhanced these experiences and instilled breastfeeding confidence:

At the beginning I was confident, I really enjoyed it [breastfeeding], everyone was giving me gold stars in hospital, it was all fine (Mrs Rf, High PSA, aged 34)

I were doing really really well, like the midwife was shocked in hospital cos I was feeding her and she said I can't believe how well she is latching on, she said she is latching on really really well, so that give me confidence (Miss Lo, Low PSA, aged 21).

4.6.2.2 Breastfeeding maintenance

Following the postpartum interview, four distinct groups were apparent in the sample; low PSA exclusive breast feeders (6/9), low PSA exclusive formula feeders (3/9), high PSA exclusive breast feeders (2/9), and high PSA exclusive formula feeders (7/9). The frequency count alone reveals a much lower number of exclusive breast feeders in the high PSA group than in the low PSA group. The remainder of

the analysis will compare high and low PSA groups according to their feeding method at the time of interview.

4.6.2.3 Exclusive breastfeeders

High PSA participants (N=2) who breastfed exclusively were older (mean = 33.0 ± 1.41) than low PSA participants (N=6; mean = 26.3 ± 4.32). Pregnancy risk status, and marital status did not differ greatly between groups. Both of the high PSA exclusive breast feeders experienced breastfeeding difficulties. The problems encountered were common amongst the overall sample in the early postpartum period, yet for these women they were prolonged and were associated with the infant failing to thrive. These difficulties were mentioned frequently throughout the interview and were an obvious cause of distress for the women. Miss Ac. (High PSA, aged 32, seven wks PN) describes the pain she experienced during early breastfeeding:

The pain was the main one, the early pain. Yeh, he [partner] was like having to hold my hands and it wasn't just the pain in my nipples, it was the pain in my shoulders and I could not deal with it, I was tense all over. He [husband] was trying to keep me going, but ooooh, it was just so painful.

The midwife advised trying a breastfeeding aid to combat the ongoing pain and she believes that this decision alone enabled her to continue breastfeeding:

I was like right I am gonna have to do something, the midwife said why don't you try nipple shields and I thought I am gonna have to and I did and I am still breast feeding and it is all because of them.

However, despite her perseverance, her baby had continued to lose weight since the birth dropping from the 50th centile to the 2nd centile on growth charts. At the time of interview (7 weeks postpartum) her baby was still below her birth weight and her health visitor was considering a referral. Interestingly, she was unwilling to adapt her feeding regime any further:

The health visitor is coming again in two days, she said if she hasn't gained then she might refer and we need to think about topping

up.....I shouldn't rely on the scales but I do, if she put weight on I would feel okbut now she has taken another little dip and she's still not back at her birth weight.....I don't feel like I can give her any more than what I am doing without my lifestyle having to massively change. I would have to not see people and not go out and spend the day feeding her and expressing all day and that I would not be prepared to do

This quote seemed to mirror the inflexibilities observed in high PSA participants when discussing their feeding intentions in pregnancy. Mrs Rf (High PSA, aged 32, four wks PN) also spoke of early problems with her baby's milk intake which caused concern for both her and her midwife:

He got like urine crystals in his wee, so I thought it was blood, and I rang the midwife and she came round and she was like no it's cos he is not feeding, he is not getting enough, it's like he is dehydrating, which upset me so much

Similarly to Miss Ac, these problems continued and resulted in the baby losing weight beyond what the midwife considered to be appropriate:

He lost well over ten per cent of his body weight in the first week, the midwife said anymore we are talking [hospital name] admission, and those words made me so upset, I didn't want to hospitalise my child just because I am breastfeeding

The majority of low PSA exclusive breast feeders also experienced common early breastfeeding difficulties such as nipple pain and latching problems. Milk intake concerns were also prevalent, however, these anxieties diminished as they noticed signs that their baby was thriving:

At first I were a bit worried, cos you don't know how much they've had, but now I think with all the nappies, wet nappies and dirty nappies, I think it is going alright. Yes, so I am quite confident now. (Mrs Ed, Low PSA, aged 32, five wks PN)

For Miss Ma (Low PSA, aged 26, seven wks PN), attending regular clinics and monitoring her baby's weight gain helped her rationalise these concerns:

I first thought is he getting enough and then I knew obviously, cos he is getting weighed every week and he is putting on a lot every week so, that that has made me feel better in myself.

Only one of the low PSA women had issues with infant weight gain. Mrs Li's (Low PSA, aged 28, six wks PN) baby struggled to regain her birth weight after being discharged from a special care unit. However, the following quotation highlights how her adaptive breastfeeding behaviour enabled her to overcome this early problem:

She hadn't regained her birth weight and they want them to regain it by two weeks, so this is what I did, I breastfed her, and then expressed straight after and then at the next feed, breastfed and gave her that bottle, so that was really hard work cos I was continually feeding basically, and that is what I did for quite a while but it did work

4.6.2.4 Exclusive formula feeders

The remainder of the sample (9/18) were exclusively formula feeding at the time of interview. High PSA participants were more likely to be formula feeding (6/9) than low PSA participants (3/9). High PSA participants who formula fed were older (mean 29.6 ± 8.63) than low PSA participants (mean 26.6 ± 7.37). They were also more likely to be married (2/6) and receive high risk maternity care (2/6) than low PSA participants (0/3; 0/3) respectively. The majority (low PSA 3/3; high PSA 4/7) had used breastfeeding pumps to try and increase their milk supply and some (low PSA 1/3; high PSA 4/7) combination fed for varying lengths before the complete cessation of breastfeeding. Reasons for cessation were similar amongst PSA groups; perceptions of milk insufficiency were most common (low PSA 2/3; high PSA 6/7), although nipple pain and anxieties around milk intake were also prevalent and often occurred simultaneously. Many of the women referred to their baby being "settled", "happier", and "instantly different" once formula was introduced. The following two quotes from both a high PSA and low PSA participant illustrate these descriptions:

She didn't seem happy, she didn't seem happy at all, and everybody said afterwards who came, after she had gone to bottles, God she is content, she wasn't content before..... she obviously was not getting enough food and I couldn't have physically fed her anymore (Miss Us, Low PSA, aged 35, five wks PN)

The fourth day she stopped going on breast properly, like she was going on for like five mins and then coming off and stressing, she weren't taking much. I don't think I were producing enough or something, like as soon as she had the formula once, I saw how settled she was (Miss Me, High PSA, aged 21, six wks PN)

The last quotation is particularly pertinent given that Miss Lee's (High PSA) primary anxiety in pregnancy concerned milk insufficiency. Although reasons for cessation seemed similar amongst PSA groups, a marked difference was observed between transcripts when studying how cessation affected them emotionally. High PSA participants experienced a plethora of negative reactions which were recounted with emotional narratives during the interview. These feelings were not expressed as vehemently by low PSA participants who tended to justify that the decision to change their feeding method was optimal for maternal and infant wellbeing. Here, Miss Ul, (High PSA, aged 30, four wks PN) describes her disappointment and fear of being judged by health professionals after her decision to stop breastfeeding:

I were disappointed, it was such a nice feeling to be feeding the baby, and it was just such a good connection and it were like there were only me who could do it, so I did feel really disappointed and I were worried about what the midwife was gonna say, I don't know why, cos it's my baby.

These participants were highly aware of the benefits of breast milk in pregnancy and their use of formula postpartum was discordant with their views. All of the mothers in this group believed that their decision had undermined their infant's health and feelings of guilt were a common consequence:

I just felt guilty, I just felt it was my fault and he was missing out , because everyone says how it is the best for them and stuff.....I was amazed that I was as bothered as I was (Mrs Cb, High PSA, aged 43, five wks PN)

What upset me the most was I felt like I was failing him, felt like I wasn't giving him the best start in life, felt like he was gonna get some sort of crippling disease or something cos he wasn't having the breast milk (Miss Eb, High PSA, aged 24, four wks PN)

This final quotation highlights the desperation of some high PSA mothers to continue breastfeeding. This participant held particularly negative views of formula feeding in pregnancy and sought out medical intervention in an attempt to increase her milk supply:

I was really, really upset. I went to the doctors to ask if he could medicate cos of the pill they have in America and they use it a lot for milk supply problems. He said no, not many do that over here, you just have to sort of accept it sometimes (Mrs Ez, High PSA, aged 39, five wks PN)

4.7 Discussion

The second research question asked whether PSA affected breastfeeding initiation and duration postpartum. There was a high concordance between breastfeeding intentions and breastfeeding initiation in both groups. This is in accordance with the UK intention-initiation relationship (McAndrew et al., 2012) and suggests a representative subset with no immediate postpartum impact of PSA on breastfeeding behaviour. Previous research examining prenatal anxiety and breastfeeding initiation also found no relationship between these variables (Fairlee et al., 2009; Mehta et al., 2011; Sherr, 1989).

An inverse relationship between high PSA and exclusive breastfeeding duration was identified in the second phase of interviews. This finding is supported by a single, recent study which found that high state anxiety in pregnancy was predictive of exclusive breastfeeding duration of less than one month (Mehta et al., 2012). Breastfeeding difficulties were also evident in both breastfeeding PSA groups,

although they were much more pronounced and emotionally driven among high PSA women. Although this has not been examined previously with PSA, this is consistent with research linking postpartum depression to an increase in reported breastfeeding problems (Dennis & McQueen, 2009). In general, there are two arguments which may account for these associations: (1) negative mood influences maternal cognitions and consequently perceptions of breastfeeding difficulties are augmented (Dennis & McQueen, 2009), and (2) maternal anxiety and depression undermine breastfeeding through physiological stress responses and reduced self-efficacy (Adedinsewo et al., 2014).

Reasons for breastfeeding cessation among both groups were concordant to those commonly found in the literature, although cessation rates were higher among high PSA participants. The primary reason for breastfeeding cessation among both groups was perceptions of insufficient milk supply (PIM). A review of 20 studies highlighted PIM as the most widespread problem with breastfeeding and the principal reason for early cessation in the first two months after birth (Gatti, 2008). Interestingly, PIM negatively correlated with cognitions such as maternal satisfaction, self-efficacy, and confidence in a number of the reported studies (Blyth et al., 2002; McCarter-Spaulding & Kearney, 1999; Wojnar, 2004). In our study, PIM rates were much higher among high PSA participants, providing further support for the relationship between negative mood, maternal cognitions, and subsequent breastfeeding behaviour. Lower self-efficacy may cause a woman to doubt her ability to produce adequate milk (Gatti, 2008); these doubts were recounted frequently by high PSA participants in both phases of the study.

The emotional consequences of breastfeeding cessation were evident among high PSA participants. The decision to exclusively formula feed acted as a catalyst for negative emotions such as guilt, disappointment, fear, and anxiety. There already exists a high correlation between pre and postpartum anxiety (Heron et al., 2004); health professionals need to be aware that cessation of breastfeeding may further aggravate negative emotions in those who are already vulnerable to experiencing them. Although breastfeeding support in the hospital was highlighted as valuable for high PSA women, additional breastfeeding support after the mother's discharge from hospital may help to overcome breastfeeding difficulties and prevent the emotional

consequences of cessation. For those who do stop breastfeeding, sensitive, non-judgemental reassurance will help to ensure that rather than fearing disapproval from health professionals, these mothers are willing to seek professional advice with regards to the safe preparation of formula and sterilising of formula feeding equipment.

4.8 General Discussion

This paper does not seek to make statistical generalisations that are applicable to all women. Instead, women's experiences of anxiety and infant feeding have been explored and some important trends, which may have implications for maternal mental health and midwifery practice, can be highlighted. Our study emphasises that promotion of breastfeeding among the sample was very successful in terms of breastfeeding initiation. All of the women intended to breastfeed and all but one initiated breastfeeding successfully following the birth. This provides further support for the use of the intention construct from theories of health behaviour when predicting initiation of breastfeeding.

However, consistent with current breastfeeding statistics, an intention-behaviour gap was observed between both groups of participants in this study in terms of exclusive breastfeeding duration. Therefore, despite the effectiveness of models such as the TRA and TPB in understanding what motivates breastfeeding intentions and initiation, the theories may need to be extended when considering breastfeeding duration (DiGirolamo, Thompson, Martorell, Fein, & Grummer-Strawn, 2005). One factor which may be a better predictor of breastfeeding duration is a woman's experiences with breastfeeding once she initiates the behaviour (Rothman, 2000). This is supported by research which maintains that while physiological breastfeeding advice is perhaps too heavily promoted, the social, emotional, and individual nature of the breastfeeding experience is largely ignored by health professionals, researchers and policy makers (Knaak, 2006, 2010; Murphy, 1999; Williams, Donaghue, et al., 2012).

This gap was also distinctly wider among those experiencing anxieties specific to pregnancy and suggests that consideration of maternal emotions such as PSA within future intention-duration studies of breastfeeding are warranted. It is theorised that

the intention themes identified in high PSA women have a subsequent effect on postpartum breastfeeding behaviour. The intensity of their commitment to breastfeeding in pregnancy may cause additional pressure when breastfeeding problems arise postpartum. Furthermore, the extreme attitude shift which occurs when abandoning breastfeeding early may also make it highly emotionally burdensome for these women. These notions have previously been identified in qualitative work with pregnant women (Schmied, Sheehan, & Barclay, 2001), however, no study has considered that prenatal mood may be a contributing factor.

The study benefitted from a novel method of analysis which allowed us to compare differences in breastfeeding intentions and behaviour among those with low or high PSA whilst preserving the richness of a qualitative approach. To our knowledge, this is also the first study to qualitatively examine the impact of PSA on breastfeeding across the transition from pregnancy to parenthood. However, our study is not without limitations. The self-selected sample were all Caucasian and well-educated which may have contributed to our high exclusive breastfeeding rates in the overall sample. However, this homogeneity negates the potential effects of socio demographic confounders and allows firmer conclusions to be drawn about the variables of interest within this sample. There were a very low number of participants in the high PSA exclusive breastfeeding group which although highlights the intention behaviour gap means that data pertaining to these women is limited. Phase two interviews were conducted between four and eight weeks and it is recognised that breastfeeding behaviour can change dramatically in this period. However, given that this is a highly unpredictable time, particularly for first time mothers, a flexible approach was paramount to the success of the study. Our retention rate reflects this success. Another limitation is that the classification system used may be too simplistic. However, we noted that some low PSA participants expressed some anxieties (but not all) relating to the criteria, and simultaneously, anxieties not identified in the criteria were discussed by both groups of women. This suggests that a more thorough exploration of PSA may aid the development of a measure which encompasses the full range of anxieties experienced during pregnancy. Despite these limitations, our findings suggest that an association exists between PSA and breastfeeding intentions and duration and future research on a larger scale is necessary to confirm or refute this.

In conclusion, women identified as high in PSA may have an idealised view of breastfeeding when compared to those with low PSA. This may manifest as a strong, inflexible desire to breastfeed, negative opinions of formula feeding, and a heightened awareness of breastfeeding difficulties. Negative moods may affect how women process breastfeeding information and a more realistic approach to prenatal breastfeeding education may balance the intensity of their intentions. Contrary to these intentions, high PSA women are less likely to exclusively breastfeed in the early postpartum period and those that do are more likely to have difficulties. Breastfeeding cessation provokes further negative emotions which may be a consequence of failing to maintain their intentions. Consideration of PSA is warranted in future studies that assess both breastfeeding intention and duration. Clinicians and policy makers should be aware that sub clinical levels of anxiety specific to pregnancy may pose a risk to both the breastfeeding relationship and postpartum mental health. Research to determine effective interventions for those with high PSA may contribute to a reduction in the breastfeeding intention-behaviour gap.

Chapter 5

The emotional and practical experiences of formula feeding mothers⁶

5.1 Foreword

The emotional and practical consequences of breastfeeding cessation were augmented among individuals classified as ‘high’ in pregnancy-specific anxiety in Chapter 4. Themes of guilt, stigma, and dissatisfaction were evident in ‘high’ PSA participants supplementing or swapping completely to formula. However, it is still unclear whether maternal anxiety causes negative infant feeding experiences, or whether negative feeding experiences are a consequence of anxiety. There are many accounts of women’s emotional responses to infant feeding which suggest that the association between maternal anxiety and infant feeding may be bidirectional in nature (Lee, 2007; Murphy, 1999; Thomson & Dykes, 2011; Thomson et al., 2015). Negative feeding experiences have already been linked to other domains of maternal mood (Watkins, Meltzer-Brody, Zolnoun, & Stuebe, 2011) but research relating to the directional nature of this relationship has not been explored. The temporality of the relationship between anxiety and feeding is difficult to ascertain given the multifaceted determinants of both variables but by exploring emotional and practical mechanisms that may exacerbate the associations highlighted in previous chapters, a more nuanced understanding can be achieved. A body of qualitative research suggests that negative emotional and practical feeding experiences are common in non-anxious samples and may be an unintended consequence of pro-breastfeeding initiatives (Knaak, 2006, 2010; Lagan, Symon, Dalzell, & Whitford, 2014; Lee, 2007; Murphy, 1999; Williams, Donaghue, et al., 2012) but this has not yet been quantified. Using the themes generated in Chapter 4 to operationalise predictor variables, the current study uses a cross sectional online survey approach to quantify the emotional and practical experiences of formula feeding mothers. The design considers the importance of feeding intentions (Chapter 4), and overcomes the definitional issues in the infant feeding literature highlighted in Chapters 2 and 3.

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5.2 Study introduction

Breastfeeding has unanimously positive short and long term health benefits for both mother and infant (Kramer & Kakuma, 2012) and these effects are enhanced with the exclusivity and duration of breastfeeding (Ip et al., 2007). The World Health Organisation [WHO] recommend exclusive breastfeeding up to six months of age, with continued breastfeeding up to two years of age or beyond (WHO, 2015). To achieve this goal, a wide variety of pro-breastfeeding initiatives and campaigns have been developed to promote the commonly affirmed 'breast is best' message. The dominant infant feeding discourse emphasises not only the nutritional benefits of human milk, but also stresses the advantages of breastfeeding from environmental, economic, feminist, and attachment perspectives (Knaak, 2010; Lee, 2007). This multidisciplinary belief in the superiority of breastfeeding has been widely disseminated among the lay population and the way mothers feed their babies has become a matter of international social and public interest (Lee, 2007; Murphy, 1999). However, despite growing evidence for the positive impact of breastfeeding promotion on breastfeeding outcomes (Semenic, Childerhose, Lauziere, & Groleau, 2012), differences in breastfeeding initiation and continuation rates persist. In many developed countries achieving the WHO recommendation remains a challenge. For example, despite UK breastfeeding initiation rates increasing by 19% since 1990 (62% in 1990 - 81% in 2010), the latest infant Feeding Survey [IFS] revealed that only 1% of UK mothers are exclusively breastfeeding their infants up to the recommended six months juncture (McAndrew et al., 2012). Sub-optimal exclusive breastfeeding statistics can also be observed in the United States (16%), Canada (25%), and Australia (15%) leaving the vast majority of babies in developed countries receiving some formula milk in the first six months of life (Australian Institute of Health and Welfare 2011; Health Canada 2011; Centers for Disease Control and Prevention 2015; McAndrew et al. 2012). A small percentage (up to 2%) of mothers are physically unable to breastfeed due to biological problems such as hypoplasia, breast abnormalities, prior surgery or other medical contraindications (Brown, Raynor, & Lee, 2011). However, in the majority of cases the introduction of formula is related to breastfeeding management rather than biological issues (Neifert & Bunik, 2013).

A growing body of literature highlights some of the more problematic aspects of the dominant breastfeeding discourse (Knaak, 2006, 2010; Lagan et al., 2014; Lee, 2007; Murphy, 1999; Williams, Donaghue, et al., 2012). While breastfeeding promotion is fundamentally a medical based discourse with the objective of conveying the health benefits of breastfeeding, it subliminally situates breastfeeding as the appropriate and ‘moral’ choice (Knaak, 2010). Given the widespread knowledge of the many merits of breastfeeding among mothers, the moral statuses of those who decide not to breastfeed, or who are unable to, are left in jeopardy (Murphy, 1999; Spencer, Greatrex-White, & Fraser, 2015). Assuming that every new parent desires the ‘best’ for their infant, the ‘breast is best’ slogan becomes a profoundly moralistic message, rather than a promotional tool to simplify the scientific evidence about the benefits of breastfeeding. This is amplified further by expert claims about the ‘riskiness’ of choosing formula (Lee, 2007). In this manner, the pro-breastfeeding discourse has become intertwined with broader ideologies of the concept of optimal parenting (Knaak, 2010; Lee, 2007). This can lead to considerable pressure to conform to infant feeding guidelines in pregnancy and an emotional burden for those who do not manage to adhere to current recommendations in the postpartum period.

This discursive trend has also guided research protocols with a predominance of infant feeding research focused on identifying mother’s reasons for the cessation of breastfeeding (Lakshman et al., 2009). While this is important in informing breastfeeding interventions, the lived experience of mothers who choose to use formula in a context where breastfeeding is strongly advocated has been largely overlooked (Knaak, 2006). The limited evidence which examines mothers who formula feed from this perspective does, however, raise important socio-cultural concerns which extend beyond those about health and nutrition (Bailey, Pain, & Aarvold, 2004; Knaak, 2010; Lee, 2007; Mozingo, Davis, Droppleman, & Meredith, 2000; Murphy, 1999). A mixed methods systematic review by Lakshman et al. in 2009 effectively synthesises the available evidence. Two key themes were identified among only 23 studies examining mother’s experiences of formula feeding; maternal emotions; and perceptions of support. Negative feelings of guilt, stigma, and dissatisfaction were highlighted in all of the qualitative studies examining the emotional experiences of formula feeding women (Bailey et al., 2004; Cairney, Alder, & Barbour, 2006; Cloherty, Alexander, & Holloway, 2004; Earle, 2000; Lee,

2007; Mozingo, Davis, Droppleman, & Meredith, 2000; Spencer et al., 2015). In some of the studies, these feelings were internally motivated by an awareness of the superiority of breastfeeding (Bailey et al., 2004; Cloherty et al., 2004; Lee, 2007) and appeared to be more pronounced when formula feeding was not intended in pregnancy (Lakshman et al., 2009). Lee (2007) describes this intention-behaviour incongruence as one of “moral collapse” (p. 1087) which refers to women who have strong intentions to breastfeed in pregnancy and experience negative emotions as a result of being unable to do so in the postpartum period. However, in other studies, an allegedly unreasonable pressure to breastfeed from external sources, namely health professionals, emerged as the emotional catalyst (Earle, 2000; Lagan et al., 2014; Lee, 2007; Mozingo, Davis, Droppleman, & Meredith, 2000; Spencer et al., 2015). A perceived emphasis on the promotion of breastfeeding starting in pregnancy functioned as a vehicle of persuasion, rather than a vehicle of education, and alienated those who had chosen to formula feed (Lakshman et al., 2009). Mothers who initiate breastfeeding and then move to formula appear to be particularly susceptible to feelings of distress as a result of failing to conform to the “breast is best” message (Lagan et al., 2014). It has also been reported that these women experience a lack of support and information from health professionals concerning formula feeding (Lagan et al., 2014; Lakshman et al., 2009). Support and information is instead found to be heavily slanted towards breastfeeding, which again, reinforces the supremacy of the pro-breastfeeding discourse (Cairney et al., 2006; Furber & Thomson, 2006; Lagan et al., 2014). To foster appropriate infant feeding intentions, the previous Baby Friendly Initiative (BFI) code on infant feeding discouraged health professionals from actively disseminating formula feeding information antenatally (UNICEF, 2010). In 2012 this policy was revised to a more mother-centred approach which encourages health professionals to accept and respect formula feeding decisions and to discuss the importance of responsive formula feeding (UNICEF, 2017).⁷ However, this policy may still be misinterpreted. Findings from two qualitative studies in the UK highlight that midwives in Baby-Friendly settings erroneously failed to provide support to formula feeding mothers in the postpartum period because they believed they were prohibited by BFI policy (Furber & Thomson, 2006; Lagan et al., 2014). Consistent with this, mothers report

⁷ This sentence has been amended from the original publication to address thesis corrections

a perceived reluctance by health professionals to provide advice about formula feeding postpartum (Lagan et al., 2014; Lee, 2007).

Compared with the large literature on breastfeeding, the high percentage of infants receiving formula (McAndrew et al., 2012) and the potentially grave consequences for maternal and infant health and wellbeing arising from negative feeding experiences, there is very limited evidence regarding the opinions and experiences of formula feeding mothers. Previous qualitative studies have only explored emotional experiences; while the quantitative studies primarily describe perceptions of information and support (see review by Lakshman et al., 2009). To our knowledge, no study has explored emotional and practical factors simultaneously nor quantified them in a large sample. Specifically, the aims of the current large scale internet study were to i) describe experiences of infant feeding support, information, respect, stigma, guilt, satisfaction, and defence in mothers who use formula in any quantity; ii) examine whether these experiences would vary among different cohorts of formula feeding mothers, and iii) examine whether these experiences would differ according to feeding intention in pregnancy. It was predicted that formula feeding mothers who planned to follow current breastfeeding guidelines in pregnancy, would perceive their infant feeding experiences more negatively than those who intended to formula feed in any quantity. Furthermore, mothers who exclusively formula feed at the time of study, yet initiated breastfeeding in accordance with current guidelines were predicted to perceive their infant feeding experiences more negatively than other cohorts of formula feeding mothers.

5.3 Method

5.3.1 Participants and recruitment

A total of 890 mothers of infants up to 26 weeks of age, who were currently formula feeding in any quantity, were recruited through relevant social media sites and mailing lists via advertisements providing a link to the Qualtrics survey software. The 26 weeks cut off point applied reflects the current WHO infant feeding recommendations (WHO, 2015). The advertisements stated that participants were invited to take part in a short study which would examine the opinions and experiences of formula feeding mothers. Women who were exclusively breastfeeding, younger than 18 years of age, or non-English-speaking, were not

eligible to participate. Of the 890 participants, 289 (32%) were excluded from final analyses as they did not complete the full survey. The age of the final sample of 601 mothers ranged from 18 to 46 years ($M = 29.44$; $SD = 5.65$). Their babies' ages ranged from one to 26 weeks ($M = 17.96$; $SD = 7.38$). The sample were predominately married (64%), primiparous (62%) women from the United Kingdom (57%). Fifty-six percent of the sample intended to exclusively breastfeed which is comparable with UK breastfeeding data (McAndrew et al., 2012). Forty six percent of the sample initiated exclusive breastfeeding but were exclusively formula feeding at the time of study. See Table 5.1 for full demographic details. The study gained ethical approval from the University of Liverpool Institute of Psychology, Health and Society Ethics Committee in January 2015 (Appendix 18). All aspects of the study were performed in accordance with the 1964 Declaration of Helsinki. Participants were provided with an information sheet and informed consent was gained with a tick box. The online survey was accessible from 30/1/2015 to 3/3/2015.

5.3.2 The survey

5.3.2.1 Demographics

Mothers were initially asked demographic questions relating to their age, marital status, and country of residence. To assess socio-economic status participants were asked to report their current occupation (or if currently on maternity leave, previous occupation). The simplified National Statistics Socio-economic Classification, which contains eight occupation classifications was then applied (Office for National Statistics, n.d.). Demographic information (birth order and age in weeks) relating to the infant was also obtained.

5.3.2.2 Exposure variables

The exposure variables were developed from exploratory qualitative work which examined the infant feeding experiences of a sample of 19 postpartum women at two time points (4-8 weeks and 12-16 weeks). The data revealed various themes relating to emotional and practical infant feeding experiences which were concurrent with the qualitative literature highlighted in the introduction and were used to generate survey items. Basic face and content validation were conducted on the items. The survey

was reviewed and revised by all members of the research team with the following characteristics in mind: 1) simplicity and viability 2) reliability and precision in item wording 3) adequacy of the experience that it was intended to measure 4) reflection of the underlying concept that was measured. See Table 5.2 for a breakdown of items in the order that they were displayed to participants.

The first part of the survey assessed the perceived level of infant feeding support that mothers received from health professionals, the perceived level of respect displayed by their everyday environment with regards to their feeding choices, and the perceived level of satisfaction experienced as a result of their feeding choices. All answers were provided via a 5-point Likert-scale (higher responses indicated higher levels of support, respect, and satisfaction). Mothers were also asked about their main source of information about infant feeding. Potential responses included the internet, health professionals, family members, other mothers, the media, or previous experiences/own accord.

In the second part of the survey mothers were asked to provide a binary (yes/ no) response to indicate the presence of feelings of guilt, stigma and the need to defend as a result their infant feeding choices. Display-logic was embedded in the survey software so that only participants with a positive response to these items were provided with a further item which examined the source of the feelings (potential options included the internet, health professionals, family members, other mothers, the media, or previous experiences/own accord). Participants were able to choose more than one source if applicable. A positive response to the presence of guilt was also followed up using display-logic to ascertain whether the feelings were experienced internally, as a result of other's opinions, or both. Experiencing guilt internally is not dependent on other's knowing about one's behaviour (in this case feeding intention/type) for it to arise. Conversely, experiencing guilt as a result of others' opinions is linked to public evaluation and is imposed on you by someone else.

Table 5.1 Maternal characteristics by overall sample, feeding type, and feeding intention

Characteristic	Overall	Feeding Type			<i>P</i> **	Feeding Intention			<i>P</i> **
		<i>EBF now</i> <i>EFF</i>	<i>EFF</i>	<i>Combi</i>		<i>I-EBF</i>	<i>I-EFF</i>	<i>I-Combi</i>	
Feeding Type/Intention (N/%*)		274 (45.6)	152 (25.3)	175 (29.1)		338 (56.2)	103 (17.1)	160 (26.6)	
Maternal age (mean years ± SD)	29.44 (±5.65)	29.23 (±5.24)	28.38 (±6.16)	30.70 (±5.62)	.001	29.05 (±5.58)	29.60 (±6.22)	29.58 (±5.52)	.592
Child's age (mean weeks ± SD)	17.96 (±7.38)	18.47 (±7.38)	17.64 (±7.70)	17.42 (±7.07)	.282	17.63 (±7.55)	16.74 (±7.60)	18.48 (±7.20)	.090
Country of Residence (N/%*)									
UK	344 (57.2)	141 (23.4)	103 (17.1)	100 (16.6)		178 (29.6)	70 (11.6)	96 (16.0)	
Ireland	7 (1.2)	2 (0.3)	4 (0.7)	1 (0.2)		3 (0.5)	3 (0.5)	1 (0.2)	
USA	122 (20.3)	67 (11.1)	21 (3.5)	34 (5.7)		74 (12.3)	17 (2.8)	31 (5.2)	
Australia	57 (9.5)	29 (4.8)	14 (2.3)	14 (2.3)	.18	34 (5.7)	8 (1.3)	15 (2.5)	.76
New Zealand	22 (3.7)	10 (1.6)	3 (0.5)	9 (1.5)		15 (2.5)	1 (0.2)	6 (1.0)	
Canada	30 (5.0)	13 (2.2)	6 (1.0)	11 (1.8)		20 (3.3)	3 (0.5)	7 (1.2)	
Other European	12 (2.0)	9 (1.5)	1 (0.2)	2 (0.3)		9 (1.5)	0 (0)	3 (0.5)	
Other World	7 (1.1)	3 (0.5)	0 (0)	4 (0.7)		5 (0.8)	1 (0.2)	1 (0.2)	
Birth order (N/%*)									
1 st	370 (61.6)	168 (28)	82 (13.6)	120 (20)		238 (39.6)	39 (6.5)	93 (15.5)	
2 nd	167(27.8)	80 (13.3)	51 (8.5)	36 (6)		69 (11.5)	44 (7.3)	54 (9)	
3 rd	38 (6.3)	18 (3)	8 (1.3)	12 (2)	.091	20 (3.3)	8 (1.3)	10 (1.7)	<.001
4 th	15 (2.5)	5 (0.8)	7 (1.2)	3 (0.5)		6 (1)	8 (1.3)	1 (0.2)	
5 th and after	11 (1.8)	3 (0.3)	4 (0.7)	4 (0.7)		5 (0.8)	4 (0.7)	2 (0.3)	
Marital status (N/%*)									
Married	381 (63.4)	190 (31.8)	74 (12.4)	117 (19.6)		217 (36.3)	60 (10.1)	104 (17.4)	
Living with a partner	174 (29)	70 (11.7)	55 (9.2)	49 (8.2)		91(15.2)	33 (5.5)	50 (8.4)	
Divorced	1 (0.2)	0 (0)	1 (0.2)	0 (0)	<.001	0 (0)	1 (0.2)	0 (0)	.272
Separated	4 (0.7)	1 (0.2)	2 (0.3)	1 (0.2)		2 (0.2)	1 (0.2)	1(0.3)	
Single	37 (29)	11 (1.8)	19 (3.2)	7 (1.2)		24 (0.8)	8 (1.3)	5 (4)	

Table 5.1 Continued⁸

Occupation (N/%*)								
Managers, Directors and Senior Officials	42 (7)	16 (2.7)	6 (1)	20 (3.3)		32 (3.8)	3 (0.5)	16 (2.7)
Professional Occupations	216 (35.9)	99 (16.5)	46 (7.7)	71 (11.8)		132 (22)	36 (6)	48(8)
Associate Professional and Technical Occupations	16 (2.7)	8 (1.3)	2 (0.3)	6 (1)		11 (1.8)	2 (0.3)	3 (0.5)
Administrative and Secretarial Occupations	67 (11.1)	32 (5.3)	18 (3)	17 (2.8)	.058	38 (6.3)	22 (12)	7 (3.7)
Skilled Trades Occupations	18 (3.0)	11 (1.8)	3 (0.5)	4 (0.7)		8 (1.3)	3 (0.5)	7 (1.2)
Caring, Leisure and Other Service Occupations	64 (10.6)	30 (5)	18 (3)	16 (2.7)		36 (6)	11 (1.8)	17 (2.8)
Sales and Customer Service Occupations	88 (14.6)	39 (6.5)	30 (5)	19 (3.2)		50 (8.3)	22 (2.7)	16 (3.7)
Process, Plant and Machine Operatives	2 (0.3)	1 (0.2)	0 (0)	1 (0.2)		1 (0.2)	0 (0)	1 (0.2)
Elementary Occupations	11 (1.8)	3 (0.5)	2 (0.3)	6 (1)		7 (1.2)	3 (0.2)	1 (0.5)
Not in paid occupation	77 (12.8)	35 (5.8)	27 (4.5)	15 (2.5)		32 (5.3)	24 (4)	21

⁸ EBF: Exclusive breastfeeding; EFF: Exclusive formula feeding; Combi: Combination feeding (all types); I-EBF: Exclusive breastfeeding intention; I-EFF: Exclusive formula feeding intentions; I-combi: Combination feeding intention (all types) * Percentages are given in reference to the whole sample; **Group differences ascertained by one Way ANOVA or χ^2 tests

Table 5.2 *Survey items examining feeding intention, type, emotional and practical experiences in order of appearance*

Display to	Question	Response options
All	1. How are you currently feeding your baby?	Exclusively formula feeding from birth Exclusively breastfeeding to begin with, but now exclusively formula feeding Breastfeeding to begin with, but now a little formula Breastfeeding to begin with, but now some formula Breastfeeding to begin with, but now mostly formula Combination feeding from birth
All	2. How satisfied you are with your choice of feeding method?	Very Dissatisfied Dissatisfied Neutral Satisfied Very Satisfied
All	3. Do you find that your everyday environment is respectful of your infant feeding choices?	Very Disrespectful Disrespectful Neutral Respectful Very Respectful
All	4. How well supported by health care professionals do you feel when it comes to infant feeding?	Not supported at all Minimally supported Moderately supported Very supported Extremely supported
All	5. What has been your main source of information for milk feeding?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other Previous experiences/ own accord
All	6.1. Have you ever felt stigmatised for the way you choose to feed your baby?	Yes/No
If yes to q 6.1**	6.2. If yes, where?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other
All	7.1. Have you ever felt guilty about the way you choose to feed your baby?	Yes/No
If yes to q 7.1**	7.2. If yes, was this feeling the result of others opinion or your own feelings?	Other's opinions/ Own feelings/ Both

Table 5.2 *Continued*

If other's opinions or Both selected to q 7.2**	7.3. If so, where?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other
All	8.1. Have you ever felt the need to defend your choice of milk feeding method?	Yes/No
If yes selected to q 8.1**	8.2. If yes, where?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other To myself
All	9. How were you planning to feed you baby when you were pregnant?	Exclusively formula feeding Mostly formula feeding with a little breast feeding Approximately 50% formula feeding and 50% breast feeding Mostly breast feeding with a little formula Exclusively breast feeding

* Forced response was activated on all items; ** Display logic was used on follow up items

5.3.2.3 Outcome variables

The outcome variables, current feeding type and feeding intention in pregnancy were independently ascertained. Available answers were based on WHO-defined categories (UNICEF, 2014). Six different categories were available to the mothers (exclusively formula feeding from birth; breastfeeding to begin with but now a little formula; breastfeeding to begin with but now some formula; breastfeeding to begin with but now mostly formula; exclusively breastfeeding to begin with but now exclusively formula feeding; and combination feeding from birth).

Feeding intention was asked retrospectively at the end of the study to avoid response bias on answers relating to guilt, stigma or the need to defend infant feeding choices. Five choices were available to the mothers (exclusively breastfeeding, mostly

breastfeeding with some formula, approximately 50% breastfeeding and 50% formula feeding, mainly formula feeding with some breastfeeding and exclusively formula feeding).

5.3.3 Statistical analysis

All analysis was conducted using the IBM SPSS 22 software package. Due to unexpected singularities (empty cells in the cross-tabulations) occurring during statistical analysis both outcome variables (current feeding type and feeding intention) were collapsed into three categories. Current feeding type: exclusively formula feeding from birth (EFF); exclusively breastfeeding to start with but now exclusively formula feeding (EBF now EFF); and all other types of combination feeding (combi) and feeding intention: exclusively breastfeeding [I-EBF]; any type of combination feeding [I-combi] and exclusively formula feeding [I-EFF]. Descriptive statistics were generated for demographic and exposure variables of interest (Tables 5.1 and 5.3). One way ANOVA and χ^2 tests were used to examine bivariate associations between study variables and both feeding type, and feeding intention. Relative risk ratio's (RRRs) for the association between exposure (emotional and practical variables) and outcome variables (feeding type and feeding intention) were then calculated using multinomial logit models. These include two sets of referent categories, one for the exposure category and one for the outcome category. Separate models were built for feeding type and feeding intention. The referent outcome category was set to reflect the hypotheses (i.e. feeding type: exclusive breastfeeding but now exclusively formula feeding; feeding intention: exclusive breastfeeding). Backward elimination was used to build the adjusted models and demographic variables were kept as confounders in the model if they changed the beta coefficients of the exposure categories by more than 10%. Feeding intention and feeding type were also included as potential confounders in the opposing models. When necessary exposure categories were collapsed (as described above) to meet the requirements of the statistical test and overcome complete separation issues within the sample (see Tables 5.4 and 5.5).

5.4 Results

5.4.1 Overall sample

Of the 601 mothers, the majority experienced feelings of guilt (67%) about their choice of feeding method (Table 5.3). Interestingly, guilt was more likely to be internally motivated (30%) than stem from external sources (12%), although many experienced it from both channels (55%). Similar statistics were observed for other negative emotions with 68% of the sample experiencing feelings of stigma and a large majority (76%) of the sample experiencing the need to defend their choice of feeding method. External sources of guilt, stigma, and defence were primarily perceived to come from other mothers in similar quantities (68%, 62%, and 69% respectively), although this was closely followed by health professionals (64%, 59%, and 58% respectively). Despite these experiences, the majority (67%) of mothers responded that they were satisfied with their feeding method with a much lesser proportion (17%) reporting feelings of dissatisfaction. Similarly, the majority (62%) of mothers indicated that they felt respected, rather than disrespected (14%) in their everyday environment in terms of their infant feeding choices.

Thirty six percent of the sample felt well supported by health professionals about their choice of feeding method. This left the majority of mothers experiencing low to moderate levels of infant feeding support (64%) from health professionals. This was echoed in the descriptive statistics regarding infant feeding information. The internet was favoured above health professionals as a source of infant feeding information among the sample with one in three mothers (31%) choosing this option. Remarkably, mothers were almost equally likely to gain information from health professionals (23%) as they were to use their own accord (22%).

Table 5.3 Descriptive experiences of formula feeding mothers by overall sample, feeding type, and feeding intention

Formula Feeding Experience	Overall N (%)	Feeding Type N (%)			p-value**	Feeding Intention N (%)			p-value**
		EBF now EFF	EFF	Combi		I-EBF	I-EFF	I-Combi	
Guilty about choice of feeding method	601	274	152	175		338	103	160	
No	197 (33)	57 (21)	83 (55)	57 (33)	<.001	71 (21)	68 (66)	58 (36)	<.001
Yes	404 (67)	217 (79)	69 (45)	118(67)		267(79)	35(34)	102(64)	
Source of guilt	404	217	69	118		267	35	102	
Internal	121 (30)	66 (30)	17 (25)	38 (32)	.264	91 (34)	9 (26)	21 (21)	.001
External	50 (12)	24 (11)	14 (21)	12(10)		23 (9)	10 (29)	17 (17)	
Both	223 (55)	127(59)	38 (55)	68 (58)		153(57)	16 (46)	64 (63)	
Source of guilt*†	273	151	52	80		176	26	81	
Media	130 (48)	74 (49)	22 (42)	34 (43)		91 (52)	12 (46)	27 (33)	
Health professionals	176 (64)	96 (64)	33 (63)	47 (59)		114(65)	16 (62)	46 (57)	
Family members	94 (34)	49 (32)	9 (17)	36 (45)		65 (40)	4 (15)	25 (31)	
Other mothers	186 (68)	106 (70)	32 (62)	48 (60)		120(68)	12 (46)	54 (67)	
Internet	177 (64)	106 (70)	35 (67)	46 (58)		113(64)	15 (58)	49 (60)	
Stigmatised about choice of feeding method	601	274	152	175		338	103	160	
No	191 (32)	81 (30)	39 (26)	71 (41)	.009	118(35)	28 (27)	45 (28)	.172
Yes	410 (68)	193 (70)	113(74)	104(59)		220(65)	75 (73)	115(72)	
Source of stigma*‡	410	193	113	104		220	75	115	
Media	180 (44)	91 (47)	42 (37)	47 (45)		105(48)	30 (40)	45 (39)	
Health professionals	244 (59)	113 (59)	74 (65)	57 (55)		125(57)	52 (69)	67 (58)	
Family members	117 (29)	56 (29)	18 (16)	43 (41)		74 (34)	11 (15)	32 (28)	
Other mothers	255 (62)	138 (72)	59 (52)	58 (56)		144(65)	33 (44)	78 (68)	
Internet	229 (56)	115 (60)	63 (56)	51 (49)		122(55)	48 (64)	59 (51)	
Need to defend choice of feeding method	601	274	152	175		338	103	160	
No	144 (24)	51 (19)	38 (25)	55 (31)	.008	82 (24)	31 (30)	31 (19)	.136
Yes	457 (76)	223 (81)	114(75)	120(69)		256(76)	72 (70)	129 (81)	
Source of defence*‡	457	223	114	120		256	72	129	
Media	62 (13)	34	15 (13)	13 (11)		37 (14)	10(14)	15 (12)	
Health professionals	265 (58)	123 (55)	76 (67)	66 (55)		140(55)	49 (68)	76 (59)	
Family members	181(40)	92 (41)	30 (26)	59 (49)		113(44)	16 (22)	52 (40)	
Other mothers	314 (69)	162 (73)	72 (63)	80 (67)		174(68)	42 (58)	98 (76)	

Table 5.3: Continued⁹

Internet	197 (43)	107 (48)	54 (47)	36 (30)		108(42)	39 (54)	50 (34)	
Internal defence	222 (49)	123(30)	34 (30)	65 (54)		160(63)	14 (19)	48 (37)	
Source of infant feeding information	601	274	152	175		338	103	160	
Media	3 (<1)	2 (<1)	0	1 (<1)		1 (<1)	0	2 (1)	
Health professionals	135 (23)	60 (22)	21 (14)	54 (31)		91(27)	16 (16)	28 (18)	
Family members	77 (13)	26 (10)	35 (23)	16 (9)		33 (10)	21 (20)	23 (14)	
Other mothers	66 (11)	27 (10)	17 (11)	22 (13)	<.001	36 (11)	12(12)	18(11)	<.001
Internet	187 (31)	99 (36)	36 (24)	52 (30)		123(36)	18 (18)	46 (29)	
Own accord/previous experiences	133 (22)	60 (22)	43 (28)	30 (17)		54 (16)	36 (35)	43 (27)	
Level of support from health professionals	601	274	152	175		338	103	160	
Not supported at all	44 (7)	22 (7)	14(9)	10 (6)		26 (8)	7 (7)	11 (7)	
Minimally supported	125 (21)	58 (21)	31(20)	36 (21)		78 (23)	17 (17)	30 (19)	
Moderately supported	216 (36)	91 (33)	61(40)	64 (37)	.548	113(33)	48 (47)	55 (34)	.340
Very supported	135 (23)	71 (26)	26(17)	38 (22)		79 (23)	17 (17)	39 (24)	
Extremely supported	81 (13)	34 (12)	20(13)	27 (15)		42 (12)	14 (14)	25 (16)	
Satisfaction with feeding method	601	274	152	175		338	103	160	
Very dissatisfied	37 (6)	15 (6)	3 (2)	19 (11)		33 (10)	2 (2)	2 (1)	
Dissatisfied	68 (11)	39 (14)	6 (4)	23 (13)		58 (17)	0	10 (6)	
Neutral	89 (15)	43 (16)	9 (6)	37 (21)	<.001	63 (19)	6 (6)	20 (13)	<.001
Satisfied	153 (25)	88 (32)	27 (18)	38 (22)		95 (28)	13 (13)	45 (28)	
Very Satisfied	254 (42)	89 (33)	107(70)	58 (33)		89 (26)	82 (80)	83 (52)	
Respect in everyday environment	601	274	152	175		338	103	160	
Very disrespectful	21 (3)	6 (2)	10 (7)	5 (3)		7 (2)	8 (8)	6 (4)	
Disrespectful	69 (11)	35 (13)	11 (7)	23 (13)		48 (14)	9 (9)	12 (8)	
Neutral	142 (24)	72 (26)	26 (17)	44 (25)	0.003	92 (27)	18 (18)	32 (20)	.004
Respectful	215 (36)	107(39)	51 (34)	57 (33)		115(34)	34 (33)	66 (41)	
Very Respectful	154 (26)	54 (20)	54 (36)	46 (26)		76 (23)	34 (33)	44 (28)	

⁹ EBF: Exclusive breastfeeding; EFF: Exclusive formula feeding; Combi: Combination feeding (all types); I-EBF: intention to exclusively breastfeed; I-EFF intention to exclusively formula feed; I-Combi: intention to combination feed (all types) * Percentages are given in reference to the whole sample; **Group differences ascertained by one Way ANOVA or x² tests

Table 5.4 Crude and adjusted results for multinomial logit models* of the association between predictor variables and feeding type¹⁰

Predictor	Feeding Type			
	EBF now EFF/EFF		EBF now EFF/Combi	
	Crude RRR (95% CI)	Adjusted RRR (95% CI)	Crude RRR (95% CI)	Adjusted RRR (95% CI)
Guilty about choice of feeding method				
Yes	0.25 (0.15, 0.41)	0.45 (0.25, 0.79)	0.52 (0.31, 0.58)	0.38 (0.21, 0.64)
No*	1.00	1.00	1.00	1.00
Stigmatised about choice of feeding method				
Yes	1.89 (1.04, 3.41)	1.48 (0.78, 2.83)	0.78 (0.47, 1.29)	0.85 (0.50, 1.44)
No*	1.00	1.00	1.00	1.00
Need to defend choice of feeding method				
Yes	0.75 (0.40, 1.40)	0.88 (0.44, 1.77)	0.67 (0.39, 1.16)	0.76 (0.43, 1.36)
No*	1.00	1.00	1.00	1.00
Source of infant feeding information**				
Internet and Media	1.02 (0.51, 2.04)	1.17 (0.55, 2.50)	0.69 (0.41, 1.17)	0.73 (0.42, 1.27)
Family members	2.99 (1.38, 6.51)	2.74 (1.16, 6.44)	0.74 (0.35, 1.57)	0.93 (0.43, 2.04)
Other mothers	1.66 (0.71, 3.84)	1.50 (0.60, 3.78)	1.00 (0.49, 1.99)	1.10 (0.54, 2.27)
Own accord/previous experiences	1.76 (0.88, 3.49)	1.21 (0.57, 2.60)	0.61 (0.34, 1.10)	0.66 (0.38, 1.22)
Health Professionals*	1.00	1.00	1.00	1.00
Level of support from health professionals				
Not supported at all	1.65 (0.59, 4.68)	1.57 (0.52, 4.78)	0.87 (0.32, 2.31)	0.79 (0.28, 2.21)
Minimally supported	1.70 (0.75, 3.90)	1.52 (0.62, 3.70)	1.18 (0.56, 2.47)	1.02 (0.47, 2.22)
Moderately supported	1.45 (0.71, 2.98)	1.16 (0.54, 2.51)	1.21 (0.64, 2.30)	1.13 (0.58, 2.20)
Very supported	0.62 (0.29, 1.34)	0.71 (0.31, 1.63)	0.81 (0.42, 1.59)	0.73 (0.37, 1.47)
Extremely supported*	1.00	1.00	1.00	1.00
Satisfaction with feeding method**				
Dissatisfied	0.34 (0.15, 0.77)	0.70 (0.30, 1.67)	1.78 (1.04, 3.06)	1.51 (0.87, 2.64)
Neutral	0.39 (0.18, 0.85)	0.48 (0.20, 1.13)	1.70 (1.01, 2.91)	1.42 (0.82, 2.48)
Satisfied*	1.00	1.00	1.00	1.00
Respect in everyday environment**				
Disrespectful	0.87 (0.43, 1.72)	0.89 (0.41, 1.94)	1.23 (0.67, 2.27)	1.40 (0.74, 2.67)
Neutral	0.57 (0.32, 1.02)	0.70 (0.37, 1.33)	0.93 (0.57, 1.53)	0.94 (0.56, 1.58)
Respectful*	1.00	1.00	1.00	1.00

¹⁰ EBF: Exclusive breastfeeding; EFF: Exclusive formula feeding; Combi: Combination feeding (all types); RRR: Relative risk ratio; * There are two referent categories in multinomial logit models, one for the exposure (indicated with *) and one for the outcome (exc BF now exc FF; to reflect the hypothesis); ** Categories were collapsed to meet requirements of multinomial logistic regression; **Bold type** indicates significant associations; Models were adjusted for age, marital status, and feeding intention

Table 5.5 Crude and adjusted results for multinomial logit models* of the association between predictor variables and feeding intention¹¹

Predictor	Feeding Intention			
	I-EBF/I-EFF		I-EBF/I-Combi	
	Crude RRR (95% CI)	Adjusted RRR (95% CI)	Crude RRR (95% CI)	Adjusted RRR (95% CI)
Guilty about choice of feeding method				
Yes	0.14 (0.08, 0.26)	0.13 (0.06, 0.28)	0.48 (0.29, 0.79)	0.47 (0.28, 0.78)
No*	1.00	1.00	1.00	1.00
Stigmatised about choice of feeding method				
Yes	2.63 (1.31, 5.27)	1.81 (0.79, 4.19)	1.75 (1.03, 2.96)	1.65 (0.96, 2.84)
No*	1.00	1.00	1.00	1.00
Need to defend choice of feeding method				
Yes	0.95 (0.47, 1.91)	0.86 (0.36, 2.03)	1.55 (0.86, 2.79)	1.51 (0.82, 2.77)
No*	1.00	1.00	1.00	1.00
Source of infant feeding information**				
Internet and Media	0.84 (0.36, 1.92)	0.47 (0.17, 1.35)	1.21 (0.67, 2.19)	1.15 (0.63, 2.10)
Family members	2.50 (1.04, 6.02)	1.50 (0.50, 4.53)	0.82 (0.43, 1.57)	1.63 (0.76, 3.49)
Other mothers	1.75 (0.68, 4.53)	1.60 (0.51, 4.98)	1.50 (0.71, 3.18)	1.40 (0.66, 2.99)
Own accord/previous experiences	3.78 (1.74, 8.21)	1.33 (0.48, 3.66)	2.51 (1.35, 4.68)	2.22 (1.12, 4.38)
Health Professionals*	1.00	1.00	1.00	1.00
Level of support from health professionals				
Not supported at all	0.76 (0.21, 2.72)	0.37 (0.08, 1.74)	0.76 (0.28, 2.05)	0.74 (0.27, 2.02)
Minimally supported	1.20 (0.45, 3.25)	0.69 (0.20, 2.32)	0.79 (0.37, 1.67)	0.79 (0.37, 1.71)
Moderately supported	1.61 (0.71, 3.63)	1.80 (0.67, 4.78)	0.82 (0.43, 1.58)	0.85 (0.44, 1.65)
Very supported	0.60 (0.25, 1.46)	0.60 (0.20, 1.77)	0.72 (0.37, 1.42)	0.76 (0.38, 1.51)
Extremely supported*	1.00	1.00	1.00	1.00
Satisfaction with feeding method**				
Dissatisfied	0.07 (0.02, 0.30)	0.13 (0.06, 0.28)	0.24 (0.12, 0.49)	0.26 (0.13, 0.52)
Neutral	0.27 (0.10, 0.68)	0.54 (0.18, 1.60)	0.55 (0.31, 0.98)	0.58 (0.21, 1.04)
Satisfied*	1.00	1.00	1.00	1.00
Respect in everyday environment**				
Disrespectful	1.65 (0.74, 3.70)	3.25 (1.12, 9.38)	0.71 (0.37, 1.38)	0.75 (0.39, 1.47)
Neutral	0.67 (0.34, 1.32)	0.88 (0.38, 2.04)	0.67 (0.40, 1.12)	0.70 (0.41, 1.20)
Respectful*	1.00	1.00	1.00	1.00

¹¹ I-EBF: Exclusive breastfeeding intention; I-EFF: Exclusive formula feeding intention; I-Combi: Combination feeding intention (all types); RRR: Relative risk ratio; * There are two referent categories in multinomial logit models, one for the exposure (indicated with *) and one for the outcome (exc BF; to reflect the hypothesis); ** Categories were collapsed to meet requirements of multinomial logistic regression; **Bold type** indicates significant associations; Models were adjusted for maternal age, birth order, and feeding type

5.4.2 Associations by feeding type

Descriptive statistics for all predictor variables split by feeding type can be found in Table 5.3. Forty six percent of the mothers who were exclusively formula feeding at the time of study initiated breastfeeding in accordance with current guidelines (EBF now EFF). EBF now EFF mothers were more likely to be married ($p < .001$) than exclusive formula feeding (EFF) mothers and mother who were combination feeding in any quantity (combi). EFF mothers were significantly younger than EBF now EFF mothers and combi mothers ($p = .001$). There were no differences in infant age, birth order, or occupational status between groups (Table 5.1).

Crude multinomial regression revealed that for those who experienced guilt as a result of their feeding method, the relative risk for being in the EFF group was four times lower in relation to EBF now EFF mothers and two times lower in combination feeding mothers when compared to EBF now EFF mothers (Table 5.4). After adjusting for maternal age, marital status, and feeding intention, the effect estimate for the EFF/EBF now EFF comparison was attenuated but the relative risk was still much lower (RRR: 0.45; 95% CI: 0.25, 0.79). Adjustment for covariates actually lowered the effect estimate further in the combi/EBF now EFF comparison (RRR: 0.38; 95% CI: 0.21, 0.64). Conversely, for those experiencing stigma as a result of their feeding method, the relative risk for being in the EFF group was much higher when compared to EBF now EFF mothers (RRR: 1.89; 95% CI: 1.04, 3.41). However, in adjusted analyses, this association was no longer significant. No associations between groups were observed with respect to defence.

In crude models, for those who experienced dissatisfaction or neutrality as a result of their feeding method, the relative risk of being in the EFF group was almost three times lower (RRR: 0.34; 95% CI: 0.15, 0.77; RRR: 0.39; 95% CI: 0.18, 0.85) when compared to EBF now EFF mothers. However, for those experiencing dissatisfaction and neutrality, a contrary association occurred when comparing combi/EBF now EFF groups (RRR: 1.78; 95% CI: 1.04, 3.06; RRR: 1.70; 95% CI: 1.01, 2.91). Neither of these associations were significant in adjusted models.

There were no differences in levels of respect or support between groups. However, one association was present when examining sources of information. Interestingly, in both crude (RRR: 2.99; 95% CI: 1.38, 6.51) and adjusted models (RRR: 2.74;

95% CI: 1.16, 6.44), for those that used family members over health professionals as their source of infant feeding information, the relative risk for being in the EFF group was three times higher when compared to EBF now EFF mothers.

5.4.3 Associations by feeding intention

Descriptive statistics for all predictor variables split by feeding intention can be found in Table 5.3. More than half of the mothers (56% of 601) intended to exclusively breastfeed their baby in pregnancy (I-EBF). These mothers were more likely to be primiparous ($p < .001$) than those who planned to exclusively formula feed (I-EFF) or combination feed in any quantity (I-combi) (Table 5.3). Crude multinomial regression revealed that for those experiencing guilt, the relative risk for being in the I-EFF group was seven times lower when compared to I-EBF mothers (RRR: 0.14; 95% CI: 0.08, 0.26) and two times lower for I-combi mothers when compared to I-EBF mothers (RRR: 0.48; 95% CI: 0.29, 0.79). Adjustment for maternal age, birth order, and feeding type lowered the relative risk further (RRR: 0.13, 95% CI: 0.06, 0.28; RRR: 0.47, 95% CI: 0.28, 0.78 respectively). Conversely, for those experiencing stigma, the relative risk for being in the I-EFF group was 2.6 times higher than those in the I-EBF group (RRR: 2.63; 95% CI: 1.31, 5.27) and 1.7 times higher in the I-combi group (RRR: 1.75; 95% CI: 1.03, 2.96) than those in the I-EBF group. Neither association remained significant in adjusted models. Again, no associations between groups were observed with respect to defence.

Although this finding was as hypothesised, the relative risk of being in the I-EFF group rather than the I-EBF group was 14 times lower for those experiencing dissatisfaction (RRR: 0.07; 95% CI: 0.02, 0.30). The risk was also four times lower when comparing I-combi/I-EBF mothers (RRR: 0.24; 95% CI: 0.12, 0.49). In adjusted models the associations were attenuated but remained strong (Table 5). However, in adjusted models, for those experiencing disrespect from their everyday environment, the relative risk of being in the I-EFF group was three times higher (RRR: 3.25; 95% CI: 1.12, 9.38) than I-EBF mothers. No differences in levels of support were observed between groups. However, when examining sources of information, for those that used family members and their own accord over health professionals (RRR: 2.50; 95% CI: 1.04, 6.02; RRR: 3.78; 95% CI: 1.74, 8.21 respectively), the relative risk of being in the I-EFF group was higher than the risk of

being in the I-EBF group. The same pattern was observed in the I-combi/I-EBF comparison (RRR: 2.51; 95% CI: 1.35, 4.68). Again, no associations for infant feeding information remained significant in adjusted models.

5.5 Discussion

Given the limited evidence base in quantitative designs, the first aim of this study was to examine the emotional and practical experiences of mothers who use formula in any quantity. Descriptive findings from the overall sample indicate that despite feeling satisfied and well respected, a high percentage of mothers experienced negative emotions including guilt (67%), stigma (68%), and the need to defend their decision (76%) to use formula. This is the first study to provide numerical evidence to support qualitative research (Bailey et al., 2004; Cairney et al., 2006; Cloherty et al., 2004; Earle, 2000; Lee, 2007; Mozingo, Davis, Droppleman, & Meredith, 2000) and quantify the highly pervasive nature of negative emotions occurring among formula feeding women. Eighty-eight percent of women are using some quantity of formula in the first six months of life (McAndrew et al., 2012). These findings indicate a widespread public health issue that requires urgent attention from infant feeding policy makers in order to protect the emotional wellbeing of formula feeding mothers at an already precarious time. Mood disturbances are more common postpartum as compared to prepartum or the rate that characterises women in the general population (O'Hara et al., 2012; Viguera et al., 2011; Wenzel et al., 2005). Moreover, they are a precursor to more serious postpartum mood disorders and potentially deleterious maternal or infant health outcomes (Glasheen et al., 2010; Grace, Evindar, & Stewart, 2003; Raes et al., 2014). Undesirable emotions relating to infant feeding may exacerbate these relationships.

Feelings of guilt were more likely to be internally motivated than stem from external sources. This is an interesting finding supporting previous literature that proposes an instinctive knowledge regarding the superiority of breastfeeding (Bailey et al., 2004; Cloherty et al., 2004; Lee, 2007) and indicates that self-reproach is the likely consequence of a discordant infant feeding outcome. With regards to external emotional catalysts, the data followed a similar pattern for guilt, stigma, and the need to defend feeding method. The primary external source of all the emotions under study was other mothers. Although this is a novel finding in the infant feeding

literature, the media-fuelled “mummy-wars” between breastfeeding and formula feeding mothers may be a contributing factor (Christopher & Krell, 2014). Informal relationships between mothers both face to face, and via social media platforms are an important source of social and emotional support (Lee, 2007; Zimmerman et al., 2008) and the socio-cultural significance of infant feeding decisions may be placing these networks in jeopardy (Christopher & Krell, 2014).

These negative emotions were secondarily driven by health professionals. These feelings may occur as a result of not conforming to health professionals’ recommendations or stem from a perception that health professionals judge formula to be an inferior option (Lagan et al., 2014; Spencer et al., 2015). Such conclusions are further reinforced by data revealing that the majority of mothers in this study felt unsupported by health professionals and were more likely to rely on the internet for infant feeding information than seek advice from them. Although it is acknowledged that the vast majority of health professionals strive to promote and support the health and well-being of mothers and their infants, a perceived lack of infant feeding support and information from commissioned health services may result in errors in the preparation, handling, and storage of formula. These mistakes were noted in a number of studies reviewed by Lakshman (2009) and such consistencies in the literature raise considerable implications for infant health. Inadequate conditions when handling formula milk may lead to inadequate or excessive intake of calories and nutrients, dehydration, and diarrhoea. Moreover, there is a high risk of infection if bottles are washed or diluted with water at incorrect temperatures or stored inappropriately (Labiner-Wolfe, Fein, & Shealy, 2008; Lakshman et al., 2009).

The secondary aims of this work were to assess whether these experiences varied according to prenatal feeding intention and postpartum feeding type. Specifically, it was predicted that formula feeding mothers who had intentions to exclusively breastfeed in pregnancy (I-EBF) or those who exclusively formula fed at the time of study, yet initiated breastfeeding in accordance with current guidelines (EBF now EFF), would have more negative experiences than the other groups under study. Regression analyses revealed that both I-EBF and EBF now EFF type mothers were at a significantly higher risk of experiencing guilt about their choice of feeding method than other cohorts. These associations remained strong after adjustment for a range of confounders and could be most clearly observed when mothers expressed

intentions to exclusively breastfeed in pregnancy. Guilt arises from the internal consciousness of an immoral action, this finding further exposes the moralistic nature of the pro-breastfeeding discourse (Knaak, 2010; Lee, 2007; Murphy, 1999) and highlights the emotional costs for those who try, yet are unable to achieve the current WHO guidance of exclusive breastfeeding for six months. This guidance is intended to inform international government policies, but is instead widely disseminated by health professionals as an individual feeding goal for women (Hoddinott, Craig, Britten, & McInnes, 2013). Others have suggested that this is an unachievable “one size fits all” approach which disregards individual women’s circumstances (Lagan et al., 2014; Schmied et al., 2001) and sets women up for failure (Hoddinott et al., 2013).

Similarly, the findings revealed that both I-EBF and EBF now EFF type mothers were at a significantly higher risk of experiencing dissatisfaction about their choice of feeding method than other cohorts, although this result was not significant in adjusted models for feeding type. Cultural representations of formula as nutritionally inferior, unsafe or risky have been highlighted as a contributors to feeding dissatisfaction (Knaak, 2006, 2010; Lee, 2007; Murphy, 1999); these findings lend agreement to this body of qualitative work. In addition, dissatisfaction with infant feeding has been associated with overall discontent about the initial postpartum period (Symon et al., 2013). Several other studies have noted the emotional burden for those that intend to, and initially start breastfeeding in accordance with current policies, yet change to formula feeding early (Lagan et al., 2014; Lee, 2007; Schmied et al., 2001). These findings provide quantitative evidence to support criticisms of how infant feeding recommendations are framed by policy makers and appeals for a less prescriptive approach to the way current guidelines are presented to women (Knaak, 2006; Lagan et al., 2014; Lee, 2007). Associations for both guilt and dissatisfaction were stronger in feeding intention analyses than feeding type analyses. This suggests that the negative emotions experienced when prenatal exclusive breastfeeding expectations are unmet may be more profound than those experienced when exclusive breastfeeding is ceased in the postpartum period. Although this is a novel finding, recent work has indicated that the psychological disappointment generated by unmet expectations leads to lower wellbeing and a higher risk of depressive symptoms in the postpartum (Gregory,

Butz, Ghazarian, Gross, & Johnson, 2015). Others have also noted this mismatch between idealism and realism, suggesting that policy makers are encouraging idealistic expectations in pregnancy but failing to support women to achieve these goals after birth (Hoddinott et al., 2013; Lagan et al., 2014; Lee, 2007).

Contrary to the hypothesis, I-EFF and EFF mothers were at a higher risk of experiencing stigma as a result of their feeding method than other cohorts, although these associations were attenuated in adjusted models. This suggests that mothers who intentionally use formula may be prone to a different, albeit undesirable, emotional experience. Furthermore, these mothers were also more likely to rely on family members than health professionals for infant feeding information when compared to those who attempted to follow current breastfeeding recommendations. Stigma is defined as a negative and widely held social belief about an undesirable behaviour (Goffman, 1963), and is highly associated with perceptions of social isolation (Link & Phelan, 2006). It is argued, that the highly prevalent “breast is best” mantra serves to alienate those who intend to exclusively formula feed and creates reluctance among women to seek professional advice about their “suboptimal” feeding method. This finding resonates with other work highlighting feelings of isolation (Lee, 2007; Murphy, 1999) and information gaps in the current infant feeding message for those who decide to formula feed (Knaak, 2006, 2010; Lagan et al., 2014). The Royal College of Midwives (2004) advocates that women who choose to formula feed should have their decision respected. Similarly, the National Institute for Health and Care Excellence (2008) guidelines emphasises that health professionals need to provide balanced and individualised information in discussions which encompass all infant feeding options. Counterintuitively, up until 2012, BFI policy continued to prohibit health professionals from providing antenatal formula feeding advice in pregnancy, even to those who expressed intentions to exclusively formula feed in pregnancy (UNICEF, 2016b; UNICEF, 2017).¹² Although this policy has now been revised, it should still be emphasised that there is a critical window of time for such conversations to take place to enhance perceptions of care and prevent negative maternal emotions from occurring prior to the

¹² This sentence has been amended from the original publication to address thesis corrections

postpartum period. Furthermore, this will enable health professionals to promote the safe and appropriate use of formula prior to commencement of use.

While the BFI message is critically important in developing countries (Bartington, Griffiths, Tate, & Dezateux, 2006) or high-risk situations (prematurity, very low birth weight) (UNICEF, 2013) where the relevance for child survival is undisputed, it may be internalised differently among affluent or low-risk populations. The evidence presented here suggests that the current approach to infant feeding promotion and support in higher-income countries may be paradoxically related to significant issues with emotional wellbeing and may need to be situationally modified. This is not an isolated finding (Knaak, 2006; Lagan et al., 2014; Lee, 2007; Schmied, Beake, Sheehan, McCourt, & Dykes, 2011; Spencer et al., 2015; Thomson & Dykes, 2011) and points to tensions with breastfeeding initiatives such as BFHI in their current form. Exclusive breastfeeding rates are very low in some higher-income countries such as the UK and continue to stagnate (Bolling et al., 2005; McAndrew et al., 2012). At present, there is limited evidence examining the efficacy of public health interventions designed to increase rates of breastfeeding initiation and duration in higher-income settings. Only two studies in the UK have been conducted in BFI settings and both indicate that the benefits of the current strategy are transient and not sustained (Bartington et al., 2006; Broadfoot, Britten, Tappin, & MacKenzie, 2005). There is urgent need for further evaluation of current initiatives such as BFHI in higher-income settings to identify barriers to breastfeeding success and eliminate risks to maternal and infant wellbeing.

These conclusions are reinforced by the present study's large sample size which allowed assessment and adjustment of a range of established confounders while maintaining statistical power. The study design allowed us to distinguish between the emotional and practical experiences of different groups of formula feeders and as such provides a rationale for support to be tailored to specific cohorts of women. These experiences were however explored in a self-selected online sample of mothers. It is possible that responses were biased towards those with extreme experiences as those who are neutral about the topic may have chosen not to participate. For instance, mothers who wanted to breastfeed yet were unable to for biological reasons are likely to experience negative emotions as a result of diminished choice. Feeding intention was assessed retrospectively which may have

also increased the chance of response bias. However, this is offset by the high levels of anonymity experienced when participating in online research. The study sample was predominantly first time, married mothers from the UK which limits the generalizability of findings to other settings. Data from exclusively breastfeeding women were also not obtained and so comparisons cannot be made with those who successfully adhere to current recommendations; this may be an interesting avenue for future research. The survey items used were not subject to comprehensive validity testing, again, this should be explored if the questions are to be used again with a different sample.

5.6 Conclusions

To conclude, descriptive findings from the overall sample indicate widespread negative emotions among those who choose to formula feed in any quantity. Although the hypotheses were only partially supported, this is the first study to identify that failure to initiate, or premature discontinuation of breastfeeding is directly associated with negative emotions, namely guilt and stigma. Women who intended to exclusively breastfeed, or initiated exclusive breastfeeding were more susceptible to guilt, whereas those that intended to or initiated exclusively formula feeding were at greater risk of experiencing stigma. As such, it exposes the specific emotional repercussions of formula feeding and provides further evidence to suggest that there is insufficient support and advice in place for those who use formula to feed their infants. The findings quantitatively summarise a rich body of qualitative work which highlights a need to address formula feeding in a more balanced, woman-centred manner. Such consistency in the literature provides a solid basis to inform large-scale trials and evaluations examining the efficacy of current infant feeding initiatives. Ultimately, it is imperative to determine whether the benefits of the current infant feeding message outweigh the apparent risks to maternal and infant wellbeing.

Chapter 6

Differences in the emotional and practical experiences of exclusively breastfeeding and combination feeding mothers¹³

6.1 Foreword

Chapter 5 reported negative emotional and practical experiences from a large sample of formula feeding mothers. However, negative emotional and practical experiences have also been highlighted in breastfeeding mothers (Bailey et al., 2004; Thomson et al., 2015), particularly when breastfeeding in public or in the workplace. A recommendation for future research using a sample of breastfeeding women was advanced. It is essential to understand the emotional and practical experiences of all maternal feeding types in order to contextualise the relationship between maternal anxiety and infant feeding. By running a mirrored study including exclusively breastfeeding women, comparisons can also be drawn with those who successfully adhere to current recommendations. This study targeted breastfeeding mothers to quantify their emotional and practical experiences using identical methods. Two additional survey items were included to account for determinants that are unique to breastfeeding experiences; the experiences of those who breastfeed in public, and in the workplace.

6.2 Study introduction

Although breastfeeding initiation rates have steadily increased in the UK over the past two decades; 62% in 1990 to 81% in 2010 (Bolling et al., 2005; McAndrew et al., 2012), the number of mothers who breastfeed their infant exclusively has failed to rise. In 2010, just 1% of women were exclusively breastfeeding up until the nationally recommended six month juncture (McAndrew et al., 2012). It appears that despite virtually all mothers and healthy term babies possessing the physiological capacity to successfully breastfeed, the majority (88%) use formula in some quantity in the first six months (McAndrew et al., 2012). This indicates the

¹³ Chapter 6 is published in *Maternal and Child Nutrition* as:

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presence of factors creating barriers to the most health promoting infant feeding outcomes (Neifert & Bunik, 2013).

Quantitative literature examining the barriers to breastfeeding has been orientated towards the physical challenges encountered by breastfeeding mothers. On the other hand, a large body of qualitative literature has previously highlighted the negative emotional and practical experiences of exclusively breastfeeding and combination feeding mothers (Burns, Schmied, Sheehan, & Fenwick, 2010; Hauck, Langton, & Coyle, 2002; Hegney, Fallon, & O'Brien, 2008; Hoddinott et al., 2012; Lee, 2007; Leeming, Williamson, Johnson, & Lyttle, 2015; Nelson, 2006; Thomson et al., 2015). Moreover, in a number of studies these experiences are largely only looked at through the lens of postpartum depression and its association with breastfeeding initiation, duration, exclusivity, or related difficulties (Brown, Rance, & Bennett, 2015; Dennis & McQueen, 2007, 2009; Henderson, Evans, Straton, Priest, & Hagan, 2003; McCarter-Spaulding & Horowitz, 2007; Shakespeare, Blake, & Garcia, 2004). However, breastfeeding mothers without a postpartum mood disorder are also susceptible to negative emotional responses. Whilst many consider breastfeeding as a cornerstone of their maternal experience, a body of qualitative work highlights an array of potential negative emotions. These include shame about breastfeeding in public (Davis, 2004; Taylor & Wallace, 2012), embarrassment about breastfeeding in front of family and friends (Smyth, 2008), and stigmatisation for breastfeeding in a 'bottle feeding culture' (Scott & Mostyn, 2003; Dykes & Moran, 2003).

Current breastfeeding promotion may inadvertently contribute to negative feeding experiences. Although designed to convey the health benefits of this approach to infant feeding it may instead situate breastfeeding as the "moral" and "responsible" mothering choice (Williams, Kurz, Summers, & Crabb, 2012). As a result, failure to breastfeed becomes a major source of both internal and external guilt and stigma (Knaak, 2010; Marshall, Godfrey, & Renfrew, 2007). Breastfeeding mothers may feel direct and indirect external pressure to supplement or substitute breastfeeding with formula (Arora, McJunkin, Wehrer, & Kuhn, 2000; Baranowski et al., 1983; Mazingo, Davis, Droppleman, & Merideth, 2000). With the decision to introduce formula considered suboptimal, qualitative studies often report that mothers also feel the need to internally justify this choice (Mazingo et al., 2000; Stewart-Knox,

Gardiner, & Wright, 2003; Williams, Donaghue, et al., 2012; Williams, Kurz, et al., 2012).

Mothers who exclusively breastfeed for the first six months of their infant's life are acting in accordance with current guidelines. Yet, this moralistic approach still renders them susceptible to negative emotional responses to the feeding process. The source of these emotions can be different from those who formula feed their baby (Williams, Kurz, et al., 2012) and may reflect a perceived internal conflict between their sense of duty as a mother and a desire to attend to their own personal needs (Hauck & Irurita, 2003). Exclusively breastfeeding mothers can also find themselves facing conflicting and incompatible expectations from their close external environment, with family, work and social obligations proving unavoidable burdens to breastfeeding (Hoddinott et al., 2012).

This large-scale internet study is the first to quantify the emotional and practical experiences of an overall sample of breastfeeding mothers and identify the differences in the emotional and practical experiences of exclusively breastfeeding mothers (EBF) and combination feeding mothers (Combi), by feeding type and intention. It was hypothesised that mothers who chose to supplement with formula (Combi) would be more susceptible to negative experiences as opposed to those who chose to exclusively breastfeed (EBF). Furthermore, it was proposed that the source of negative feelings would differ according to feeding type with negative emotions in EBF mothers arising from external sources and in combi mothers from internal sources. Finally, with a related survey of formula feeding mothers (Fallon et al. 2016; Chapter 5) reporting a strong association between feeding intentions in pregnancy and negative feeding experiences, a further aim was to examine whether the experiences of breastfeeding mothers would also differ according to feeding intention in pregnancy.

6.3 Method

6.3.1 Ethical approval

The study gained ethical approval from the University of Liverpool Institute of Psychology, Health and Society Ethics Committee in March 2015 (Appendix 19). All aspects of the study were performed in accordance with the 1964 Declaration of

Helsinki. Participants were provided with an information sheet and informed consent was gained with a tick box. The online survey was accessible from 30/3/2015 to 12/4/2015.

6.3.2 Participants and demographics

A total of 845 mothers of infants up to 26 weeks of age, who were currently breastfeeding in any quantity, were recruited through relevant social media sites and mailing lists via advertisements providing a link to the Qualtrics survey software. The 26 weeks cut off point applied reflects the current WHO exclusive breastfeeding recommendations (WHO, 2015). The advertisements stated that participants were invited to take part in a short study which would examine the opinions and experiences of breastfeeding mothers. Women who were exclusively formula feeding, younger than 16 years of age, or non-English-speaking, were not eligible to participate. Of the 845 participants, 151 (17.9%) were excluded from final analyses as they did not complete the study. A further seven participants, who reported the intention to exclusively formula feed, were also excluded due to statistical issues introduced by the small group size.

Maternal age, marital status, and country of residence were initially asked. To assess socio-economic status mothers were asked to report their current occupation (or if currently on maternity leave, previous occupation). The simplified National Statistics Socio-economic Classification, which contains eight occupation classifications was then applied (Office for National Statistics, n.d.). Only mothers who reported previous occupation were asked questions related to their return to their previous employment. Information relating to the infant such as birth order and age in weeks was also obtained.

6.3.3 Exposure variables

The survey had a similar study design to previous work examining the emotional and practical experiences of formula feeding mothers (Fallon et al. 2016; Chapter 5). The first part of the survey assessed the practical experiences of breastfeeding mothers. Questions included the perceived level of infant feeding support that mothers received from health professionals, the perceived level of respect displayed by their everyday environment with regards to their feeding choices, and the

perceived level of satisfaction experienced as a result of their feeding choices. In addition, mothers were asked whether they had breastfed in public, and if so the perceived level of respect at the time of this event. Where applicable, mothers were also asked about perceived respect for their feeding choices at the workplace (displayed or expected). All answers were provided via a 5-point Likert scale (higher responses indicated higher levels of support, respect, and satisfaction). Finally, mothers were also asked about their main source of information about infant feeding. Potential responses included the media, health professionals, family members, other mothers, or previous experiences/own accord.

The second part of the survey examined the emotional experiences of breastfeeding mothers. Respondents were asked to provide a binary (yes/ no) response to indicate the presence of feelings of guilt, stigma and the need to defend as a result their infant feeding choices. Positive responses were followed up to identify the source of the feelings (see Table 6.1). Participants were able to choose more than one source if applicable. A positive response to the presence of guilt was also followed up to ascertain whether the feelings were experienced internally, as a result of other's opinions, or both. For stigma, two additional choices were added relating to the working environment and when breastfeeding in public. The structure and content of the questionnaire is presented in Table 6.1.

6.3.4 Outcome variables

The outcome variables were current feeding type and feeding intention in pregnancy. Available answers were based on WHO-defined categories (UNICEF, 2014). At the time of completion, five different categories were available to the mothers (exclusively breast feeding from birth; breastfeeding to start with but now a little formula; breastfeeding to start with but now some formula; breastfeeding to start with but now mostly formula, and combination feeding from birth). Feeding intention was asked retrospectively, at the end of the study, to avoid response bias on answers relating to the emotional experiences.

6.3.5 Statistical analysis

All analyses were conducted using the IBM SPSS 22 software package. Descriptive statistics were generated for demographic and exposure variables of interest (Tables

6.2 and 6.3). Independent samples t-test and χ^2 tests were used to examine bivariate associations between study variables and both feeding type, and feeding intention. Relative risk ratio's (RRRs) for the association between exposure and outcome variables were then calculated using binary logit models. Separate models were built for feeding type and feeding intention. Backward elimination was used to build the adjusted models and demographic variables were kept as confounders in the model if they changed the beta coefficients of the exposure categories by more than 10%. Feeding intention and feeding type were also included as potential confounders in the opposing models.

Exposure categories were collapsed to a three point scale during the analysis (See Table 6.4) to meet the requirements of the statistical test and overcome complete separation issues within the sample. Moreover, due to unexpected singularities occurring during statistical analysis, the initial feeding type categories (N=5) were collapsed into two categories: exclusively breast feeding (EBF) from birth, and all other types of combination feeding (combi). Concurrent with feeding type, the initial feeding intention categories were collapsed into two (exclusively breastfeeding, EBF; and any type of combination feeding, combi), for the same reason (see Table 6.4). Those who intended to exclusively formula feed were excluded from the analysis due to statistical issues arising from the small number of cases identified (7 cases). For the respect of mothers' workplace and the respect when breastfeeding in public, separate binary logit regression models were run in order to include only participants who reported paid employment and public breastfeeding respectively.

6.4 Results

6.4.1 Demographics

The age of the final sample of 679 (80% of the original sample) mothers ranged from 19 to 45 years (M = 31.21; SD = 4.59). Their baby's age ranged from one to 26 weeks (M = 16.49; SD = 7.62). The majority of the sample was married or living with their partner (95.8% cumulatively) and from the United Kingdom (88.1%). See Table 6.2 for full demographic details.

6.4.2 Overall Sample

From the total sample of 679 mothers, 14.9% experienced feelings of guilt about their choice of feeding method. The guilt was motivated from both internal and external sources in equal proportions among both feeding type groups (Table 6.3). Approximately one in three mothers (38%) also reported experiencing feelings of stigma about the way they chose to feed their baby while more than half of the mothers in the sample (54.5%) reported that they felt the need to defend their feeding choices. Interestingly, in all cases where these feelings were present, they arise primarily from family members (58.7%, 40.7% and 62.7% respectively), with other mothers and peers also making a notable contribution (31.7%, 38.4% and 42.7% respectively). However, regardless of the presence of negative experiences, the vast majority of the mothers in the sample were satisfied with their choice of feeding method (93.8%) and they reported high rates of respect from their everyday environment (80.6%) and when breastfeeding in public (71.9%). By contrast, when they were asked about the respect in their working environment (or the respect expected upon returning to their employment) mothers reported lower levels of respect (56.8%) and higher levels of disrespect (12.8%) than when they were asked about the respect from their everyday environment or when breastfeeding in public.

From the whole sample, only 56.6% of the mothers felt well supported by health professionals with infant feeding issues. The remainder (43.4%) of the sample reported feeling moderately to not at all supported. This finding was congruent with descriptive statistics relating to sources of infant feeding information with 42.1% of mothers using the internet as their primary resource of information around infant feeding. Here independently sourced online forums, social media and scientific evidence were more popular to information gained from health professionals.

Table 6.1 Survey question assessing feeding type, intention, emotional and practical experiences in the order they appeared in the survey.

Display to	Question	Response options
All	1. How are you currently feeding your baby?	Exclusively breast feeding from birth Exclusively breastfeeding to begin with, but now using a little formula (the odd feed) Exclusively breastfeeding to begin with, but now using some formula Exclusively breastfeeding to begin with, but now using mostly formula Combination of breast milk and formula milk from birth Exclusively breast feeding from birth
All	2. How satisfied you are with your choice of feeding method?	Very Dissatisfied Dissatisfied Neutral Satisfied Very Satisfied
All	3. Do you find that your everyday environment is respectful of your infant feeding choices?	Very Disrespectful Disrespectful Neutral Respectful Very Respectful
Those who reported paid occupation post-partum	4. Do you (or do you expect to) find your environment in the workplace respectful of your feeding choices?	Very Disrespectful Disrespectful Neutral Respectful Very Respectful
All	5. How well supported by health care professionals do you feel when it comes to infant feeding?	Not supported at all Minimally supported Moderately supported Very supported Extremely supported
All	6. What has been your main source of information for milk feeding?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other Previous experiences/ own accord
All	7.1. Have you ever breast fed your baby in public?	Yes/No
If yes to q 7.1	7.2. If yes, how respectful are the people around you in general when you breast feed in public?	Very Disrespectful Disrespectful Neutral Respectful Very Respectful

Table 6.1 Continued

All	8.1. Have you ever felt stigmatised for the way you choose to feed your baby?	Yes/No
If yes to q 8.1	8.2. If yes, where?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other My working environment When feeding in public
All	9.1. Have you ever felt guilty about the way you choose to feed your baby?	Yes/No
If yes to q 9.1	9.2. If yes, was this feeling the result of others opinion or your own feelings?	Other's opinions/ Own feelings/ Both
If other's opinions or Both selected to q 9.2	9.3. If so, where?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other
All	10.1. Have you ever felt the need to defend your choice of feeding method?	Yes/No
If yes to q 10.1	10.2. If yes, where?	Internet online parenting forums/social media sites, health related websites, others Peers/other mothers in person Family members – mother, father, sister, brother, grandparents, other Health professionals – midwives, health visitors, GP, other Media - television, radio, newspaper, other My working environment When feeding in public To myself
All	11. How were you planning to feed you baby when you were pregnant?	Exclusively formula feeding Mainly formula feeding with a little breast feeding Approximately 50% formula feeding and 50% breast feeding Mainly breast feeding with a little bit of formula feeding Exclusively breast feeding

* Forced response was activated on all items; ** Display logic was used on follow up items

Table 6.2 Maternal characteristics by overall sample, feeding type, and feeding intention¹⁴

Characteristic	Overall	Feeding Type		<i>P</i> **	Feeding Intention		<i>P</i> **
		<i>EBF</i>	<i>Combi</i>		<i>EBF</i>	<i>Combi</i>	
Maternal age (mean years ± SD)	31.21(±4.57)	31.11(±4.58)	31.57(±4.58)	.294	31.11(±4.65)	31.87(±4.08)	.143
Child's age (mean weeks ± SD)	16.49 (±7.62)	16.33 (±7.72)	17.14 (±7.23)	.262	16.44(±7.69)	16.88(±7.20)	.609
Birth order (N/%*)							
1 st	311 (45.8)	239 (44.2)	72 (52.2)		274 (46.5)	37 (41.1)	
2 nd	268 (39.5)	220 (40.7)	48 (34.8)		226 (38.4)	42 (46.7)	
3 rd	73 (10.8)	60 (11.1)	13 (9.4)	.332	66 (11.2)	7 (7.8)	.414
4 th	22 (3.2)	19 (3.5)	3 (2.2)		18 (3.1)	4 (4.4)	
5 th and after	5 (0.7)	3 (0.6)	2 (1.4)		5 (0.8)	0(0.0)	
Marital status (N/%*)							
Married	422 (62.2)	346 (64.0)	76 (55.1)		363 (61.6)	59 (65.6)	
Living with a partner	228 (33.6)	177 (32.7)	51 (37.0)		201 (34.1)	27 (30.0)	
Divorced	1 (0.1)	1 (0.2)	0 (0.0)	.072	1 (0.2)	0 (0.0)	.886
Separated	2 (0.3)	1 (0.2)	1 (0.7)		2 (0.3)	0 (0.0)	
Single	26 (3.8)	16 (3.0)	10 (7.2)		22 (3.7)	4 (4.4)	
Occupation (N/%*)							
Managers, Directors and Senior Officials	46 (6.8)	37 (6.8)	9 (6.5)		38 (6.5)	8 (8.9)	
Professional Occupations	280 (41.2)	218 (40.3)	62 (44.9)		241 (40.9)	39 (43.3)	
Associate Professional and Technical Occupations	22 (3.2)	19 (3.5)	3 (2.2)		21 (3.6)	1 (1.1)	
Administrative and Secretarial Occupations	78 (11.5)	63 (11.6)	15 (10.9)		64 (10.9)	14 (15.6)	
Skilled Trades Occupations	11 (1.6)	10 (1.8)	1 (0.7)		11 (1.9)	0 (0.0)	
Caring, Leisure and Other Service Occupations	89 (13.1)	74 (13.7)	15 (10.9)	.137	79 (13.4)	10 (11.1)	.312
Sales and Customer Service Occupations	74 (10.9)	56(10.4)	18 (13.0)		61 (10.4)	13 (14.4)	
Process, Plant and Machine Operatives	2 (0.3)	1 (0.2)	1 (0.7)		2 (0.3)	0 (0.0)	
Elementary Occupations	9 (1.3)	4 (0.7)	5 (3.6)		8 (1.4)	1 (1.1)	
Not in paid occupation	68 (10.0)	59 (10.9)	9 (6.5)		64 (10.9)	4(4.4)	

¹⁴ EBF: Exclusive breastfeeding; Combi: Combination feeding (all types * Percentages are given within each category (EBF or Combi and feeding intentions); **Group differences ascertained by independent samples t test and x² tests

Table 6.3 Descriptive experiences of breast feeding mothers by overall sample, feeding type, and feeding intention

Breast Feeding Experience	Overall N (%)	Feeding Type N (%)		p-value**	Feeding Intention N (%)		p-value**
		EBF	Combi		EBF	Combi	
Guilty about choice of feeding method	679	541	138		589	90	
No	578 (85.1)	497 (91.9)	81 (58.7)	<.001	510 (86.6)	68 (75.6)	.006
Yes	101 (14.9)	44 (8.1)	57 (41.3)		79 (13.4)	22 (24.4)	
Source of guilt					79	22	
Internal	38 (37.6)	9 (20.5)	29 (50.9)		29 (36.7)	9 (40.9)	
External	33(32.7)	25 (56.8)	8 (14.0)	<.001	31 (39.2)	2 (9.1)	.120
Both	30 (26.7)	10 (22.7)	20 (35.1)		19 (24.1)	11 (50)	
Source of guilt*†							
Media	10 (15.9)	2 (5.7)	8 (28.6)	.113	8 (16.0)	2 (15.4)	.886
Health professionals	12 (19.0)	3 (8.6)	9 (32.1)	.167	9 (18.0)	3 (23.1)	.774
Family members	37 (58.7)	25 (71.4)	12 (42.9)	<.001	33 (66.0)	4 (30.7)	.042
Other mothers	20 (31.7)	11 (31.4)	9 (32.1)	.249	14 (28.0)	6 (46.2)	.320
Internet	17 (27.0)	4 (11.4)	13 (46.4)	.068	12 (24.0)	5 (38.5)	.403
Stigmatised about choice of feeding method	679	541	138		589	90	
No	421(62.0)	343 (63.4)	78 (56.5)	.137	222 (37.7)	36 (40.0)	.674
Yes	258 (38.0)	198 (36.6)	60 (43.5)		367 (62.3)	54 (60.0)	
Source of stigma*‡							
Media	76 (29.5)	60 (30.3)	16 (26.7)	.738	66 (18.0)	10 (18.5)	.383
Health professionals	41 (15.9)	28 (14.1)	13 (21.7)	.549	35 (9.5)	6 (11.1)	.661
Family members	105(40.7)	81 (40.9)	24 (40.0)	.900	92 (25.1)	13 (24.1)	.576
Other mothers	99 (38.4)	74 (37.4)	25 (41.7)	.162	84 (22.9)	15 (27.8)	.891
Internet	73 (28.3)	55 (27.8)	18 (30.0)	.588	65 (17.7)	8 (14.8)	.812
My working environment	16 (6.2)	14 (7.1)	2 (3.3)	.293	14 (3.8)	2 (3.7)	.826
When fed in public	106 (41.1)	89 (44.9)	17 (28.3)	.022	93 (25.3)	13 (24.1)	.513
Need to defend choice of feeding method	679	541	138		589	90	
No	309 (45.5)	265 (49.0)	44 (31.9)	<.001	323 (54.8)	47 (52.2)	.642
Yes	370(54.5)	276 (51.0)	94 (68.1)		266 (45.2)	43 (47.8)	
If so, where*‡							
Media	38 (10.2)	33 (12.0)	5 (5.3)	.067	34 (12.8)	4 (9.3)	.671
Health professionals	74 (20.0)	49 (17.8)	25 (26.6)	.064	67 (25.2)	7 (16.3)	.349
Family members	232 (62.7)	179 (64.9)	53 (56.4)	.142	205 (77.1)	27 (62.3)	.425
Other mothers	158 (42.7)	113 (40.9)	45 (47.9)	.241	113 (42.5)	25 (58.1)	.120
Internet	32 (8.6)	59 (21.4)	23 (24.5)	.533	74 (27.8)	8 (18.6)	.364

Table 6.3 Continued¹⁵

To my working environment	19 (5.1)	19 (6.9)	0 (0.0)	.009	17 (6.4)	2 (4.7)	.770
Internal defence	40 (10.8)	15 (5.4)	25 (26.6)	<.001	35 (13.2)	5 (11.6)	.967
Source of infant feeding information	679	541	138		589	90	
Media	0 (0.0)	0 (0.0)	0 (0.0)		0 (0.0)	0 (0.0)	
Health professionals	118 (17.4)	89 (16.5)	29 (21.0)		98 (16.6)	20 (22.2)	
Family members	55 (8.1)	45 (8.3)	10 (7.2)	.644	49 (8.3)	6 (6.7)	.679
Other mothers	91 (13.4)	71 (13.1)	20 (14.5)		79 (13.4)	12 (13.3)	
Internet	286 (42.1)	228 (42.3)	57 (41.3)		248 (42.1)	38 (42.2)	
Own accord/previous experiences	129 (19.0)	107 (19.8)	22 (15.9)		115 (19.5)	14 (15.6)	
Level of support from health professionals	679	541	138		589	90	
Not supported at all /Minimally supported	120 (17.7)	87 (16.1)	33 (23.9)		103 (17.5)	17 (18.9)	
Moderately supported	175 (25.8)	134 (24.8)	41 (29.7)	.005	151(25.6)	24 (26.7)	.660
Very supported / Extremely supported	384 (56.6)	320 (59.1)	64 (46.4)		335 (56.9)	49 (54.4)	
Satisfaction with feeding method	679	541	138		589	90	
Very dissatisfied/ Dissatisfied	24 (3.5)	11 (2.0)	13 (9.4)		20 (3.4)	4 (4.4)	
Neutral	18 (2.7)	8 (1.5)	10 (7.2)	<.001	13 (2.2)	5 (5.6)	.292
Satisfied/Very Satisfied	637 (93.8)	522 (96.5)	115 (83.3)		556 (94.4)	81 (90)	
Respect in everyday environment	679	541	138		589	90	
Very disrespectful/disrespectful	28 (4.1)	18 (3.3)	10 (7.2)		21 (3.6)	7 (7.8)	
Neutral	104 (15.3)	72 (13.3)	32 (23.2)	.002	88 (14.9)	16 (17.8)	.102
Respectful / Very respectful	547 (80.6)	451 (83.4)	96 (69.6)		480 (81.5)	67 (74.4)	
Respect in working environment α	611	482	129		525	86	
Very disrespectful/disrespectful	78 (12.8)	64 (13.3)	14 (10.9)		64 (12.2)	14 (16.3)	.260
Neutral	186 (30.4)	114 (29.9)	42 (32.6)	.758	159 (30.3)	27 (31.4)	
Respectful / Very respectful	347 (56.8)	274 (56.8)	73 (56.6)		302 (57.5)	45 (52.3)	
Respect when feed on public β	641	520	121		559	82	
Very disrespectful/disrespectful	22 (3.4)	15 (2.9)	7 (5.8)	.126	19 (3.4)	3 (3.7)	.133
Neutral	158 (24.6)	125 (24.0)	33 (27.3)		131 (23.4)	27 (32.9)	
Respectful / Very respectful	461 (71.9)	380 (73.1)	81 (66.9)		409 (73.2)	52 (63.4)	

** Bivariate differences in experience ascertained by independent sample t tests and χ^2 tests; †Percentages are calculated from participants who answered “External” and “Both” in the reference question; ‡ Percentages are calculated from participants who answered “yes” in the reference question; α Responses counted only for mothers who stated that they had a paid employment before pregnancy; β Responses counted only from mothers who stated that they have breastfed in public

Table 6.4 Crude and adjusted results for binary logit models of the association between predictor variables and feeding type/feeding intention

Predictor	Feeding Type		Feeding intentions	
	EBF/Combi		EBF/Combi	
	Crude RRR (95% CI)	Adjusted RRR (95% CI)	Crude RRR (95% CI)	Adjusted RRR (95% CI)
Guilty about choice of feeding method				
Yes	0.17 (0.10, 0.27)	0.16 (0.09, 0.27) ◇	0.49 (0.26, 0.89)	0.90 (0.47, 1.74) #
No*	1.00	1.00	1.00	1.00
Stigmatised about choice of feeding method				
Yes	1.27 (0.79, 2.05)	1.36 (0.82, 2.24) ◇	0.94 (0.55, 1.60)	0.88 (0.51, 1.52) #
No*	1.00	1.00	1.00	1.00
Need to defend choice of feeding method				
Yes	0.79 (0.49, 1.28)	0.66 (0.39, 1.09) ◇	1.45 (0.85, 2.47)	1.58 (0.91, 2.73) #
No*	1.00	1.00	1.00	1.00
Have you ever breastfeed in public				
Yes	2.31 (1.03, 5.17)	2.25 (0.94, 5.37) ◇	1.42 (0.60, 3.38)	1.17 (0.48, 2.87) #
No*	1.00	1.00	1.00	1.00
Source of infant feeding information**				
Internet	0.52 (0.29, 0.95)	0.54 (0.29, 1.01) ◇	0.70 (0.37, 1.32)	0.81 (0.42, 1.58) #
Other mothers	0.51 (0.23, 1.11)	0.64 (0.28, 1.45) ◇	0.65 (0.28, 1.49)	0.76 (0.32, 1.82) #
Family members	0.61 (0.25, 1.47)	0.65 (0.26, 1.64) ◇	0.55 (0.20, 1.51)	0.61 (0.21, 1.72) #
Own accord/previous experiences	0.59 (0.29, 1.17)	0.65 (0.32, 1.34) ◇	0.61 (0.29, 1.30)	0.68 (0.31, 1.49) #
Health Professionals	1.00	1.00	1.00	1.00
Level of support from health professionals**				
Not supported at all /Minimally supported	1.49 (0.81, 2.73)	1.39 (0.74, 2.63) ◇	1.11 (0.57, 2.18)	1.00 (0.49, 2.02) #
Moderately supported	1.67 (1.00, 2.78)	1.74 (1.02, 2.97) ◇	1.17 (0.67, 2.07)	1.03 (0.57, 1.86) #
Very supported / Extremely supported	1.00	1.00	1.00	1.00
Satisfaction with feeding method**				
Very dissatisfied/ Dissatisfied	2.85 (1.08, 7.61)	3.18 (1.17, 8.68) ◇	0.96 (0.29, 3.16)	0.67 (0.19, 2.32) #
Neutral	2.78 (0.91, 8.49)	2.56 (0.80, 8.25) ◇	1.66 (0.54, 5.16)	1.26 (0.39, 4.12) #

Table 6.4 *Continued*¹⁶

Satisfied/Very Satisfied	1.00	1.00	1.00	1.00
Respect in everyday environment**				
Very disrespectful/disrespectful	1.36 (0.53, 3.46)	1.05 (0.39, 2.85) \diamond	1.97 (0.76, 5.12)	1.89 (0.69, 5.17) #
Neutral	1.52 (0.87, 2.64)	1.46 (0.82, 2.58) \diamond	1.20 (0.64, 2.24)	1.05 (0.55, 2.01) #
Respectful / Very respectful	1.00	1.00	1.00	1.00
Respect/expected respect at the workplace α **				
Very disrespectful/disrespectful	0.82 (0.44, 1.55)	0.76 (0.39, 1.47) \updownarrow	1.47 (0.76, 2.83)	1.62 (0.82, 3.23) #
Neutral	1.10 (0.71, 1.70)	1.09 (0.70, 1.71) \updownarrow	1.14 (0.68, 1.90)	1.12 (0.65, 1.91) #
Respectful / Very respectful	1.00	1.00	1.00	1.00
Respect when breastfeed in public β **				
Very disrespectful/disrespectful	2.19 (0.87, 5.54)	2.18 (0.80, 5.94) \triangle	1.24 (0.36, 4.34)	0.93 (0.25, 3.45) #
Neutral	1.24 (0.79, 1.95)	1.12 (0.90, 1.83) \triangle	1.62 (0.98, 2.69)	1.57 (0.93, 2.66) #
Respectful / Very respectful	1.00	1.00	1.00	1.00

¹⁶ EBF: Exclusive breastfeeding; Combi: Combination feeding (all types); RRR: Relative risk ratio; ** Categories were collapsed to meet requirements of binary logistic regression; \diamond Adjusted for marital status and feeding intention; # Adjusted for feeding type; \updownarrow Adjusted for birth order; \triangle Adjusted for mother's age, marital status and feeding intention; **Bold type** indicates significant associations; α Calculated from mothers who reported paid employment; β Calculated from mothers who reported they have breast fed in public.

6.4.3 Differences in experience by feeding type

Demographic characteristics did not statistically differ between EBF and Combi feeding mothers (Table 6.2). The risk for Combi feeding mothers to experience guilt was almost six times higher than EBF mothers (RRR: 0.17 CI: 0.10, 0.27) and largely unaffected after adjustments for confounders (RRR: 0.16 CI: 0.09, 0.27) (Table 6.4). Interestingly, in the two groups, the guilt was motivated from different sources [χ^2 (2, $N=101$) = 21.30 $p<.001$] (Table 6.3). For EBF mothers feelings of guilt originated more often from the external environment (56.8%) than internal feelings (20.5%). However, for half of the Combi feeding mothers feelings of guilt could be traced from internal factors rather than external (50.9%). Key differences between feeding type were also identified when examining the nature of external sources of guilt with EBF mothers reporting they arose from family members more often than combi mothers [χ^2 (2, $N=101$) = 13.68, $p<.001$] (Table 6.3). Internet and social media sources display a trend [χ^2 (2, $N=101$) = 3.34, $p=.068$] for between group differences, with Combi feeding mothers reporting these sources of guilt more frequently (Table 6.3).

No associations between infant feeding type were observed with regard to stigma (RRR:1.36 CI:0.82, 2.24) (Table 6.4). However, when stigma was reported, mothers who EBF were more likely to do so as result of breastfeeding in public in comparison to combination feeding mothers [χ^2 (2, $N=258$)=5.25, $p=.022$] (Table 6.3). Whilst no associations between infant feeding type and feeling the need to defend feeding choices were observed (Table 6.4), the proportion of mothers reporting defence was high, (51% for EBF mothers and 68.1% for combi feeding mothers). When the need for defence was reported, only EBF mothers identified the workplace as the source of the feelings. Additionally, combi mothers reported a need to defend their feeding choices to themselves (internal defence) significantly more often than EBF mothers [χ^2 (2, $N=370$)=32.56, $p<.001$] (Table 6.3).

With regard to the practical experiences of infant feeding, EBF mothers were more likely to turn to the internet and social media for advice on infant feeding than combi mothers (RRR: 0.52 CI:0.29, 0.95), however this association just failed to reach significance in the adjusted model (RRR: 0.54 CI:0.29, 1.01) (Table 6.4). There were also no differences in the perceived level of support or respect between groups.

However, the sources of support were found to differ. EBF mothers reported higher rates of support from health professionals significantly more often than their combi peers [χ^2 (2, $N=679$)=8.03, $p=.018$] (Table 6.3). A similar pattern with even stronger predictive value was identified with regard to satisfaction with the milk feeding method ratings. Even though the reported level of satisfaction were high in both groups, combi mothers were more frequently dissatisfied or neutral with regard to their feeding choice, than their EBF peers (RRR: 3.18 CI:1.17, 8.68) (Table 6.4).

6.4.4 Differences in experience by feeding intention

For feeding intention, although in the crude model mothers who were planning to combi feed were at higher risk of experiencing guilt (RRR: 0.49 CI: 0.26, 0.89), after adjustment for feeding type the comparison was no longer significant (RRR: 0.90 CI: 0.47, 1.74) (Table 6.4). Nevertheless, for those who actually reported the presence of guilt, mothers who intended to EBF more frequently reported family members as a source of the guilt [χ^2 (2, $N=101$)=4.13, $p=.048$] (Table 6.3). Neither of the remaining negative emotions (stigma and need to defend their feeding choices) nor any of the practical experiences (sources of information, satisfaction and perceived support and respect) examined were found to differ significantly according to feeding intention (Table 6.3 and 6.4).

6.5 Discussion

To our knowledge, this large-scale internet study is the first to examine the risk of encountering negative emotional and practical feeding experiences in different cohorts of breastfeeding mothers. Descriptive findings from the whole sample indicated that mothers reported feeling satisfied with their chosen feeding method, respected by their everyday environment including when breastfeeding in public and well supported by health professionals. Despite this, overall amongst breastfeeding mothers, 15% reported feeling guilty, 38% stigmatised and 54.5% felt the need to defend their feeding choice, with the family environment being the most frequent source of those feelings. These findings suggest that at surface level, breastfeeding mothers appear to be satisfied, respected and supported but on a deeper level, they are still susceptible to negative emotional experiences, particularly stigma and defence. Being aware that these emotions occur presents an opportunity to support breastfeeding women both emotionally and practically and limits the potential for

postpartum mood issues, which bring deleterious outcomes for both mother and infant.

Regression analyses identified that mothers supplementing breastfeeding with formula (combi) were far more likely to experience guilt, with these associations remaining strong after adjustment for confounders. Previous qualitative literature (Knaak, 2010; Marshall et al., 2007; Williams, Donaghue, et al., 2012) identifies the moralistic nature of the messages currently used to promote breastfeeding. The 'breast is best' mantra accompanies the promotion of breastfeeding as something that should come natural, is tailored to the baby's needs, and provides the best opportunity for bonding and attachment between the mother-infant dyad (Mozingo, Davis, Droppleman, & Meredith, 2000; Murphy, 1999; Williams, Donaghue, & Kurz, 2012; Williams, Kurz, et al., 2012). Feelings of guilt associated with formula supplementation could therefore arise from a sense of inadequacy or failing when compared to this socially constructed ideal mother.

Looking more specifically at the sources of guilt, half of the mothers who use a combination feeding method faced internally induced guilt. This is consistent with qualitative research, which reports that mothers who decide to offer formula either because their child is not thriving, or as an aid for themselves to recover from the physical and emotional challenges of breastfeeding, internalise the blame (Mozingo, Davis, Droppleman, & Meredith, 2000; Williams, Donaghue, et al., 2012; Williams, Kurz, et al., 2012). On the other hand, with breastfeeding being demanding, meeting maternal commitments with other children and managing domestic responsibilities in conjunction with social and public life, could produce an array of incompatible expectations from breastfeeding mothers. For working mothers, return to their workplace can also contribute to the incompatibility of their roles (Stewart-Knox et al., 2003). Those expectations, often not conducive to the establishment of successful breastfeeding, could potentially give rise to a source of externally derived guilt when entered into the daily life equation (Hauck & Irurita, 2003).

Regression analyses also revealed that combi feeding mothers were at a higher risk of dissatisfaction from their infant feeding method. With breastfeeding promotion creating a perception of formula as an inferior and unsafe substitute of breast milk that introduces a higher health risk for the babies, this is not a surprising finding.

Such factors have also been linked with greater dissatisfaction with the milk feeding method in qualitative literature (Knaak, 2010b; Lee, 2007; Murphy, 1999) and can lead to broader dissatisfaction with the mothers' postpartum experience (Symon et al., 2013). Interestingly, this finding is consistent with outcomes from a recent study looking at the emotional and practical experiences of exclusively formula feeding mothers (Fallon et al., 2016, Chapter 5). This suggests that the effect is independent of the amount of formula supplementation and is linked directly to the act of formula provision itself.

In contrast to the initial predictions, neither of these experiences varied according to prenatal feeding intention after adjustment for confounders. It is possible that responding to a study recruiting breastfeeding mothers fostered internally positive opinions with regard to current feeding method and masked any discourse from prenatal feeding intentions. However, breastfeeding intention is a complex concept and as the present study was not designed to assess individual components, such as the strength of feeding intention and plans for feeding duration, a complete feeding intention profile could not be generated.

Although not directly related to the main hypothesis, responses relating to managing breastfeeding in public settings and the workplace were included in this study as additional variables of importance. While nursing in public may be anticipated to be the most popular source of stigmatisation in breastfeeding mothers, the vast majority reported that the public was moderately to very respectful when they nursed in public. This difference between the expected public response, which is expressed as perceived stigmatisation, and the actual respect by the public has also been reported in a previous study (Sheeshka et al., 2001). Negative media reports about public breastfeeding could be contributing to this discourse (Boyer, 2011; Taylor & Wallace, 2012). In contrast, stigmatisation due to public breastfeeding was not an issue raised by only a minority of Combi feeding mothers. Mothers who are supplementing with formula milk may be less likely to breastfeed in situations where they could feel concerned about negative reactions to public breastfeeding, as they have allowed the option to offer formula. The working environment was also examined as a specific source of negative experiences. Only mothers who EBF indicated they felt the need to defend their infant feeding choices in this location. This is to be expected, as EBF mothers are more likely to require additional facilities

(such as a private room and a fridge to store expressed milk) and time in the workplace than Combi feeding mothers (Brown, 2016; Wyatt, 2002). The importance of support from employers and co-workers towards the breastfeeding mothers in order to successfully continue breastfeeding is highlighted in the literature (Brown, Poag, & Kasprzycki, 2001; Escobar-Zaragoza et al., 2015; Johnston & Esposito, 2007). More recently the rights of breastfeeding mothers were officially established by law (Government Equality Office, 2010). However, there are no contemporary studies in the UK to demonstrate the efficacy of those provisions, or the change of employers' mind-set or practice towards breastfeeding mothers in the workplace. This finding could indicate a less flexible approach by employees when it comes to exclusive breastfeeding, however, direct examination of employers' attitudes towards continuation of breastfeeding, when mothers return to work, was beyond the scope of this study.

This survey is not without its limitations. It was completed by a self-selected sample of breastfeeding mothers whose willingness to participate may represent a desire to voice more extreme views than those with more neutral experiences who have no perceived benefit from taking part. Although efforts were made to advertise the study to the widest possible audience, this sample included participants from higher socio-economic status and as such cannot be generalised to women from different socio-economic backgrounds. In addition, the retrospective nature of questions relating to feeding intentions may have introduced biases. However, the high anonymity that an online study design offers is likely to balance the possible biases. Furthermore, the sample size of the study is large enough to engender confidence in the accuracy of the resulting summary of emotional and practical experience of breastfeeding mothers during the first six months postpartum. In addition, the design of the survey allowed differentiation of feelings from EBF and combi feeders in terms of both feeding intention and feeding type as well as adjustment for established confounders. The differences in the proportions between the groups are, in many cases, striking.

Breastfeeding mothers who did not initially intend to breastfeed were not included in the analysis because the sample size was too small, thus creating problems in the logit regression analysis. However, looking at the decision making process of these mothers in more detail may provide useful insights to motivate mothers who were

not planning to breastfeed to initiate it in the postpartum and may help to identify effective support mechanisms that can help counteract prior negative beliefs and experiences about breastfeeding.

In light of the present findings, several recommendations of future research directions can be given. Although in this study, indications of the sources of guilt undoubtedly arise, future research should focus on qualitatively identifying the exact reasons mothers feel guilty. This cannot only help contextualizing the present findings but can inform health professional practices that eliminate the emotional impact on mothers. Of equal importance is a qualitative examination of the decision making process and the support network of mothers who were intending to formula feed postpartum, but exclusively breastfed postpartum. Those mothers were present in the initial sample, however they had to be excluded from the analysis due to very low numbers (<1% of the sample). This examination can inform effective strategies that can aid towards breastfeeding initiation rates among mothers who have not considered breastfeeding as an option prenatally. Additionally, replication of the present study to a targeted sample of mothers of lower socioeconomic status is critical to be able to confidently generalize the findings to the general population. Finally, managing EBF continuation upon return to workplace was highlighted by EBF mothers as an issue, despite the protective policies in place. An evaluation of the implementation of those policies in both private and public sector workplace settings is crucial.

Future recommendations in breastfeeding promotion, policies, and campaigns should take into account the diverse and multi-factorial needs of different cohorts of breastfeeding mothers in order to provide an evidence-based framework of action. Milk feeding practices should not be guided by a moral prism or viewed as a moral obligation of the mother to her child. While breastfeeding has undoubted health benefits for both mother and child (Kramer & Kakuma, 2012; Kramer et al., 2008), the importance of maternal mental health and wellbeing should not be overlooked in promotional efforts as this can have profound implications for maternal and infant health and wellbeing (Milgrom, Westley, & Gemmill, 2004; Murray, 1992).

To conclude, this study demonstrates that when breastfeeding mothers fail to adhere to exclusive breastfeeding guidelines, they are at risk of encountering negative

emotions; particularly guilt. Such emotions are likely precursors to more serious postpartum disorders with the potential for damaging outcomes for both mother and child. Given that exclusive breastfeeding rates are very low in some countries, including the UK, this points to a large population whose emotional needs are not represented by current breastfeeding promotion practices and infant feeding policies. It is crucial that information provided to mothers is balanced and realistically reflects the challenges that exclusive breastfeeding brings. Moreover, to enhance the breastfeeding experience and empower mothers with confidence in their abilities, promotion and advice must be tailored to individual situations and respect the decisions of mothers who choose to supplement with formula.

PART THREE

**OVERCOMING MEASUREMENT ISSUES TO PREDICT THE
RELATIONSHIP BETWEEN MATERNAL ANXIETY AND INFANT
FEEDING**

Chapter 7

The Postpartum Specific Anxiety Scale: Development and preliminary validation¹⁷

7.1 Foreword

Literature reviewed in previous chapters (Chapters 2, 3 and 4) concerning maternal anxiety and infant feeding outcomes has highlighted that interpretation of the current evidence based may be limited by the use of general measures of anxiety (i.e. those not designed for use with childbearing populations). Researchers using temporally-specific measures of anxiety (e.g. pregnancy-specific anxiety) have demonstrated that they are more effective predictors of infant health outcomes (e.g. Guardino & Schetter, 2014; Huizink et al., 2003). Some argue that this is because it is a unique construct, in that it is tightly linked to a woman's emotional and physical experiences of a specific period of childbearing (Dunkel Schetter, 2011; Huizink et al., 2004). Chapter 3 identified that a measure of postpartum-specific anxiety was absent in the research literature. Given the potential of pregnancy-specific measures in predicting infant health outcomes, development of a postpartum-specific equivalent is timely and necessary. This chapter uses qualitative data from the final two phases of a qualitative, longitudinal study to generate items for a postpartum-specific anxiety scale (see Fig 1.2). A four-phase scale development and validation study is reported.

7.2 Introduction

Up to twenty percent of women in developed countries experience mental health problems postpartum (World Health Organisation [WHO], 2016). Several decades of research have focused on postpartum depression, while symptoms of anxiety have been largely overlooked. However, postpartum anxiety has become a condition of interest to perinatal researchers, and practitioners in recognition of high prevalence rates and impact on maternal and infant outcomes (Glasheen et al., 2010; Lonstein,

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2007; Paul et al., 2013). Studies of postpartum anxiety reveal incidence estimates ranging from 3% to 43%, with evidence suggesting that it may occur independently and at a higher rate than postpartum depression (PPD) (Britton, 2008; Glasheen et al., 2010; Paul et al., 2013; Wenzel et al., 2005).

The postpartum period involves a series of temporally unique transitions which are often experienced as stressful and overwhelming. This can lead to specific postpartum concerns such as personal appearance and postpartum weight gain (Walker & Freeland-Graves, 1998), health and wellbeing of the infant (Lugina, Nyström, Christensson, & Lindmark, 2004), interpersonal relationships (Hiser, 1991), and general infant care (Warren, 2005). Comprehensive reviews by Lonstein (2007) and Glasheen et al. (2010) also link postpartum anxiety to a range of adverse developmental, somatic, and psychological outcomes in the infant. The interpretation of these results, however, is limited by the use of general scales of anxiety such as the State Trait Anxiety Inventory [STAI] (Spielberger et al., 1970) and/or scales that focus predominantly on postpartum depression (i.e. the Edinburgh Postnatal Depression Scale; EPDS; Cox et al., 1987).

General measures of anxiety are relied upon in a large majority of studies examining postpartum anxiety¹⁸ (Glasheen et al., 2010; Lonstein, 2007; Meades & Ayers, 2011) and may be psychometrically problematic. Many commonly used general measures include somatic items which may occur naturally in the postpartum (e.g. STAI: “I feel rested” or “I feel comfortable”). These may inflate anxiety scores in postpartum populations (Meades & Ayers, 2011) and increase the likelihood of false positives (Swallow, Lindow, Masson, & Hay, 2003). Furthermore, symptoms of anxiety occurring in the postpartum may have distinct presentations which are not encompassed by items in general scales (Meades & Ayers, 2011; Phillips et al., 2009); this limitation has been addressed when examining anxieties occurring in pregnancy (Huizink et al., 2002; Levin, 1991; Van den Bergh, 1990; Wadwha et al., 1993).

A variety of self-report questionnaires have been developed to assess specific anxieties relating to the gestational period which would not bear relevance in general

¹⁸ For a comprehensive review of anxiety measures validated in perinatal populations refer to Meades and Ayers (2011)

scales. These include the Pregnancy Anxiety Scale (PAS; Levin, 1991), the Pregnancy Related Anxiety Questionnaire (PRAQ; Van Den Bergh, 1989), the PRAQ-R (Huizink et al., 2004), and the Pregnancy Related Anxiety Scale (PRAS; Wadwha et al., 1993). These measures include constructs such as fear of childbirth, foetal health and wellbeing, bearing a physically or mentally handicapped child, the mother-infant relationship, relationship changes, and changes in appearance. Two key findings have been observed by studies using these measures: (a) that they predict perinatal outcomes more effectively than general measures of anxiety (Wadwha et al., 1993,1997); (b) that they are qualitatively and quantitatively distinct from general indices of anxiety and depression (Huizink et al., 2002). This has led researchers to regard pregnancy specific anxiety as a distinct entity to anxiety experienced at other times of life (Huizink et al., 2004).

In a similar manner, postpartum specific scales have been designed to measure depression. These include the EPDS (Cox et al., 1987) and the Postpartum Depression Screening Scale (Beck & Gable, 2000). Given high comorbidity with anxiety in some postpartum samples, some researchers have argued that they may be utilised to screen for both anxiety and depression concurrently (Reck et al., 2008; Ross et al., 2003; Stuart et al., 1998). While three items of the EPDS have been found to cluster together on an anxiety factor in postpartum women in several studies (Matthey, 2008; Matthey, Fisher, & Rowe, 2013; Phillips et al., 2009; Ross et al., 2003), the authors maintain that the scale does not measure anxiety (Cox et al., 1987). Furthermore, the EPDS does not distinguish whether anxiety scores on these three items are a feature of depression or a distinct entity (Matthey et al., 2003; Ross et al., 2003). This limits the utility of such tools considering work which finds that anxiety occurs more frequently (Muzik et al., 2000; Paul et al., 2013; Wenzel et al., 2005) and independently (Matthey et al., 2003; Miller et al., 2006; Muzik et al., 2000; Wenzel et al., 2005) of depression in the postpartum.

Two recent endeavours have been made to create an anxiety scale relevant to postpartum women; the Perinatal Anxiety Screening Scale (PASS; Somerville et al., 2014) and the Postpartum Worry Scale-Revised (PWS-R; Moran, Polanin, & Wenzel, 2013). Both measures aim to detect clinically significant levels of anxiety which map onto existing diagnostic criteria for anxiety disorders, although the PWS-R focuses only on generalised anxiety disorder (Moran, Polanin, & Wenzel, 2014).

Emerging evidence highlights a large number of postpartum women who do not meet diagnostic criteria for an existing anxiety disorder yet experience a clinically significant degree of “maternally focused worry” (Phillips et al., 2007, 2009; Wenzel et al., 2005). As such, items within these scales may not encompass the full range of symptoms of anxiety experienced postpartum and a scale with a more focused domain is necessary. Furthermore, the PASS was designed for use with both antenatal and postpartum women (Somerville et al., 2014) suggesting that symptoms are comparable across childbirth. Although an overlap between pregnancy and postpartum anxiety has been identified (Heron et al., 2004), a body of literature provides evidence for a temporally specific pregnancy anxiety (Huizink et al., 2004; Levin, 1991; Van den Bergh, 1990; Wadwha et al., 1993) which includes constructs such as “fear of childbirth” (Huizink et al., 2004) that would not be applicable postpartum. Furthermore, some women may be more prone to developing postpartum anxiety as consequence of specific physiological and psychological processes associated with birth (Heron et al., 2004) which raises additional considerations for measurement. Finally, items from both the PASS and the PWS-R were generated from researcher/clinician experience (Moran et al., 2014; Somerville et al., 2014). Although clinicians may be the best observers of the outward manifestations of symptoms or disorder, only those who experience it can effectively capture the subjective elements (Streiner, Norman, & Cairney, 2015). This multifactorial rationale supports the development of an anxiety scale which is specific to the postpartum period and takes into account the limitations of the existing evidence base.

7.3 Research aims

1. To develop and validate a postpartum specific anxiety scale;
2. To investigate the structure of specific fears and worries related to the postpartum period (“postpartum anxieties”) using this new scale.

7.4 PSAS development

The PSAS was developed by a doctoral student under the supervision of two experienced perinatal psychologists in the Department of Psychological Sciences at The University of Liverpool. All stages of the scale development and validation

gained ethical approval from the University of Liverpool Institute of Psychology, Health and Society Ethics Committee in August 2015 (Appendix 20). All aspects of the study were performed in accordance with the 1964 Declaration of Helsinki.

7.4.1 Stage one: Item generation

Items were predominately informed from interviews conducted with a group of 19 postpartum women at two time-points (time one: 4-8 weeks; time two: 12-16 weeks; Fig 1.2) to ensure an accurate, experiential representation of postpartum specific anxieties was achieved. Responses to the open question “What are the main anxieties that women have at this stage of motherhood” were digitally recorded and a basic content analysis was performed to identify themes and develop items (Appendix 21). The scale items were further developed by reviewing validated pregnancy and postpartum anxiety questionnaires (PASS: Somerville et al., 2014; PWS-R: Moran et al., 2014; PAS: Levin, 1991; PRAQ: Van Den Bergh, 1990; PRAQ-R: Huizink et al., 2004; PRAS: Wadwha et al., 1993), and the postpartum anxiety research literature. The item pool was developed to systematically encompass a broad range of anxieties which were temporally specific to the postpartum period.

Consistent with other validated scales in the field, the 51 item PSAS was formatted as a self-report questionnaire with a four point Likert Scale assessing the frequency of specific anxieties with consistent response options (from zero = “Not at all” to three = “Almost Always”). The order of 27 responses was randomly reversed in order to avoid ‘yea-saying’ bias and aid participant concentration (Streiner et al., 2015). The wording and amount of Likert-scale divisions were chosen based on best current practice in the psychometrics literature (Streiner et al., 2015) and careful review of the self-admitted limitations of already validated anxiety scales (Somerville et al., 2014). The timeframe for rating frequency of anxieties was limited to over the past seven days. This is congruent with pregnancy-specific anxiety scales and deemed necessary given the transient nature of anxieties occurring in the postpartum.

7.4.2 Stage two: Expert panel and face and content validity

The preliminary 51 item scale was reviewed and refined by a panel of 12 individuals, each reflecting distinct insights of scale development and/or postpartum anxiety. The panel included: three experienced perinatal researchers, three senior community midwives, three research midwives (one senior), one statistician, and two psychometricians. Each panel member (blind to the other members' feedback) provided detailed comments on individual items and the overall suitability of the scale (Appendix 22 and 23). Qualitative responses from the panel indicated that the preliminary scale appeared to be measuring postpartum specific anxieties, and was both clinically acceptable for perinatal women and psychometrically feasible, indicating adequate face validity. Panel members also evaluated each item on a four-point Likert scale (four = highly relevant; three = quite relevant or highly relevant but needs rewording; two = somewhat relevant; and one = not relevant). A content validation ratio (CVR; Streiner et al., 2015) was calculated to provide a quantitative expression of content validity. The mean CVR across all items was .76 which is indicative of good content validity. The panel were also asked to comment on whether any items had been omitted to further establish content coverage.

Specific qualitative feedback was collated and analysis of this phase indicated a need to revise certain aspects of the scale. Thirty two items were reworded based on the general consensus of the panel. Of particular importance was the rewording of 11 items to reflect the specificity of postpartum anxiety. For example, the item "I have worried about my relationship with my partner" was reworded to "I have worried more about my relationship with my partner than before my baby was born". Five items were deleted either due to repetition or because there was general agreement that they did not specifically relate to postpartum anxiety (e.g. low CVR). In addition, seven new items were included based on content coverage ideas provided by the panel.

The design and presentation of the final 53 item scale was then extensively reviewed to ensure it was streamlined and easy to respond to. The wording of final items was subject to a computer literacy check (Flesch-Kincaid Grade Level test) as being understandable for someone with five years of education or a ten-year-old child. A

question understanding aid [QUAID] (Graesser, Cai, Louwerse, & Daniel, 2006) was also used and no issues were found with wording, syntax or semantics of questions.

7.4.3 Stage three: Pilot study

An online pilot study was conducted via the Qualtrics survey software platform to assess comprehensibility of item wording, ease of responding, time taken to complete, and any other implementation issues. Mothers of infants aged between 0-6 months (n=146) were recruited via online forums (Mumsnet, Netmums) and social media platforms (Facebook groups and Twitter). Participants completed the 53-item scale and rated comprehensibility and ease of responding on two 10 point Likert scales (i.e. “not at all easy to understand” [0] to “extremely easy to understand” [10] and “not at all easy to complete” [0] to “extremely easy to complete” [10]). An optional free text box was provided at the end of the survey to allow qualitative comments on the questionnaire content and experience of completion to be made.

Acceptability of the PSAS was excellent. The mean scores for the comprehensibility item and the ease of completion item were 9.29 (± 1.24) and 9.18 (± 1.26) respectively. Mean time taken to complete the 53-item scale was nine minutes (range three to 15 minutes). Based on qualitative responses from 18 women, a “not applicable” option was created for seven items relating to partner, families, and work to avoid response ambiguity for women who may not have these life-domains. Positive comments about the scale design and items were also recorded by 36 women, which provided further evidence of its acceptability in this population.

A preliminary item analysis (endorsement frequency and item homogeneity) was also conducted on the pilot study data. The overall scale had excellent reliability (Cronbach's $\alpha = .96$). Inter-item correlations were between .15 and .50. Item-total correlations were between .30 and .70. No problematic items were identified at this stage.

7.5 Stage four: Scale reliability and validation study

7.5.1 Method

7.5.1.1 Measures

Demographic Information: Maternal demographic questions were asked at the beginning of the online survey, including maternal age, country of residence, marital status, skill level of occupation, educational attainment, current diagnosis of anxiety and depression, timing of diagnosis, and any current antidepressant/anxiety medications. Infant demographic data was also asked, including infant age, birth order, multiple birth status (twins/triplets), timing of birth, and mode of feeding.

The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987): The EPDS is a 10-item self-report questionnaire administered to screen for depressive symptoms in the postpartum period. It is the most widely used and recommended screening scale for postpartum depression. Three items (items three, four, and five) have been found to cluster together on an anxiety factor (EPDS-3A) to indicate postpartum anxiety (Matthey, 2008; Matthey et al., 2013). Higher scores indicate higher levels of postpartum depressive symptoms with a score of over 10 (maximum score 30) indicating probable postpartum depression.

The Beck Depression Inventory-II (BDI-II; Beck et al., 1988): The BDI is a widely used self-report instrument for detecting and measuring depression. It measures the severity of 21 symptoms of general depression experienced during the past two weeks with higher scores indicating more severe depressive symptoms. Twenty-five years of research literature provide evidence of its reliability and validity in clinical and non-clinical samples (Beck et al., 1988).

The Spielberger State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970): The STAI is a 40-item self-report questionnaire designed to measure general anxiety. It has two separate sub-scales to measure situational (state) and stable (trait) anxiety. The STAI is a reliable and valid measure used with clinical and non-clinical populations and more recently in perinatal samples (Meades & Ayers, 2011; Spielberger et al., 1970). Higher scores on each four-point Likert scale item indicate higher levels of anxiety.

Figure 7.1 *Participant flowchart*

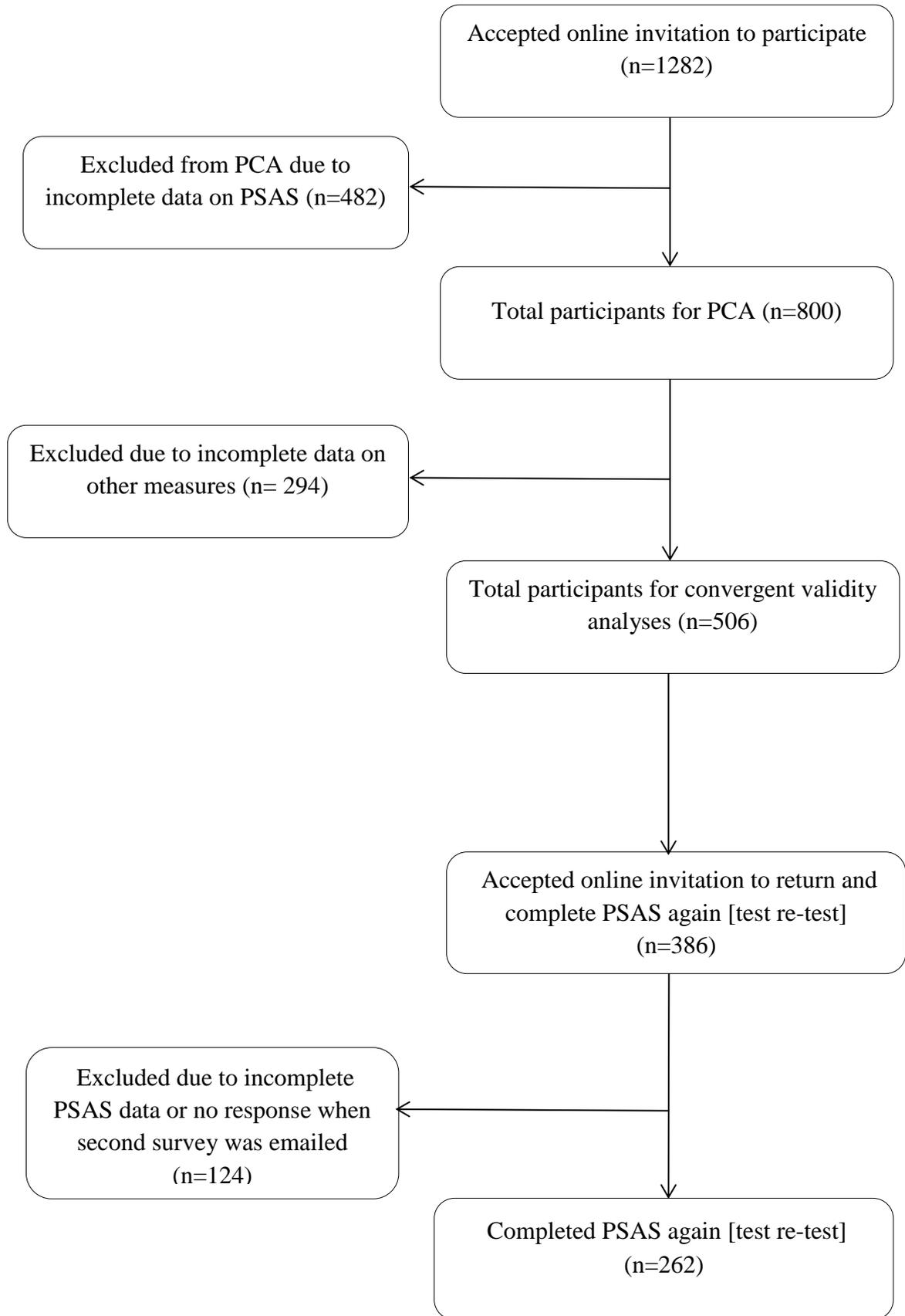


Table 7.1 *Maternal and infant demographic characteristics (N=800)*

Maternal Characteristic	Value	Infant Characteristic	Value
Maternal age (mean years \pm SD)	30.78 (\pm 4.96)	Infant age (mean weeks \pm SD)	16.20 (\pm 7.08)
Country of Residence (N/%)		Birth order (N/%)	
UK & Ireland	682 (85.2)	1 st	399 (49.9)
US	63 (7.9)	2 nd	285 (35.6)
Australia & NZ	21 (2.7)	3 rd	85 (10.6)
Canada	10 (1.3)	4 th	19 (2.4)
Other European	19 (2.3)	5 th and after	12 (1.5)
Other Non-European	5 (0.6)	Timing of Birth (N/%)	
Marital Status (N/%)		Premature (<37 weeks)	38 (4.7)
Married	563 (70.4)	Early Term (>37<39)	156 (19.5)
Co-habiting	199 (24.9)	Full Term (>39<41)	356 (44.5)
Single	32 (4)	Late Term (>41<42)	141 (17.6)
Separated/Divorced/Widowed	6 (0.8)	Post Term (>42 weeks)	109 (13.7)
Occupation (N/%)		Multiple Birth (N/%)	
Managers, Directors and Senior Officials	65 (8.1)	Yes	13 (1.6)
Professionals	319 (39.9)	No	787 (98.4)
Associate Professional/Technical	23 (2.9)	Mode of Feeding (N/%)	
Administrative and Secretarial	76 (9.5)	Exclusively Breastfeeding	528 (66.0)
Skilled Trades	14 (1.8)	Combination Feeding	125 (15.7)
Caring, Leisure and Other Service	91 (11.4)	Exclusively Formula Feeding	147 (18.4)
Sales and Customer Service	70 (8.8)		
Elementary Occupations	4 (0.5)		
Housewife	114 (14.2)		
Not in paid occupation	24 (3.0)		
Educational Attainment (N/%*)			
Postgraduate education	194 (24.3)		
Undergraduate education	313 (39.1)		
A-levels or equivalent college education	169 (21.1)		
GCSEs or equivalent secondary school education	83 (10.4)		
Other Qualification	27 (3.4)		
No qualifications	14 (1.8)		
Current Diagnosis of Anxiety/Depression (N/%)			
Yes	114 (14.2)		
No	680 (85.0)		
Prefer not to say	6 (0.8)		
Timing of Diagnosis (N/%*)			
Before pregnancy	67 (58.8)		
During pregnancy	9 (1.1)		
Postpartum	38 (33.3)		
Currently prescribed medication for anxiety/depression diagnosis (N/%*)			
Yes	57 (50)		
No	57 (50)		

* Only participants who gave a “yes” response to current diagnosis included

7.5.1.2 Participants

Participants were self-identified mothers ($n=1282$) of infants aged between birth and six months postpartum. The six-month cut-off point applied reflects the complete range of theorised postpartum phases (Romano, Cacciatore, Giordano, & La Rosa, 2010). Of the 1282 participants, 482 (38%) were excluded from final analyses as they had missing data on the PSAS. For full details of participation rates at each stage of the study see Figure 7.1. The age of the final sample of 800 mothers ranged from 16 to 45 years ($M = 30.78$; $SD = 4.96$). The sample were predominately married (70%), primiparous (50%), professional (40%) women from the United Kingdom (84%). One hundred and fourteen (14%) women had a current, clinical diagnosis of anxiety/depression at the time of participation which is comparable with UK prevalence estimates. The babies' ages ranged from 0 to 26 weeks ($M = 16.20$; $SD = 7.08$). See Table 7.1 for full demographic details. Participants were recruited through parenting forums (Mumsnet, Netmums), social media platforms (Facebook, Twitter), and other relevant websites via advertisements providing a link to the Qualtrics survey software. The advertisements stated that participants were invited to take part in a study to validate a new measure of postpartum anxiety. Prior to the main survey, an electronic consent form and information sheet were provided with a tick box to confirm that main points had been read and understood. A single question enquired whether the participant was a mother to an infant aged between 0-6 months; only a positive response allowed entry to the main survey. Participants completed demographic questions followed by online versions of the PSAS, EPDS (including EPDS-3A), BDI, STAI (state and trait). On completion of all measures, participants were invited to return two weeks later to complete the PSAS again as a measure of test-retest reliability for a reimbursement of £10. Those who were willing to return received an email with the second survey containing the PSAS two weeks later. Responses were linked via a unique ID embedded in the survey software to preserve anonymity. Online measurement provides greater convenience and anonymity than traditional paper based methods (Evans & Mathur, 2005). The potential for repetitive responding was restricted via a "prevent ballot box stuffing" option embedded in the survey software. The online survey was accessible from 4/9/15 to 5/11/15.

7.5.2 Results

7.5.2.1 Factor Structure of the PSAS

The factor structure of the PSAS was examined using data from all participants who completed the scale (n=800). A series of PCA's were conducted to determine the most appropriate number of factors to retain for rotation. Four factors were retained based on a combination of statistical tests: the results of the scree-test (Eigenvalues > 1 and the scree plot elbow point; Cattell 1966); cumulative variance explained (highest proportion of variance while retaining the simplest, most theoretical meaningful structure; Field 2009); Parallel Analysis (Eigenvalue that corresponds to the 95th percentile of the distribution of Eigenvalues derived from the random data; Glorfeld 1995); and MAP test (average partial correlations between the variables after successively removing the effect of the factors; O'Connor 2000). This model achieved the optimal structure but revealed that seven items had factor loadings below the 0.4 threshold. Five of these items were retained ("I have felt that I should not need help to look after my baby", "I have felt a greater need to do things in a certain way or order than before my baby was born", "I have worried more about my finances than before my baby was born", "I have felt that when I do get help it is not beneficial", and "I have worried that my baby is not developing as quickly as other babies") based on sample size requirements for practical significance (Hair, Anderson, Tatham, & Grablovsky, 1979), adequate item-total correlations (>.40), alpha if item deleted statistics (>.95), and their theoretical relevance to postpartum anxiety, producing a 51 item scale. The PCA was conducted again, excluding the redundant items "I have felt under pressure from health professionals to care for my baby in a certain way" and "I have had negative thoughts about my birth experience". Sampling adequacy for the 51 item scale was excellent (KMO =.95) and Bartlett's test of sphericity demonstrated that correlations between items were large enough for PCA ($\chi^2(1275) = 14,117.3, p < .001$). The PCA revealed four factors which in combination explained 44.72% of the variance.

Theoretical review of the factor loadings was conducted by two authors (VF and JH) after oblique (direct oblimin) rotation (see Table 7.2). This revealed that factor one (competence and attachment anxieties) contained 15 items that addressed anxieties relating to maternal self-efficacy, parenting competence and the mother-infant

relationship. Factor two (safety and welfare anxieties) had 11 items which were related to fears about infant illnesses, accidents, and cot death. Factor three (practical baby care anxieties) included seven items covering anxieties that are specific to infant care such as feeding, sleeping, and general routine. Finally, factor four (psychosocial adjustment to motherhood) contained 18 items which addressed adjustment concerns since the birth of the baby about management of personal appearance, relationships and support, work and finances, and sleep.

Cross-loading items (i.e. items 14, 24, 26, 47, 49 and 51) were retained in the component with the highest loading and theoretical congruence to the other items in the factor. Item 14 (“I have felt that motherhood is much harder than expected”) had similar loadings on factor one (competence and attachment anxieties) and factor four (psychosocial adjustment to motherhood). Though this item may represent difficulty adjusting, it is a competency based question and was therefore retained in factor one. Similarly, Item 47 (“I have felt unable to juggle motherhood with other responsibilities”) loaded onto factors one and four. This item represented management of responsibilities and was better suited to factor four. Items 24 (“I have worried about my baby’s health even after reassurance from others”) and 26 (“I have felt a greater need to do things in a certain way or order than before my baby was born”) reflect the obsessive-compulsive symptoms of anxiety that are often grounded in infant safety and welfare and were retained in factor two. Items 49 (“I have felt isolated from family and friends”) and 51 (“I have felt that when I do get help it is not beneficial”) both represent management of support networks and were retained in factor four.

The four factors had excellent reliability (Cronbach’s alpha ranged from .80 to .91; see Table 2) and had low to moderate correlations (r values ranged .26 to .39) indicating that they are not derived from a single underlying latent variable. The overall scale had excellent reliability (Cronbach’s $\alpha = .95$).

Table 7.2 Factor structure of the PSAS (significant loadings in bold)

Scale Item	Rotated components			
	1	2	3	4
Factor 1: maternal competence and attachment anxieties				
1. I have had negative thoughts about my relationship with my baby	.73	-.06	.08	.06
2. I have felt that my baby would be better cared for by someone else	.72	.01	.03	-.04
3. I have felt unconfident or incapable of meeting my baby's basic care needs	.66	.10	.20	-.07
4. I have worried about the bond I have with my baby	.66	.05	.12	.07
5. I have worried that my baby feels more content in someone else's care	.62	.21	.02	-.05
6. I have felt that other mothers are coping with their babies better than me	.59	-.01	.22	.20
7. I have felt that I am not the parent I want to be	.57	-.04	-.03	.31
8. I have worried I will not know what to do when my baby cries	.54	.11	.24	.01
9. I have worried about how I will cope with my baby when others are not around to support me	.53	.09	.08	.08
10. I have worried about being unable to settle my baby	.52	-.05	.36	.02
11. I have worried that my baby is picking up on my anxieties	.49	.13	.02	.27
12. I have worried that my baby is less content than other babies	.47	-.05	.42	-.01
13. I have worried that other people think my parenting skills are inadequate	.41	.18	.08	.31
14. I have felt that motherhood is much harder than expected	.41	-.16	.17	.40
15. I have felt that I should not need help to look after my baby	.36	.09	-.06	.26
Factor 2: infant safety and welfare anxieties				
16. I have worried about my baby being accidentally harmed by someone or something else	.12	.76	-.02	-.01
17. I have repeatedly checked on my sleeping baby	-.05	.71	.05	.02
18. I have worried that my baby will stop breathing while sleeping	-.02	.68	.11	-.02
19. I have felt frightened when my baby is not with me	.03	.67	-.09	.19
20. I have worried about leaving my baby in a childcare setting	-.12	.55	.03	.28
21. I have worried about accidentally harming my baby	.27	.52	.00	-.07
22. I have thought of ways to avoid exposing my baby to germs	-.12	.51	.17	.02
23. I have not taken part in an everyday activity with my baby because I fear they may come to harm	.29	.48	-.09	.10
24. I have worried about my baby's health even after reassurance from others	.16	.48	.42	-.02
25. I have worried that I will become too ill to care for my baby	.30	.43	.08	.02
26. I have felt a greater need to do things in a certain way or order than before my baby was born	.02	.29	.13	.28
Factor 3: practical infant care anxieties				
27. I have worried about my baby's milk intake	-.01	.05	.74	-.04
28. I have worried about my baby's weight	.07	.12	.68	-.12
29. I have worried about getting my baby into a routine	.08	-.09	.67	.14
30. I have worried about the way that I feed my baby	.15	.07	.62	.00
31. I have worried about the length of time that my baby sleeps	.10	-.18	.54	.26
32. I have used the internet for reassurance about my baby's health	.00	.27	.44	.08
33. I have worried that my baby is not developing as quickly as other babies	.25	.19	.32	.05
Factor 4: psychosocial adjustment to motherhood				
34. I have felt resentment towards my partner	.05	-.09	.04	.59
35. I have felt tired even after a good amount of rest	.07	.05	-.03	.58
36. I have worried more about my relationship with my partner than before my baby was born	.11	.16	-.07	.57
37. I have worried that I am not going to get enough sleep	.07	-.23	.23	.56
38. I have worried that my partner finds me less attractive than before my baby was born	-.13	.16	.11	.56
39. I have worried more about my relationship with my family than before my baby was born	.13	.04	-.12	.54
40. I have worried more about my appearance than before my baby was born	-.26	.06	.10	.55

Table 7.2 Continued

41. I have worried more about completing household chores than before my baby was born	.03	.02	.23	.52
42. I have had difficulty sleeping even when I have had the chance to	.01	.20	.01	.51
43. I have felt that I do not get enough support	.26	.01	-.01	.49
44. I have worried more about my relationship with my friends than before my baby was born	.16	.14	-.05	.48
45. I have been less able to concentrate on simple tasks than before my baby was born	.25	.07	-.01	.47
46. I have worried about returning to work	-.18	.27	.07	.46
47. I have felt unable to juggle motherhood with other responsibilities	.38	-.07	-.13	.45
48. I have felt that I have had less control over my day than before my baby was born	.25	-.09	.20	.43
49. I have felt isolated from family and friends	.35	.18	-.12	.40
50. I have worried more about my finances than before my baby was born	-.11	.22	.17	.35
51. I have felt that when I do get help it is not beneficial	.25	.27	.01	.31
% of variance explained	29.9	6.35	4.84	3.56
	4			
Cronbach's alpha	.91	.85	.80	.90

7.5.2.2 Convergent validity of the PSAS

Participants who completed all convergent and divergent measures were included in this analysis (N=506). The PSAS total score was significantly correlated with theoretically related measures of anxiety (i.e. EPDS-A, STAI-State and STAI-Trait) and depression (i.e. EPDS, BDI) indicating good convergent validity (Table 7.3).

Table 7.3 Pearson product-moment correlations between the PSAS and other validated measures of anxiety and depression (N=506)

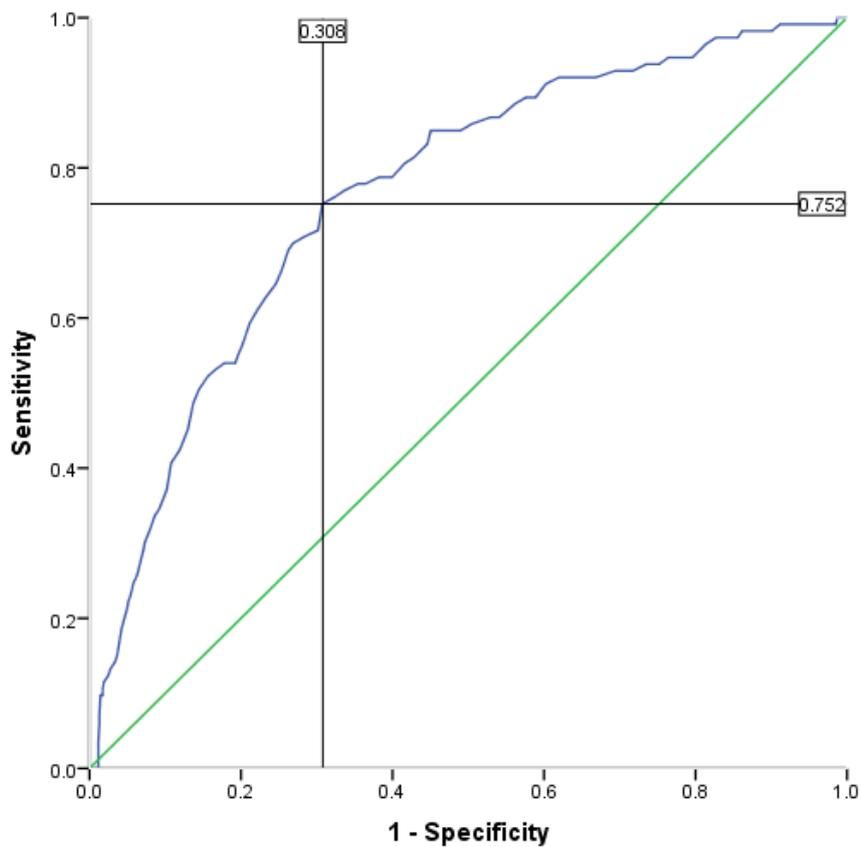
	BDI	STAI-State	STAI-Trait	EPDS	EPDS-A
PSAS	.76*	.74*	.77*	.81*	.75*

* $p < .01$ (one tailed)

7.5.2.3 Preliminary screening accuracy of the PSAS

To preliminarily evaluate the performance of the PSAS in distinguishing between those with/without a current clinical diagnosis of anxiety/depression, a ROC analysis was conducted. A statistically significant ROC curve (AUC: 0.77; SE: 0.02; $p < .001$; 95% CI: 0.72, 0.81; Figure 7.2) revealed that the optimal cut-off PSAS score for detecting clinical levels of anxiety/depression was 112 with a sensitivity and specificity of 0.75 and 0.31 respectively. When compared to the recommended cut-off scores for the other included anxiety measures (STAI-S [45]; STAI-T [45]; EPDS-A [6]) the PSAS performed marginally better than the EPDS-A which identified 73% of cases and better than the STAI-S which detected 63% of cases. However, it did not perform as well as the STAI-T which identified 86% of cases.

Figure 7.2 Receiver operating characteristic curve analysis¹⁹



7.5.2.4 Test-retest reliability of the PSAS

Pearson correlation coefficient was calculated to examine the test-retest reliability of the PSAS for a subsample of participants ($n=262$) who repeated the PSAS two weeks after the initial administration. The test-retest reliability coefficient for the PSAS was .88 ($p<.001$), indicating excellent stability over time in the first six months postpartum.

7.6 Discussion

This study reports the development and initial validation of the PSAS, a 51-item measure of postpartum specific anxiety, using a large online sample of mothers in the first six months postpartum. The results suggest that the PSAS is an acceptable

¹⁹ Area under the curve: .77

measure with sound psychometric properties. The low to moderate size correlations between factors indicated that they are not derived from a single underlying latent variable. It has a simple four factor structure which showed good face and content validity and can be distinguished as (1) competence and attachment anxieties, (2) infant safety and welfare anxieties, (3) practical baby care anxieties, and (4) psychosocial adjustment to motherhood.

Despite limited discussion about the qualitative nature of symptoms of postpartum anxiety, these constructs are theoretically meaningful when examined in relation to some recent work. Brockington et al. (2006) found qualitative themes of “fear of cot death”, “fear of the criticism of mothering skills” and “fear of disordered maternal attachment” in a sample of 129 women referred to psychiatric services. Similar symptoms were also found in a recent interview study (Highet, Stevenson, Purtell, & Coo, 2014) alongside a theme of “adjustment difficulties” which included anxieties relating to changes in appearance, daily activities, and social roles. Phillips et al. (2009) investigated symptom presentations of postpartum women with an anxiety disorder not otherwise specified (ADNOS). They identified 65% of women reporting anxieties in relation to infant health, safety, and wellbeing; 53% with anxieties concerning performance as a mother; and 18% with anxieties relating to practical day-to-day care of the infant. This finding suggests that the PSAS, unlike existing measures, may possess constructs which are sensitive to postpartum women experiencing clinically significant “maternally focused worry”, yet failing to meet diagnostic criteria for an anxiety disorder (Phillips et al., 2009). Further examination of the construct validity of the PSAS is necessary to re-examine the proposed model and to provide further confirmation of these factors.

As hypothesised, the PSAS was significantly positively correlated with theoretically related measures of anxiety, which demonstrates initial evidence of convergent validity. The PSAS was also significantly associated with measures of depression which was anticipated given the high comorbidity identified in previous work (Reck et al., 2008; Ross et al., 2003; Stuart et al., 1998) and provides further convergent support. It has been suggested that the overlap between depression and anxiety reflects the co-occurrence of phenomenologically distinct constructs (Beck, 1976; Beck et al., 1979; Burns & Eidelson, 1998). As such, Burns and Eidelson (1998) contend that any valid and reliable measure of anxiety and depression should

correlate approximately at the .70 level; the PSAS exceeded this benchmark. In addition, the internal consistency of the overall PSAS scale and four factors was good to excellent (George & Mallery, 2003; Ponterotto & Ruckdeschel, 2007). Test-retest reliability also indicated better stability over time than other recent endeavours (Somerville et al., 2014).

A preliminary ROC analysis demonstrated that the PSAS performed well at identifying women with a current clinical diagnosis of anxiety and/or depression. At the optimal cut-off score of 112, 75% of women with a diagnosis were detected, which surpasses other recent efforts (Somerville et al., 2014). Furthermore, the PSAS performed better than other general (i.e. STAI-S) and postpartum specific (i.e. EPDS-A) measures of anxiety. However, determining the case finding abilities of the PSAS was not a primary aim of the research and it is acknowledged that the self-report methods used to ascertain a current, clinical diagnosis of anxiety and/or depression in the sample are crude compared to other work (Somerville et al., 2014). Furthermore, the design precluded the differentiation of anxiety and depression within the sample. Interestingly, trait anxiety had the best case-finding abilities and previous work has suggested that the trait scale may examine depression, as well as anxiety (Bieling, Antony, & Swinson, 1998; Julian, 2011) which could explain the high AUC observed in this sample. Despite these limitations, the analysis suggests that the PSAS may be a useful screening tool for postpartum women and future work in clinical samples across the full spectrum of anxiety disorders is necessary to confirm this.

In the interim, the PSAS can be used to capture a range of anxieties relating to both mother and infant which are specific to the postpartum period. Other potential avenues for research use include examining the prevalence of postpartum specific anxiety and examining how this varies in different populations (e.g. those with high risk pregnancies, mothers of premature infants, mothers who have experienced previous miscarriage or stillbirth). Administering the PSAS in samples of postpartum women with non-comorbid anxiety and depression will allow examination of whether the PSAS measures “pure” anxiety and can differentiate anxiety from depression. A comparison of scores on the PSAS in women with ADNOS and other anxiety disorders (e.g. GAD, OCD) would be particularly

interesting given recent findings concerning “maternally focused worry” in samples of postpartum women with ADNOS (Phillips et al., 2007, 2009).

Validation of a measure is an iterative process and there are several areas for future work which are necessary to continue the development and evaluation of the PSAS. Firstly, the study used an online convenience sample which provided an appropriate sample size for the analyses conducted (in particular PCA) but lacked sampling control. The sample were predominately married, professional women from the United Kingdom. Thus, the psychometric properties of the PSAS may vary in other populations and it will be important to replicate these findings in diverse samples, particularly those at risk of developing postpartum anxiety. Second, the pilot study demonstrated excellent acceptability to postpartum women in its current form, which probably reflects the qualitative inquiry used to inform its development. However, the item analyses (inter-item, item total) displayed psychometric potential for the development of a short form which may increase its utility in both clinical and research settings.

Finally, the pregnancy anxiety literature provides findings which differentiate pregnancy-specific anxiety from general measures of anxiety and depression (Huizink et al., 2004) and highlights that temporally specific measures may be more efficacious at predicting perinatal outcomes than the more commonly used general measures (Huizink et al., 2002, 2003; Wadwha et al., 1993). Further research should attempt to replicate this work with the PSAS. Isolation of child-bearing related anxiety from symptoms of general anxiety and depression may allow clinicians and researchers to address issues of identification, prediction, and prevention more precisely (Huizink et al., 2004). Associations between postpartum anxiety and maternal attachment (Mertesacker et al., 2004), infant feeding (Britton, 2007; Paul et al., 2013), and infant temperament (Coplan et al., 2005) have been previously identified and warrant examination to ascertain the predictive value of the PSAS for maternal and infant outcomes and whether it may be a more effective predictor of perinatal outcomes than general measures of anxiety.

Chapter 8

Postpartum specific anxiety as a predictor of infant feeding outcomes and perceptions of infant feeding behaviours: New evidence for childbearing specific measures of mood

8.1 Foreword

The previous chapter reported the development and preliminary validation of a measure of postpartum specific anxiety (Fallon, Halford, Bennett, & Harrold, 2016; Chapter 7). Two suggestions were put forwards for future work; a) to examine the predictive value of the PSAS for infant feeding outcomes; and b) to ascertain whether the PSAS may be a more effective predictor of perinatal outcomes than general measures of anxiety or depression. The final empirical chapter of this thesis addresses both of these recommendations.

8.2 Study introduction

Postpartum anxiety (PPA) remains among the most under-studied, under-diagnosed, and under-treated complications of childbirth (Smith & Kipnis, 2012). This is mainly due to the ‘shadowing effect’ of postpartum depression (Matthey et al., 2003; Muzik et al., 2000; Phillips et al., 2007). However, recent studies expose incidence estimates of PPA ranging from 3% to 43%, with evidence that it can occur independently and at a higher rate than postpartum depression (PPD) (Britton, 2008; Glasheen et al., 2010; Paul et al., 2013; Wenzel et al., 2005). Moreover, PPA has been associated with a variety of sub-optimal developmental, somatic, and psychological outcomes in the infant (Glasheen et al., 2010; Lonstein, 2007).

Research into PPA currently utilises a range of self-report measures [e.g. State-Trait Anxiety Inventory (Spielberger et al., 1970), Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988), Hospital Anxiety and Depression Scale (Lisspers et al., 1997)] which are seldom validated for use in postpartum populations. This may lead to erroneous data, inaccurate interpretation, and incomparable results across studies (Meades & Ayers, 2011). These psychometric oversights have already been addressed in the pregnancy anxiety literature (Huizink et al., 2002; Levin, 1991; Van den Bergh, 1990; Wadwha et al., 1993) where a distinct presentation from general anxiety and depression (Huizink et al., 2004) has been revealed. This is

defined by pregnancy-specific worries about “the health and well-being of one’s baby, the impending childbirth, of hospital and health-care experiences, birth and postpartum, and parenting or maternal role” (Dunkel-Schetter, 2011, p. 534–535). As a result, a number of self-report measures have been developed (e.g. Pregnancy Anxiety Scale (PAS; Levin, 1991), the Pregnancy Related Anxiety Questionnaire (PRAQ; Van Den Bergh, 1990), the PRAQ-R (Huizink et al., 2004), and the Pregnancy Related Anxiety Scale (PRAS; Wadwha et al., 1993). Studies using these scales consistently find that pregnancy-specific anxiety is a stronger predictor of perinatal outcomes than other general forms of stress, anxiety, and depression (Guardino & Dunkel Schetter, 2014). The predictive power of pregnancy-specific measures is evident in studies of pre-term birth (Dunkel Schetter, 2011), cognitive and motor performance (Davis & Sandman, 2010; Huizink, Robles de Medina, Mulder, Visser, & Buitelaar, 2003), attention regulation (Huizink et al., 2002), temperament (Davis et al., 2004), and infant feeding (Fairlee et al., 2009).

Emerging research has now highlighted a further distinctive symptomatology of PPA (Phillips et al., 2007, 2009; Wenzel et al., 2005) and a measure of postpartum-specific anxiety has recently been developed and validated in a postpartum sample (Fallon, Halford, Bennett, & Harrold, 2016 [Chapter 7]). The Postpartum Specific Anxiety Scale (PSAS) is a 51-item scale developed predominately from qualitative work with postpartum women that taps into four domains of worry which are specific to the postpartum period (competence and attachment anxieties, infant safety and welfare anxieties, practical baby care anxieties, and psychosocial adjustment to motherhood; Appendix 24). The PSAS demonstrated high validity (face, content, convergent, construct) and reliability (internal, test-retest, sub-scale) in initial psychometric work and proved acceptable to postpartum women. As with all novel measures, validation is an iterative process and the predictive utility of the PSAS has not yet been examined. Of particular interest is determining whether the PSAS may hold the same predictive power in infant outcomes as its pregnancy-specific counterparts.

One fundamental infant health outcome lies in the nourishment of the infant. Appropriate infant feeding (i.e. responsive maternal feeding, exclusive breastfeeding to six months of age) confers significant health benefits. A recent systematic review provides evidence that women with PPA are less likely to breastfeed exclusively,

and more likely to terminate breastfeeding earlier (Fallon, Groves, Halford, Bennett, & Harrold, 2016 [Chapter 3]). Furthermore, mothers who report anxiety symptoms are at risk of non-responsive feeding behaviours (Hurley et al., 2008) which are characterised by impaired feeding interactions, insensitivity to infant cues of hunger and satiety, and a lack of uptake to current feeding recommendations (Birch & Fisher, 1995; Hughes, Power, Fisher, Mueller, & Nicklas, 2005). Anxious mothers tend to perceive their infant's feeding behaviour more negatively, which is thought to impact on subsequent feeding interactions (Hurley et al., 2008). Indeed, there is evidence that mothers with symptoms of anxiety report more feeding difficulties (Hellin & Waller, 1992; Richter & Reck, 2013), have lower breastfeeding self-efficacy (Britton, 2007; Dennis, 2006), and perceive their infants to be hungrier and more demanding (Hellin & Waller, 1992) than those with lower anxiety.

The aims of this paper are two-fold. Firstly, the predictive validity of the PSAS will be examined within the context of infant feeding using a short-term prospective design. Second, it will be examined whether the PSAS may be more efficacious at predicting infant feeding and perceptions of infant feeding behaviours than the more commonly used general measures. It is hypothesised that after controlling for the effects of general anxiety and depression, postpartum-specific anxiety will have a significant, independent effect on infant feeding outcomes and perceptions of infant feeding behaviours.

8.3 Methods

8.3.1 Participants

Participants were self-identified mothers of infants aged between birth and six months postpartum. Parents were recruited via online advertising techniques (e.g. social media parenting groups, forums on parenting websites) providing a link to the Qualtrics survey software. The advertisements stated that participants were invited to take part in a study to validate a new measure of postpartum anxiety. Only mothers who indicated a positive response to the initial survey item "Are you a mother to an infant aged between 0-6 months" could proceed to the main survey. The six-month cut-off point applied reflects the complete range of theorised postpartum phases (Romano et al., 2010). A self-selecting subsample returned to complete the follow-up questionnaire two weeks later.

8.3.2 Design and procedure

A short-term online prospective design with two waves of data collection was utilised. The main questionnaire comprised the maternal mental health measures (i.e. PSAS, STAI-S, STAI-T, BDI-II) in addition to demographic variables. Prior to the main questionnaire, an electronic consent form and information sheet was provided with a tick box to confirm that main points had been read and understood. The main questionnaire was accessible from 4/9/15 to 5/11/15.

Upon completion of the main questionnaire, participants were asked if they would like to return two weeks later to complete a follow-up survey for a reimbursement of £10. Those who were willing to return received an email with the follow up survey exactly two weeks later (BEBQ, feeding outcome items). The link to the follow-up questionnaire was only active on the day it was distributed (i.e. two weeks later). Another electronic consent form and information sheet was provided with a tick box to confirm that main points had been read and understood. Responses were linked via a unique ID embedded in the survey software to ensure anonymity. The potential for repetitive responding was prohibited via a “prevent ballot box stuffing” option accessed in the survey software.

8.4 Measures

8.4.1 Demographics

Maternal demographic questions were asked at the beginning of the main questionnaire, including maternal age, height, weight, country of residence, marital status, occupational prestige according to the National Statistics Socio-Economic classification (Office for National Statistics, n.d.), educational attainment, size of household, house ownership status, and current diagnosis of anxiety and depression. Maternal height and weight values were converted to metric units and a maternal BMI (kg/m^2) variable was computed for analyses. Occupational prestige, educational attainment, size of household, and living status were combined to create a composite measure of socio-economic status (SES) for analyses. Infant characteristics included infant age, gender, birth order, birth weight, multiple birth status (twins/triplets), timing of birth, timing of introduction to complementary feeding, current weight, and current length. Infant weight and length values were

converted to metric units and infant BMI z-scores and percentiles were calculated using weight, length, age and gender information.

8.4.2 The Postpartum Specific Anxiety Scale (PSAS; Fallon et al. 2016, Appendix 24)

The PSAS is a recently developed and validated measure of postpartum specific anxiety designed to measure the frequency of maternal and infant focused anxieties experienced during the past week. It contains 51 items across four distinct constructs that are specific to the first six months after birth. “Competence and attachment anxieties” (15 items) addresses anxieties relating to maternal self-efficacy, parenting competence and the mother-infant relationship. “Safety and welfare anxieties” (11 items) examines fears about infant illnesses, accidents, and cot death. “Practical baby care anxieties” (7 items) covers anxieties that are specific to infant care such as feeding, sleeping, and general routine. “Psychosocial adjustment to motherhood” (18 items) addresses postpartum adjustment concerns including management of personal appearance, relationships and support, work and finances, and sleep. The PSAS was found to be acceptable to postpartum women and performed well in validity analyses. Reliability (internal and test-retest) of the overall scale and individual PSAS subscales also proved good to excellent.

8.4.3 The Beck Depression Inventory-II (BDI-II; Beck et al., 1988)

The BDI is a commonly used self-report tool for detecting and measuring general depression. It contains 21 items designed to measure the severity of general depression experienced during the past two weeks. Higher scores indicate more severe depressive symptoms. Twenty-five years of psychometric testing provides evidence of its reliability and validity in clinical and non-clinical samples (Beck et al., 1988)

8.4.4 The Spielberger State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970)

The STAI is a self-report measure designed to capture levels of general anxiety. It contains 40 items with two separate sub-scales (20 items each) to measure situational (state) and stable (trait) anxiety. Higher scores on each four-point Likert-scale item indicate higher levels of anxiety. The STAI is a reliable and valid measure used with

clinical and non-clinical populations and more recently in perinatal samples (Meades & Ayers, 2011; Spielberger et al., 1970).

8.4.5 Infant feeding outcomes

Two researcher-developed 7-point Likert-Scale items were used to ascertain current feeding method and prenatal feeding intention. Available answers were based on WHO-defined categories (WHO, 2002). Mothers were asked ‘How are you currently feeding your baby?’ and available response options were: ‘Exclusively breastfeeding (100%)’, ‘predominately breast milk (over 80%) with a little formula (under 20%)’, ‘mainly breast milk (50%-80%) with some formula’, ‘a combination of both breast milk (50%) and formula (50%)’, ‘mainly formula (50%-80%) with some breast milk’, ‘predominately formula (over 80%) with a little breast milk (under 20%)’, and ‘exclusively formula feeding (100%)’. Mothers were then asked ‘How were you planning to feed your baby in pregnancy’ and the same response options were provided.

8.4.6 Baby Eating Behaviour Questionnaire (BEBQ; Llewellyn et al. 2011)

The BEBQ is a 17-item parental-report measure of infant feeding behaviour during the period of exclusive milk feeding. It is the first measure of infant feeding behaviour and was developed to characterise maternal perceptions of infant appetitive traits. Constructs were derived from an existing measure validated for older ages (Children’s Eating Behaviour Questionnaire) and comprise four distinct feeding traits and one item describing general appetite. ‘Enjoyment of food’ (4 items) describes the infant’s perceived liking of milk and of feeding in general. ‘Food responsiveness’ (6 items) relates to how demanding the infant is with regard to being fed, and his or her level of responsiveness to cues of milk and feeding. ‘Slowness in eating’ (4 items) evaluates the speed with which an infant typically feeds, and ‘satiety responsiveness’ (3 items) examines how easily the infant gets full during a feed. The item ‘My baby has a big appetite’ correlated with all scales, and can be used as an individual item to measure overall appetite. The BEBQ demonstrated good reliability and validity in initial psychometric testing (Llewellyn et al., 2011)

8.5 Method of Analysis

To identify confounders and develop a comprehensive model, a range of variables were identified from previous literature (see demographics for detail). Bivariate analyses (Pearson's correlations, independent samples t-tests, chi-square test) were conducted between each potential confounder, the exposure of interest (i.e. PSAS scores), and the outcome of interest (i.e. feeding outcome or appetitive trait). Confounders significantly associated with both exposure and outcome at 10% level were included in the final regression models.

Due to unexpected singularities occurring during statistical analysis, the current feeding method categories (N=5) were collapsed into two binary variables: ('exclusively breast feeding' yes/no, and 'any breastfeeding' yes/no). Concurrently, the initial feeding intention categories were collapsed to correspond with this ('exclusive breastfeeding intention' yes/no, and 'any breastfeeding intention' yes/no). Two hierarchical binary logistic regressions were then conducted to analyse the effect of PSAS scores in the main questionnaire on infant feeding outcomes in the follow-up questionnaire (any breastfeeding: yes [1] /no [0]; exclusive breastfeeding: yes [1] /no [0]) after controlling for identified covariates and general measures of anxiety and depression. Relevant confounders were entered in block one, followed by general measures of anxiety and depression in block two. The PSAS was entered into the final block. Odds ratios (OR) and 95% confidence intervals (CIs) were calculated to describe the predictive value of each variable. Although exclusive breastfeeding intention and 'any' breastfeeding intention were not significantly associated with PSAS scores in bivariate analyses, they were included as covariates in these models because of their recognised impact on breastfeeding practices (Donath & Amir, 2003; Linares et al., 2014).

Using the same entry method (block one: covariates; block two: general anxiety and depression; block three: PSAS), a hierarchical linear multiple regression analysis was conducted to analyse the effect of PSAS scores in the main questionnaire on perceptions of infant appetitive traits at T2 after controlling for identified covariates and general measures of anxiety and depression. β and p values were calculated to describe the predictive value of each variable. Variance inflation factors (VIFs) were >5 for the general measures of anxiety and depression in block two which

warrants concern. The three measures (STAI-S, STAI-T, BDI) were converted to z scores and combined and the regression was conducted again with the composite variable. Results (R^2 , β , and p values) were analogous so the original entry method (i.e. separate variables for general anxiety [STAI-S, STAI-T] and depression [BDI]) was used to provide the most informative output.

8.6 Results

8.6.1 Participants

Of the 1282 recruited, a total of 800 (62%) completed the main questionnaire. Of these, 261 returned to complete the follow-up questionnaire (33%). Among those completing both surveys, the maternal age ranged from 19 to 44 years ($M = 31.25$; $SD = 4.50$). The sample was predominately married (75%), primiparous (46%), housewives (44%) from the United Kingdom (92%). Twenty seven (10%) of the women had a current, clinical diagnosis of anxiety or depression which is comparable with UK prevalence estimates. The babies age ranged from **one** to 26 weeks ($M = 16.10$; $SD = 6.43$). 67% of the infants were exclusively breastfed and 83% of the infants were receiving breast milk in any quantity. See Table 8.1 for full demographic details. There were no difference in mean scores on any of the mood measures between those completing both surveys and those completing only the first survey (PSAS: $t = 0.86$, $p = .39$; STAI-S: $t = 1.28$, $p = .20$; STAI-T: $t = 1.30$, $p = .19$; BDI: $t = 0.02$, $p = .99$). Mothers completing both surveys did not differ from those completing only the first survey with respect to age, marital status, and BMI. However, mothers completing both surveys were more likely to have higher SES scores than those completing only the first survey (20.85 ± 3.33 vs 20.23 ± 3.59 ; $t = -2.38$, $p = .02$) and less likely to have a current, clinical diagnosis of anxiety or depression (22.1% vs 77.9%, $\chi^2 = 4.57$, $p = .03$). Infants of mothers completing both surveys did not differ from those only completing the first survey on any infant characteristic (age, gender, birth order, gestational age, birth weight, BMI percentile, multiple birth status).

Table 8.1 Maternal and infant characteristics (N=261)

Maternal Characteristic	Value	Infant Characteristic	Value
Maternal age (mean years \pm SD)	31.25 (\pm 4.50)	Infant age (mean weeks \pm SD)	16.10 (\pm 6.43)
Country of Residence (N/%)		Gender (N/%)	
UK	239 (91.6)	Male	146 (55.9)
Ireland	4 (1.5)	Female	115 (44.1)
US	4 (1.5)	Birth order (N/%)	
Australia & NZ	2 (0.8)	1 st	121 (46.4)
Other European	9 (3.4)	2 nd	104 (39.8)
Other Non-European	3 (1.2)	3 rd	27 (10.3)
Marital Status (N/%)		4 th	4 (1.5)
Married	195 (74.7)	5 th and after	5 (1.9)
Co-habiting	57 (21.8)	Birth Weight (mean kg \pm SD)	3.50 (0.69)
Single	7 (2.7)	Infant BMI percentile (mean \pm SD)	30.80 (37.0)
Separated/Divorced/Widowed	2 (0.8)	Timing of Birth (N/%)	
Occupation (N/%)		Premature (<37 weeks)	7 (2.7)
Managers, Directors and Senior Officials	6 (2.3)	Early Term (>37<39)	49 (18.7)
Professionals	34 (13.0)	Full Term (>39<41)	124 (47.5)
Skilled Trades	23 (8.8)	Late Term (>41<42)	77 (29.5)
Caring, Leisure and Other Service	22 (8.4)	Post Term (>42 weeks)	4 (1.5)
Sales and Customer Service	2 (0.8)	Multiple Birth (N/%)	
Process, Plant and Machine Operatives	31 (11.9)	Yes	4 (1.5)
Elementary Occupations	6 (2.3)	No	257 (98.5)
Housewife	116 (44.4)		
Not in paid occupation	21 (8.0)		
Educational Attainment (N/%)		Infant Feeding Outcomes and Behaviours	
Postgraduate education	64 (25.2)	EBF (N/%)	
Undergraduate education	123 (46.6)	Yes	176 (67.4)
A-levels or equivalent college education	50 (18.9)	No	85(32.6)
GCSEs or equivalent secondary school education	16 (6.1)	Any BF (N/%)	
Other Qualification	7 (3.8)	Yes	217 (83.1)
No qualifications	1 (0.4)	No	44 (16.9)
Living Status (N/%)		EBF Intention (N/%)	
Own Property	180 (68.9)	Yes	210 (80.4)
Rent privately	59 (22.6)	No	51 (19.6)
Rent from the authority	11 (4.2)	Any BF Intention (N/%)	
Live with parents	2 (0.9)	Yes	253 (97.0)
Other	9 (3.4)	No	8 (3.0)
Size of Household (inc. participant) (N/%)		Timing of ICF (N/%)	
2 people	7 (2.7)	< 6 months	53 (20.3)
3 people	113 (43.3)	6 months or after	208 (79.7)
4 people	102 (39.1)	Enjoyment of Food (mean \pm SD)*	4.20 (\pm 0.69)
5 people	29 (11.1)	Food Responsiveness (mean \pm SD)*	2.43 (\pm 0.78)
6 or more people	10 (3.8)	Satiety Responsiveness (mean \pm SD)*	2.27 (\pm 0.74)
Current Diagnosis of Anxiety/Depression		Slowness in Eating (mean \pm SD)*	2.68 (\pm 0.82)
Yes	27 (10.3)	General Appetite (mean \pm SD)*	3.79 (\pm 0.99)
No	233 (89.3)		
Prefer not to say	1 (0.4)		
Maternal BMI (kg/m ²) (mean \pm SD)	27.00 (6.69)		

*BEBQ Infant Feeding Behaviour Scores range between 1-5 with higher scores indicating higher perceived levels of each feeding behaviour

Abbreviations: EBF, exclusive breastfeeding; BF, breastfeeding; ICF, introduction to complementary feeding

8.6.2 Hierarchical logistic regression predicting exclusive breastfeeding status (Table 8.2)

The final regression model significantly predicted exclusive breastfeeding status, correctly identifying 79.9% of cases; Cox & Snell $R^2 = .24$, Nagelkerke $R^2 = .33$, $p < .001$. The covariates entered in Step one explained approximately 20% (Cox & Snell) and 29% (Nagelkerke) of the variance in exclusive breastfeeding. Both timing of introduction to complementary feeding (OR: 2.07; CI: 1.30, 3.29) and intending to exclusively breastfeed (OR: 10.28; CI: 4.55, 23.28) were positively associated with the odds of exclusively breastfeeding. After controlling for the covariates, the general measures of anxiety and depression (step two) explained approximately 2% (Cox & Snell) and 2% (Nagelkerke) of the variance but were not significant predictors of exclusive breastfeeding. However, in the final step, after controlling for covariates and general measures of anxiety and depression, the PSAS was a significant predictor of exclusive breastfeeding which explained approximately 2% (Cox & Snell) and 2% (Nagelkerke) of the variance. Higher PSAS scores were associated with lower odds of exclusive breastfeeding (OR: 0.98; CI: 0.96, 0.97).

8.6.3 Hierarchical logistic regression predicting any breastfeeding status (Table 8.3)

The final regression model significantly predicted any breastfeeding status, correctly identifying 85.6% of cases; Cox & Snell $R^2 = .17$, Nagelkerke $R^2 = .29$, $p < .001$. The covariates entered in Step one explained approximately 14% (Cox & Snell) and 23% (Nagelkerke) of the variance in any breastfeeding. Only intending to exclusively breastfeed was significant in final models and this was positively associated with the odds of any breastfeeding (OR: 5.95; CI: 2.62, 13.52). After controlling for the covariates, the general measures of anxiety and depression (step 2) explained approximately 2% (Cox & Snell) and 3% (Nagelkerke) of the variance but were not significant predictors of any breastfeeding. However, in the final step, after controlling for covariates and general measures of anxiety and depression, the PSAS was a significant predictor of exclusive breastfeeding which explained approximately 1% (Cox & Snell) and 3% (Nagelkerke) of the variance. Higher PSAS scores were associated with lower odds of any breastfeeding (OR: 0.97; CI: 0.95, 0.99).

Table 8.2 Hierarchical logistic regression demonstrating postpartum specific anxiety as a predictor of exclusive breastfeeding status after controlling for general measures of mood^f

Variables	B(SE)	Step 1 OR	95% CI	B(SE)	Step 2 OR	95% CI	B(SE)	Step 3 OR	95% CI
Step 1									
ICF									
Timing of EBF intention	.77 (.23)	2.16	1.38-3.37	.77 (.23)	2.15	1.36-3.40	.73 (.24)	2.07	1.30-3.29
Yes (1)	2.22 (.40)	9.21	4.22-20.13	2.26 (.41)	9.57	4.32-21.20	2.33 (.42)	10.28	4.55-23.28
No (0)	-	-	-	-	-	-	-	-	-
Any BF intention									
Yes (1)	.87 (1.14)	2.38	0.25-22.34	.82 (1.15)	2.28	0.24-21.71	.93 (1.16)	2.52	0.26-24.39
No (0)	-	-	-	-	-	-	-	-	-
Step 2									
BDI				.01 (.03)	1.01	0.95-1.07	.03 (.03)	1.03	0.96-1.10
STAI-S				-.05 (.03)	0.95	0.90-1.00	-.04	0.96	0.91-1.01
STAI-T				.03 (.03)	1.03	0.98-1.08	.04	1.04	0.99-1.09
Step 3									
PSAS							-.03 (.01)	0.98	0.96-.097

Note. R^2 (block 3) = .24 (Cox & Snell); .33 (Nagelkerke). Step 1 block $\chi^2 = 60.21$, $df = 3$, $p < .001$. Step 2 block $\chi^2 = 5.57$, $df = 3$, $p = .14$. Step 3 block $\chi^2 = 5.60$, $df = 1$, $p = .018$. SE = Standard Error. CI = confidence interval. Significant ($p < .05$) odds ratios (OR) are indicated in bold.

Abbreviations: EBF, exclusive breastfeeding; BF, breastfeeding; ICF, introduction to complementary feeding

Table 8.3 Hierarchical logistic regression demonstrating postpartum specific anxiety as a predictor of any breastfeeding status after controlling for general measures of mood^f

Variables	B(SE)	Step 1		B(SE)	Step 2		B(SE)	Step 3	
		OR	95% CI		OR	95% CI		OR	95% CI
Step 1									
Timing of ICF	.56 (.24)	1.76	1.09-2.82	.55 (.25)	1.73	1.06-2.85	.51 (.26)	1.66	0.99-2.76
Maternal age	.07 (.04)	1.07	0.99-1.16	.08 (.04)	1.08	1.00-1.17	.06 (.04)	1.07	0.98-1.16
EBF intention									
Yes (1)	1.69 (.40)	5.41	2.46-11.91	1.75 (.41)	5.73	2.56-12.83	1.78 (.42)	5.95	2.62-13.52
No (0)	-	-	-	-	-	-	-	-	-
Any BF intention									
Yes (1)	1.38 (.91)	3.99	0.68-23.56	1.33 (.92)	3.79	0.63-22.89	1.51 (.93)	4.53	0.74-27.77
No (0)	-	-	-	-	-	-	-	-	-
Step 2									
BDI				.01 (.04)	1.01	0.94-1.08	.04 (.04)	1.04	0.96-1.12
STAI-S				-.06 (.03)	0.94	0.89-1.00	-.05 (.03)	0.96	0.90-1.02
STAI-T				.03 (.03)	1.03	0.97-1.09	.04 (.03)	1.04	0.98-1.11
Step 3									
PSAS							-.03 (.01)	0.97	0.95-0.99

Note. R^2 (block 3) = .17 (Cox & Snell); .29 (Nagelkerke). Step 1 block $\chi^2 = 39.61$, $df = 4$, $p < .001$. Step 2 block $\chi^2 = 5.75$, $df = 3$, $p = .13$. Step 3 block $\chi^2 = 5.07$, $df = 1$, $p = .02$. SE = Standard Error. CI = confidence interval. Significant ($p < .05$) odds ratios (OR) are indicated in bold.

Abbreviations: EBF, exclusive breastfeeding; BF, breastfeeding; ICF, introduction to complementary feeding

8.6.4 Hierarchical multiple regression predicting infant enjoyment of food
(Table 8.4)

The final regression model predicted approximately 21% of the variance in general appetite scores ($R^2 = .21$, $F(7, 252) = 9.28$, $p < .001$). The covariates (current diagnosis of anxiety/depression, any breastfeeding, exclusive breastfeeding) in Step one explained approximately 8% of the variance in enjoyment of food but were not significant predictors. After controlling for the covariates, BDI and STAI scores explained approximately 9% of the variance; again, these predictors were not significant. However, in the final step, after controlling for covariates and general measures of anxiety and depression, the PSAS was a highly significant predictor which explained approximately 4% variance in enjoyment of food. Higher PSAS scores were associated with lower perceived enjoyment of food in the infant ($\beta = -.33$; $p < .001$).

Table 8.4 Hierarchical regression analysis demonstrating postpartum specific anxiety as a predictor of infant enjoyment of food after controlling for general measures of mood*

Enjoyment of Food	Cumulative		Simultaneous	
	R ² - change	F-change	β	p
Step 1				
Anxiety/depression diagnosis*			-.03	.62
EBF	.08	F (3, 256) = 7.21**	.04	.52
Any BF activity			.08	.30
Step 2				
BDI			-.05	.71
STAI-S	.09	F (3, 253) = 8.98**	-.02	.86
STAI-T			-.01	.94
Step 3				
PSAS	.04	F (1, 252) = 12.12**	-.33	<.001

Abbreviations: EBF, exclusive breastfeeding; BF, breastfeeding

Bold type indicates significant β and p values

* Also after controlling for covariates identified as significant confounders in bivariate analyses in Step 1

** $p < .001$

8.6.5 Hierarchical multiple regression predicting infant food responsiveness
(Table 8.5)

The final regression model predicted approximately 27% of the variance in food responsiveness scores ($R^2 = .27$, $F(8, 251) = 11.71$, $p < .001$). The covariates in Step one explained approximately 12% of the variance in food responsiveness with younger infant age, increasing birth order, and any breastfeeding activity predicting significantly higher levels of food responsiveness (see Table 8.5). After controlling for the covariates, BDI and STAI (state and trait) scores explained approximately 9% of the variance in scores, although these predictors were not significant. In the final step, after controlling for covariates and general measures of anxiety and depression, the PSAS was a highly significant predictor which explained approximately 6% of the variance in food responsiveness scores. Higher PSAS scores were associated with greater perceived food responsiveness in the infant ($\beta = .43$; $p < .001$).

Table 8.5 Hierarchical regression analysis demonstrating postpartum specific anxiety as a predictor of infant food responsiveness after controlling for general measures of mood*

Food Responsiveness	Cumulative		Simultaneous	
	R ² - change	F-change	β	p
Step 1				
Infant age			-.13	.02
Birth order			.18	.003
Any BF activity	.12	F (4, 255) = 8.97**	.30	<.001
Anxiety/depression diagnosis			.01	.89
Step 2				
BDI			.08	.52
STAI-S	.09	F (3, 252) = 9.87**	-.17	.17
STAI-T			.08	.54
Step 3				
PSAS	.06	F (1, 251) = 19.43**	.43	<.001

Abbreviations: BF, breastfeeding

Bold type indicates significant β and p values

* Also after controlling for covariates identified as significant confounders in bivariate analyses in Step 1

** $p < .001$

8.6.6 Hierarchical multiple regression predicting infant satiety responsiveness
(Table 8.6)

The final regression model predicted approximately 10% of the variance in satiety responsiveness scores ($R^2 = .10$, $F(8, 251) = 3.65$, $p < .001$). The covariates in Step one explained approximately 7% of the variance with increasing birth order, non UK residency, and no current breastfeeding activity predicting significantly greater perceptions of satiety responsiveness (see Table 8.6). After controlling for the covariates, BDI and STAI (state and trait) scores explained approximately 2% of the variance in scores; only general depression was significant and negatively associated with the outcome ($\beta = -.29$, $p = .047$). In the final step, after controlling for covariates and general measures of anxiety and depression, the PSAS was also a significant predictor which explained approximately 6% of the variance in food responsiveness scores. However, PSAS scores were positively associated with perceptions of satiety responsiveness ($\beta = .24$; $p = .03$).

Table 8.6 Hierarchical regression analysis demonstrating postpartum specific anxiety as a predictor of infant satiety responsiveness after controlling for general measures of mood[†]

Satiety Responsiveness	Cumulative		Simultaneous	
	R ² - change	F-change	β	p
Step 1				
UK/Non-UK			-.13	.03
Birth order			.17	.01
Any BF activity	.07	F (4, 255) = 4.94**	-.15	.01
Anxiety/depression diagnosis			.10	.17
Step 2				
BDI			-.29	.047
STAI-S	.02	F (3, 252) = 1.42	.12	.38
STAI-T			.03	.84
Step 3				
PSAS	.06	F (1, 251) = 4.71*	.24	.03

Abbreviations: BF, breastfeeding

Bold type indicates significant β and p values

[†] Also after controlling for covariates identified as significant confounders in bivariate analyses in Step 1

* $p < .05$

** $p < .001$

8.6.7 Hierarchical multiple regression predicting infant slowness in eating
(Table 8.7)

The final regression model predicted approximately 8% of the variance in slowness of eating scores ($R^2 = .08$, $F(7, 252) = 3.01$, $p = .005$). The covariates in Step one explained approximately 6% of the variance with younger infant age and later planned timing of introduction to complementary food significantly predicting more slowness in eating (see Table 8.7). After controlling for the covariates, BDI and STAI (state and trait) scores explained approximately 1% of the variance in scores and none of the predictors were significant. In the final step, after controlling for covariates and general measures of anxiety and depression, the PSAS explained approximately 1% of the variance and was not a significant predictor of slowness in eating.

Table 8.7 Hierarchical regression analysis demonstrating postpartum specific anxiety as a predictor of infant slowness in eating after controlling for general measures of mood[†]

Slowness in Eating	Cumulative		Simultaneous	
	R ² - change	F-change	β	p
Step 1				
Infant age			-.13	.03
Timing of ICF			.06	.01
Anxiety/depression diagnosis	.06	F (3, 256) = 4.94*	.07	.33
Step 2				
BDI			.18	.20
STAI-S	.01	F (3, 253) = 1.24	-.17	.22
STAI-T			-.05	.73
Step 3				
PSAS	.01	F (1, 252) = 2.40	.16	.12

Abbreviations: BF, breastfeeding, ICF, introduction to complementary feeding

Bold type indicates significant β and p values

[†] Also after controlling for covariates identified as significant confounders in bivariate analyses in Step 1

* $p < .05$

8.6.8 Hierarchical multiple regression predicting infant general appetite
(Table 8.8)

The final regression model predicted approximately 10% of the variance in general appetite scores ($R^2 = .10$, $F(8, 251) = 3.27$, $p = .001$). The covariates (infant age, timing of introduction to complementary feeding, birth weight, and any breastfeeding activity) in Step one explained approximately 9% of the variance in general appetite and were all significant predictors of general appetite (see Table 8.8). After controlling for the covariates, BDI and STAI (state and trait) scores explained approximately 1% of the variance, although these predictors were not significant. In the final step, after controlling for covariates and general measures of anxiety and depression, PSAS scores explained no variance and were not a significant predictor of general appetite.

Table 8.8 Hierarchical regression analysis showing postpartum specific anxiety as a predictor of infant general appetite after controlling for general measures of mood*

General Appetite	Cumulative		Simultaneous	
	R ² -change	F-change	β	p
Step 1				
Infant age			-.18	.003
Timing of ICF	.09	F (4,255) = 6.24**	-.15	.02
Birth weight (g)			.13	.03
Any BF activity			.17	.008
Step 2				
BDI	.01	F (3, 252) = 0.49	.14	.30
STAI-S			-.04	.76
STAI-T			-.03	.81
Step 3				
PSAS	.000	F (1, 251) = 0.02	-.03	.88

Abbreviations: BF, breastfeeding; ICF, introduction to complementary feeding

Bold type indicates significant β and p values

* Also after controlling for covariates identified as significant confounders in bivariate analyses in Step 1

** $p < .001$

8.7 Discussion

Results of this study demonstrate that higher levels of postpartum specific anxiety are associated with lower odds of breastfeeding exclusively, and breastfeeding in any quantity in the first six months postpartum. These findings provide evidence for the predictive validity of the PSAS as they are comparable with a body of literature which finds that PPA is inversely associated with exclusive breastfeeding (Adedinsewo et al., 2014; Britton, 2007; Clifford, 2006; Groër, 2005; Virden, 1988; Zanardo et al., 2009) and breastfeeding in any quantity (Adedinsewo et al., 2014; Britton, 2007; Brown & Arnott, 2014; Buckner, 1987; Courtois et al., 2014; Dusdieker et al., 1985; Hellin & Waller, 1992; Paul et al., 2013; Tinkle, 1985; Turner & Papinczak, 2000). Biological theories of anxiety and lactation posit that PPA may negatively influence breastfeeding through physiological stress responses and subsequent hormone imbalance (Lonstein, 2007). In particular, anxiety is associated with lower oxytocin and prolactin which may inhibit the milk ejection reflex and subsequent breast milk production (Chen et al., 1998; Dewey, 2001; Stuebe et al., 2012). It is theorised that anxieties which are specific to the postpartum period negatively affect breastfeeding practices via the same physiological mechanisms. The only other variables of significance in these models were intention to breastfeed and intended timing of complementary feeding. This is congruent with other work which finds that feeding intentions are consistent predictors of actual feeding practices (Duckett et al., 1998; Humphreys et al., 1998; Mallan et al., 2014; Manstead et al., 1983; Swanson & Power, 2005; Wambach, 1997) and warrants their inclusion as covariates in future studies examining infant feeding outcomes.

The current study also observed that postpartum specific anxiety was significantly associated with maternal perceptions of infant feeding behaviours including a lower perceived enjoyment of food, and greater perceived food responsiveness and satiety responsiveness in the infant. At first glance, the latter two findings may appear counterintuitive; food responsiveness is characterised by excessive hungriness, unnecessary and frequent demands for milk, and an inability to recognise satiety cues. Conversely, satiety responsiveness is characterised by under-consumption of milk during feeds and

an over-sensitivity to cues of satiety (Llewellyn et al., 2011). However, all three findings map onto previous work which finds high levels of anxiety negatively affect perceptions of infant feeding behaviour and impede maternal ability to interpret infant cues of hunger and satiety (Farrow & Blissett, 2005; Hellin & Waller, 1992; Hurley et al., 2008; Richter & Reck, 2013; Savage, Fisher, & Birch, 2008). This study adds to this literature by demonstrating that postpartum specific anxiety can negatively affect maternal perceptions across a number of feeding domains simultaneously and regardless of polarity.

Distorted perceptions are a fundamental characteristic of unresponsive feeding practices which are linked to a range of adverse health outcomes including unhealthy food choices in later childhood (Cullen et al., 2000), higher BMI (Farrow & Blissett, 2008), and obesity (Hurley, Cross, & Hughes, 2011).

Furthermore, the expression of anxiety around feeding at this early developmental stage may condition the child to find feeding an anxious or aversive experience, leading to subsequent feeding difficulties and poor health outcomes (Farrow & Blissett, 2005). Despite these findings, postpartum specific anxiety was not associated with slowness in eating or general appetite. Given that this was the case for all of the measures of mood in these models, it may be that these domains of feeding behaviour are too diffuse or that they do not elicit the same emotional response from mothers.

As hypothesised, postpartum specific anxiety was a stronger predictor of infant feeding outcomes and behaviours than general anxiety (state and trait) and depression. The PSAS was the only significant measure of mood across all of the feeding outcomes and behaviours apart from slowness in eating and general appetite analyses (in which none of the measures of mood were significant).

Furthermore, the PSAS was a significant predictor after controlling for general anxiety (state and trait) and depression indicating that postpartum specific anxiety elicits a unique effect upon infant feeding outcomes and behaviours.

This is a novel finding in the postpartum anxiety literature and resonates with a body of work which finds pregnancy specific anxiety is a more potent predictor across a range of infant health and behaviour outcomes (Davis & Sandman, 2010; Dunkel Schetter, 2011; Guardino & Schetter, 2014; Huizink et al., 2003, 2002). Theories of pregnancy specific anxiety posit that it is a distinct construct which is rooted in the emotional and physical context of a specific

pregnancy (Huizink et al., 2004). It has been suggested that pregnancy specific anxiety may differ in its predictive power because it is more proximally linked to physiological stress responses than general measures of mood (Guardino & Schetter, 2014). Furthermore, studies attempting to distinguish between general and pregnancy specific anxiety typically report moderate correlations suggesting that there is overlap but there is also an inimitable construct (Green, Kafetsios, Statham, & Snowdon, 2003; Huizink et al., 2004; Rini et al., 1999). These findings extend the applicability of this theory to the postpartum period. It is proposed that postpartum specific anxiety is a distinct construct which is embedded in the emotional and physical context of the months following childbirth with a new infant. The study provides new evidence for child-bearing specific measures of mood in the postpartum period and calls for an increased uptake in the use of these measures when attempting to predict child-bearing related outcomes. Future research should aim to replicate these findings across other indices of maternal and infant health and behaviour in the postpartum period, particularly those with previously inconsistent results using general PPA measures.

One strength of this study is its simultaneous consideration of infant feeding outcomes and behaviours which provides a more comprehensive overview of the relationship between maternal anxiety and infant feeding than other work (see reviews by Fallon, Bennett, & Harrold, 2016 [Chapter 2]; Fallon, Groves, Halford, Bennett & Harrold, 2016 [Chapter 3]). Furthermore, the analysis distinguished between exclusive and any breastfeeding which is consistent with current breastfeeding recommendations (McAndrew et al., 2012) and more detailed than previous research (Cooke et al., 2007; Courtois et al., 2014; Dusdieker et al., 1985; Hellin & Waller, 1992; Mezzacappa & Katkin, 2002; O'Brien et al., 2008). However, some limitations must also be acknowledged. Although the study controlled for a range of established confounders, the short-term prospective design precludes causality. Future research should aim to replicate the findings prospectively over a longer follow-up period. An online convenience sample was used which was adequately powered for the analyses conducted but lacked sampling control. As such, the sample was predominately married, primiparous, housewives which limits the generalizability of findings to other populations. Finally, although the PSAS

was a highly significant predictor in the models discussed, the variance explained in the outcome variables was low which indicates there is a reliable, albeit small relationship between variables. Infant feeding practices are complex and multifaceted, with many cultural (Scott et al., 2015), social (Hauff, 2014), physical (Arbour & Kessler, 2013), and emotional (O'Brien et al., 2008) factors affecting behaviours and outcomes. Given the current lack of uptake to infant feeding recommendations (McAndrew et al., 2012), identification of any factor that consistently impacts upon feeding practices is important. The domains of anxiety (i.e. competence and attachment, infant safety and welfare, practical baby care, and psychosocial adjustment) encompassed in the PSAS may all be potentially modifiable through support, education, and treatment. Replication of these findings in relation to infant feeding and other fundamental maternal and infant health outcomes will provide an evidence base to inform interventions aimed at reducing postpartum specific anxiety. Interventions designed to alter feeding perceptions in anxious postpartum populations may also increase the likelihood of positive feeding interactions, reduce the onset of feeding difficulties, and alleviate the emotional consequences brought about by them.

PART FOUR

DISCUSSION AND CONCLUSIONS

Chapter 9

Discussion and conclusions

9.1 Foreword

The overarching purpose of this thesis was to examine the relationship between maternal anxiety and infant feeding from pregnancy to parenthood. Before the specific aims of the research could be identified and appropriately addressed, two systematic reviews of the literature were conducted (Chapters 2 and 3). No such reviews of the literature had been completed previously and these chapters were essential in informing the subsequent empirical work in the thesis. Addressing the limitations of the existing evidence base found in these reviews, this thesis first aimed to identify the relationship between prenatal anxiety and infant feeding. Next, it sought to identify the relationship between postpartum anxiety and infant feeding. Then, the thesis aimed to examine emotional and practical mechanisms that may impact on these relationships. Finally, it sought to examine whether childbearing-specific measures of anxiety are more effective predictors of infant feeding than general measures of anxiety. To address the first aim, Chapter 4 used a framework analysis approach to classify women in the final trimester of pregnancy as ‘high’ or ‘low’ in pregnancy specific anxiety and to explore the impact of prenatal anxiety on breastfeeding intentions, initiation, and duration in a two-phase design. To address the second aim, Chapter 7 developed a measure of postpartum specific anxiety using qualitative, longitudinal data from a sample of postpartum women and a series of validity studies were then performed to confirm the psychometric potential of the scale. The relationship between postpartum anxiety and infant feeding was then examined using this new measure in Chapter 8. To address the third aim, Chapters 5 and 6 used cross-sectional, quantitative survey methods to quantify the emotional and practical experiences of large samples of both breastfeeding and formula feeding women. To address the final aim, Chapter 8 used hierarchical regression models to explore the independent, predictive value of postpartum-specific anxiety on infant feeding, while controlling for general measures of anxiety and depression. The current Chapter discusses the main findings of the thesis in view of these aims.

An overview of studies and the theoretical implications of findings from these studies will be presented. This will be followed by a discussion of the applied relevance of the findings and the limitations of them within the context of the existing evidence base. Finally, future directions and concluding comments will be provided.

9.2 Overview and theoretical implications of findings

9.2.1 Research Question 1: What is the relationship between prenatal anxiety and infant feeding?

Chapter 2 reported a systematic review of the relationship between prenatal anxiety and infant feeding outcomes. Of the 10 narratively synthesised analyses, seven found no relationship between prenatal anxiety and infant feeding outcomes; specifically breastfeeding initiation and ‘any’ breastfeeding activity. This is interesting considering the known relationship between these feeding outcomes and other domains of prenatal mood, such as depression (Castro Dias & Figueiredo, 2015) and suggests that prenatal anxiety may exert a different effect upon feeding practices. However, some of the studies which failed to find associations were identified as having methodological and analytical weaknesses (e.g. Sherr, 1989) which may provide a more realistic explanation of these null results. Issues with generalizability, homogeneity, sampling, and measurement were discussed in light of the findings. Two studies which examined how women intended to feed their babies reported significant relationships between high levels of prenatal anxiety and formula feeding intentions in pregnancy (Fairlee et al., 2009; Insaf et al., 2011) and another study found that prenatal anxiety was associated with reduced exclusive breastfeeding duration (Mehta et al., 2012). These variables were given further consideration in Chapter 4. The review concluded that there was insufficient evidence to make firm conclusions regarding the impact of prenatal anxiety on infant feeding outcomes and made an urgent call for prospective studies which took into consideration the limitations of the existing evidence base. Recommendations for creative, qualitative research using pregnancy-specific measures of anxiety were put forward, along with a discussion of key confounding variables that may affect the relationship. Despite the lack of high-quality evidence available to answer the research question, this review

makes important contributions to the evidence base by identifying, evaluating, combining and summarising the findings of all relevant individual studies on this topic. This provides the field with transparent and robust information to efficiently inform future research examining this relationship.

To address the research question using the recommendations proposed in Chapter 2, Chapter 4 used a framework analysis to analyse two phases of qualitative, longitudinal data (see Fig 1.2). The impact of pregnancy-specific anxiety on infant feeding intentions and behaviours were explored across the transition from pregnancy to parenthood using the breastfeeding intention-behaviour framework found in health behaviour models (e.g. Ajzen, 2011). Phase one themes contradicted previous research which found that prenatal anxiety was associated with intentions to formula feed (Fairlee et al., 2009; Insaf et al., 2011) and highlighted that those with high pregnancy-specific anxiety may have stronger intentions to breastfeed in late pregnancy. Specifically, this manifested as a strong, inflexible desire to breastfeed, negative opinions of formula feeding, and a heightened awareness of breastfeeding difficulties. These were novel findings in the anxiety literature and suggest that qualitative examination of infant feeding through the lens of a childbearing specific measure of anxiety may provide unique insights. The distinct effect of pregnancy-specific anxiety measures has been documented in quantitative studies examining other infant health outcomes (e.g. Guardino & Schetter, 2014) which suggests that the specificity of these measures may be important in predicting infant feeding outcomes also. This notion was explored quantitatively in a postpartum population in Chapters 7 and 8.

Other qualitative breastfeeding research also suggests that an idealised view of breastfeeding is not uncommon in late pregnancy and may be an unintended consequence of the pro-breastfeeding discourse (Knaak, 2006, 2010a; Murphy, 1999; Taylor & Wallace, 2012; Williams, Donaghue, et al., 2012a). Rollins et al. (2016) argues that feeding decisions are influenced heavily by the mother's internalisation of the influences at the levels of structure and setting; breastfeeding promotion is a core component of these levels. Phase One extends this work by demonstrating that in women with anxieties specific to pregnancy, these views may be augmented as a result of distorted information

processing when making feeding decisions (Armitage et al., 1999; Bless et al., 1996, 1992; Schwarz, 2012; Schwarz & Clore, 2003). Furthermore, the findings also suggest that dichotomous (yes/no) methods generally used to measure breastfeeding intentions in quantitative research may not elicit enough detail to fully understand women's multifaceted infant feeding decisions and how they affect postpartum feeding behaviour. Finally, they build on other work which argues that the intended duration of exclusive breastfeeding and the strength of those intentions are important variables to consider in quantitative studies examining mood and feeding intentions (Nommsen-Rivers & Dewey, 2009).

In phase two, the same classifications were used to explore differences in postnatal feeding behaviours. No qualitative differences were found between groups with regards to breastfeeding initiation. Studies reviewed in Chapter 2 examining prenatal anxiety and breastfeeding initiation also found no relationship between these variables (Fairlee et al., 2009; Mehta et al., 2011; Sherr, 1989). Given that only four studies to date have studied this relationship; each with diverse methodologies, more work is needed in this area. However, those with high pregnancy specific anxiety were less likely to be exclusively breastfeeding at the second phase of interviews. This finding is supported by work which reports that prenatal anxiety is predictive of reduced, exclusive breastfeeding duration (Mehta et al., 2012) and suggests a relationship between prenatal anxiety and breastfeeding exclusivity may exist. Furthermore, the emotional consequences of breastfeeding cessation were more pronounced among those with high pregnancy specific anxiety. Negative emotional responses to breastfeeding cessation have been well-documented in the general breastfeeding literature (e.g. Lee, 2007; Murphy, 1999; Thomson et al., 2015). Phase Two extends this work and suggests that pregnancy-specific anxieties may be an exacerbating factor.

Collectively, the findings from Chapter 4 indicate that pregnancy specific anxiety may affect breastfeeding intentions in pregnancy and exclusive breastfeeding in the early postpartum. A much wider intention-behaviour gap was identified among those with high pregnancy specific anxiety. The framework analysis suggests that the intention themes identified in women

with high pregnancy specific anxiety had a subsequent effect on postpartum breastfeeding behaviour (i.e. they occur as a consequence of failing to maintain their intentions); this supports and extends other general breastfeeding research (Schmied, Sheehan, & Barclay, 2001). The use of a qualitative, longitudinal design provides a richer, more nuanced understanding of the relationship between prenatal anxiety and infant feeding. However, mixed support was found for the evidence reviewed in Chapter 2. This may be because the pregnancy-specific measure used to develop the interview guide elicited different emotional responses from participants. Alternatively, it may be because the qualitative methods used provided a deeper meaning of women's experiences. Given the paucity of existing research in this area, more work is still necessary to fully elucidate the relationship between prenatal anxiety and infant feeding outcomes. Future directions to help clarify this relationship will be discussed later.

9.2.2 Research Question 2: What is the relationship between postpartum anxiety and infant feeding?

Chapter 3 provided a systematic review of the relationship between postpartum anxiety and infant feeding outcomes. The narrative synthesis provided strong evidence for the relationship between postpartum anxiety and a range of negative infant-feeding outcomes throughout the postpartum period with 36 (80%) analyses from 25 (76%) studies demonstrating a relationship. This larger review of 33 studies demonstrated that women with symptoms of postpartum anxiety were less likely to breastfeed exclusively and more likely to terminate breastfeeding earlier. There was also some evidence to suggest they were less likely to initiate breastfeeding and more likely to supplement with formula in the hospital. In those that did breastfeed, postpartum anxiety reduced breastfeeding self-efficacy, increased breastfeeding difficulties, and negatively affected breastfeeding behaviours and breast milk composition. However, as in Chapter 2, methodological limitations were prevalent among the studies included and somewhat limited the comparability of findings. Specifically, issues with breastfeeding operationalization, measurement of anxiety, and a lack of control for potentially influencing mechanisms in the

studies synthesised were highlighted as limitations. These weaknesses were taken into account in subsequent empirical work in the thesis.

The review advised that a widely accepted perinatal measurement tool for postpartum anxiety was needed to aid comparability of findings. Other work has demonstrated that pregnancy specific measures of anxiety are more effective at predicting infant health outcomes than general measures (see Guardino & Schetter, 2014). Given this evidence, alongside the findings in Chapter 4 for the impact of pregnancy-specific anxiety on infant feeding outcomes, it was deemed that a psychometric measure of postpartum-specific anxiety would be a valuable contribution to the field. Chapter 7 reports the development and 4-phase validation of the Postpartum Specific Anxiety Scale (PSAS); the first temporally-specific measure of postpartum anxiety. Items for the scale were generated using data from the final two phases of a qualitative, longitudinal study with postpartum women (see Fig 1.2). A series of validity studies using expert panels and large samples of postpartum women provided evidence for the PSAS as an acceptable, valid, and reliable research tool to assess anxieties which are specific to the postpartum period. It was recommended that the predictive value of the PSAS was examined in the context of infant health outcomes, including infant feeding.

Chapter 8 examined the relationship between postpartum specific anxiety and infant feeding outcomes and behaviours using the PSAS in a short-term, prospective, online design. The study addressed the limitations identified in previous work through simultaneous consideration of infant feeding outcomes and behaviours, distinguishing between exclusive and any breastfeeding, and controlling for a range of established confounds as identified in Chapter 3. It was hypothesised that postpartum-specific anxiety would exert a significant, negative effect on infant feeding outcomes and perceptions of infant feeding behaviours. Findings demonstrated that in adjusted models, higher levels of postpartum specific anxiety were associated with lower odds of breastfeeding exclusively, and breastfeeding in any quantity in the first six months. These findings were concurrent with the literature reviewed in Chapter 3 and provide convincing evidence for the negative impact of postpartum anxiety on 'exclusive' and 'any' breastfeeding. The study also reported that postpartum

specific anxiety was significantly associated with negative maternal perceptions of infant feeding behaviours including a lower perceived enjoyment of food, and greater perceived food responsiveness and satiety responsiveness in the infant. These findings are consistent with literature that finds high levels of anxiety negatively affects perceptions of infant feeding behaviour and impedes maternal ability to interpret infant cues of hunger and satiety (Farrow & Blissett, 2005; Hellin & Waller, 1992; Hurley et al., 2008; Richter & Reck, 2013; Savage et al., 2008). Distorted perceptions of infant feeding in pregnancy were highlighted as a potential consequence of anxiety in Chapter 4; this study provides additional evidence to suggest this may be a consistent feature across periods of childbearing. The findings also suggest that a measure of postpartum specific anxiety exerts the same directional effect on infant feeding outcomes and behaviours as a general measure of anxiety. However, it has been suggested that pregnancy-specific anxiety may differ in its predictive power because it is more proximally linked to physiological stress responses than general measures of mood (Guardino & Schetter, 2014). The predictive power of the PSAS relative to a general measure of anxiety is explored under research question 4.

9.2.3 Research Question 3: What emotional and practical mechanisms may impact on these relationships?

Up until this point, and congruent with the existing evidence base, the thesis assumed a unidirectional association between maternal anxiety and infant feeding, whereby heightened levels of anxiety exert biological and cognitive changes in the mother, which in turn impede upon optimal feeding practices. However, there are numerous accounts of women's negative emotional responses to suboptimal infant feeding outcomes; specifically breastfeeding supplementation and cessation (Lee, 2007; Murphy, 1999; Thomson et al., 2015), which suggest that negative infant feeding experiences may be a proximal antecedent of affective states such as anxiety (and other domains of maternal mood). Other work has suggested that negative emotional and practical feeding experiences are common and may be an internalised consequence of pro-breastfeeding initiatives at the structural and settings levels (Hoddinott et al., 2013; Lagan et al., 2014). The intention of the sequential

exploratory design of the thesis was to allow the qualitative findings to generate testable hypotheses for quantitative study; as such, using anxiety as a predictor variable was considered circular (i.e. Chapter 4 explored maternal anxiety by default). Furthermore, to contextualise the relationship between maternal anxiety and infant feeding it was necessary to explore other structural, settings, and individual level determinants of breastfeeding behaviour that may influence exposure or outcome (see Chapter 1).

Emotional (guilt, stigma, dissatisfaction) and practical (support, information) consequences of negative feeding outcomes were recorded among individuals classified as 'high' in pregnancy-specific anxiety in Chapter 4. The themes identified, along with other emotional and practical variables identified in the literature were used to operationalise predictor variables for quantitative study in Chapters 5 and 6. Descriptive findings from Chapter 5's study of the emotional and practical experiences of formula feeding mothers indicated that a high percentage of mothers experienced negative emotions including guilt, stigma, and the need to defend their decision to use formula. This was the first study to quantify negative emotions occurring among formula feeding women and provide numerical evidence to support a body of qualitative research (Bailey et al., 2004; Cairney et al., 2006; Cloherty et al., 2004; Earle, 2000; Lee, 2007; Mozingo, Davis, Droppleman, & Meredith, 2000). Chapter 6's mirrored study of breastfeeding mothers also demonstrated that breastfeeding mothers are susceptible to negative emotional experiences, particularly stigma and defence, albeit to a much lesser extent than formula feeding women. Guilt and stigma are tightly linked to anxiety with high correlations (.90) noted in older work (Lowe, 1964) suggesting that guilt and stigma as responses to infant feeding experiences may exacerbate existing relationships between maternal anxiety and infant feeding.

Chapter 5 reported a perceived lack of infant feeding support and information in health and community settings; health professionals and other mothers were also the chief external drivers of the negative emotions under study. Chapter 6 found that breastfeeding mothers experienced the workplace as a settings-level source of negative emotions, specifically defence. Recent work has found that perceptions of support including relationship-specific support (other mothers),

global social support (including health professionals), and support in a work environment were inversely associated with anxious symptoms (Falah-Hassani et al., 2016). Given the established effect of settings-level determinants on breastfeeding behaviour (Rollins et al., 2016), in combination, these findings warrant the consideration of such support systems in future studies examining maternal anxiety and infant feeding.

Chapters 5 and 6 also examined whether emotional and practical experiences in formula feeding (Chapter 5) and breastfeeding (Chapter 6) mothers varied according to prenatal feeding intention and postpartum feeding type. In Chapter 5, women who intended to exclusively breastfeed, or initiated exclusive breastfeeding were more susceptible to guilt and dissatisfaction, whereas those that intended to, or initiated exclusively formula feeding, were at greater risk of experiencing stigma. Similarly, Chapter 6 identified that mothers supplementing breastfeeding with formula were far more likely to experience guilt and dissatisfaction. Despite these studies running online during different time periods, it is possible that some women may have taken part in both studies which may have introduced bias. However, these findings resonate with a body of qualitative literature (e.g. Lee, 2007; Taylor & Wallace, 2012; Thomson et al., 2015) which reinforces the credibility of the work. Although similar emotions in response to infant feeding experiences (both breastfeeding and formula feeding) have been found previously (e.g. Thomson et al., 2015), this was the first study to expose and quantify the specific emotional repercussions of infant feeding among different cohorts of both breastfeeding and formula feeding women. Although the findings do not provide direct evidence for a bidirectional relationship between maternal anxiety and infant feeding, they indicate that negative emotional responses occur as a result of specific infant feeding experiences. This suggests that more broadly, the relationship between maternal emotional state and infant feeding may be bidirectional in nature. Furthermore, in Chapter 5, these associations were more pronounced when mothers expressed intentions to exclusively breastfeed in pregnancy. This supports and extends Chapter 4's breastfeeding intention-behaviour findings by demonstrating the additional risk to emotional wellbeing when prenatal breastfeeding intentions are unmet.

Collectively, findings from Chapters 5 and 6 are consistent with other work (e.g. Rollins et al. 2016) which demonstrates that a number of structural (pro-breastfeeding discourse), settings (health services, peer support, workplace and environment), and individual (breastfeeding intentions) determinants do not provide an enabling environment for breastfeeding and impact upon women's emotional and practical experiences of infant feeding. The chapters identify a number of potentially influencing emotional and practical mechanisms that warrant inclusion in future research examining determinants of breastfeeding behaviour, including those that consider the relationship between maternal anxiety and infant feeding. Both chapters concluded that the current approach to infant feeding promotion and support in higher-income countries may be paradoxically related to significant issues with emotional wellbeing. Within the context of this thesis, these conclusions highlight that it is imperative to consider the wider contextual framework of breastfeeding behaviour (Rollins et al., 2016) when designing studies examining maternal emotional states (e.g. anxiety) and infant feeding.

9.2.4 Research Question 4: Are childbearing-specific measures of anxiety more effective predictors of infant feeding outcomes and behaviours than general measures of anxiety?

Chapter 8 used hierarchical regression modelling to examine whether postpartum specific anxiety was a more effective predictor of infant feeding outcomes and behaviours than general (i.e. state, trait) anxiety. As hypothesised, postpartum specific anxiety was a stronger predictor of infant feeding outcomes and behaviours than general anxiety (state and trait) and also general depression. The PSAS was the only significant measure of mood predicting reduced breastfeeding (exclusive and any), a lower perceived enjoyment of food, and greater perceived food responsiveness, and satiety responsiveness in the infant. Furthermore, the PSAS remained a significant predictor after controlling for general anxiety (state and trait) and depression, indicating that postpartum specific anxiety exerts a unique effect upon infant feeding outcomes and behaviours.

These findings are novel in the postpartum anxiety literature and support a body of work which demonstrates pregnancy specific anxiety is a more potent

predictor than general measures of anxiety across a range of infant health and behaviour outcomes (Davis & Sandman, 2010; Dunkel Schetter, 2011; Guardino & Schetter, 2014; Huizink et al., 2003, 2002). Theoretical work examining pregnancy-specific anxiety find that it is a distinct construct which is rooted in the emotional and physical context of a specific pregnancy (Huizink et al., 2004). It may vary in its predictive power because it is more proximally linked to physiological stress responses than general measures of mood (Guardino & Schetter, 2014). Infant feeding is a proximal feature of the childbearing experience and a physiological relationship between anxiety and feeding has been demonstrated (see Chapter 2) which may explain the stronger associations found in Chapter 8. Chapter 4 also found that qualitative examination of infant feeding through the lens of a pregnancy specific measure of anxiety provided unique insights into women's infant feeding experiences which lends further theoretical support to this argument.

Studies which have previously attempted to distinguish between general and pregnancy-specific anxiety report moderate correlations suggesting that there is overlap but there is also an inimitable childbearing specific construct (Green et al., 2003; Huizink et al., 2004; Rini et al., 1999). Concurrent validity analyses in Chapter 7 also found moderate correlations between postpartum specific anxiety and general measures of mood which provides further support for the distinctiveness of childbearing-specific anxieties. Both Chapter 7 and 8's findings extend the applicability of pregnancy-specific anxiety theory to the postpartum period. It is concluded that postpartum-specific anxiety is a distinct construct which is embedded in the emotional and physical context of the months following childbirth with a new infant. Collectively, the chapters provide convincing evidence for the use of childbearing specific (pregnancy and postpartum) measures of anxiety, above and beyond general measures of anxiety, in predicting infant feeding outcomes.

9.3 Applied Relevance

9.3.1 Policy Makers

The findings of this thesis have several applications for those involved in the design and implementation of maternal and infant health policies. First, policy

makers are urged to raise awareness of postpartum anxiety as a disorder that can occur independently of postpartum depression. This thesis highlights literature which finds that despite high comorbidity, postpartum anxiety occurs independently, and at a higher rate than postpartum depression (PPD) (Britton, 2008; Glasheen et al., 2010; Paul et al., 2013; Wenzel et al., 2005). Chapter 3 demonstrates that postpartum anxiety negatively affects infant feeding outcomes and behaviours, and Chapter 8 provides evidence that these effects persist after controlling for depression. Currently, the NHS and NICE does not recognise postpartum anxiety as a distinct disorder, and subsume symptoms of anxiety within their guidelines on postpartum depression. Consequently, there is no current guidance which exclusively addresses postpartum anxiety for either health professionals or mothers. This under-recognition leaves mothers who are anxious and depressed, diagnosed with depression. It also leaves mothers with pure anxiety misdiagnosed with depression. Worse, it raises the potential for both mother and health professional to assume that they are functioning normally as they are not depressed. All of these scenarios delay or prevent the appropriate management and treatment of symptoms of anxiety which may have serious consequences for both mother and child.

Second, and relatedly, it is strongly recommended that policy makers should roll out guidelines for mandatory screening of both anxiety and depression when examining the mental health of new mothers. Along with diverse evidence linking postpartum anxiety with other suboptimal maternal and infant health outcomes (Glasheen et al., 2010; Lonstein, 2007), Chapter 3 provides evidence that postpartum anxiety negatively affects infant feeding; a fundamental infant health outcome. Furthermore, Chapter 8 demonstrates that these effects persist after controlling for depression. Routine screening for symptoms of anxiety in the perinatal period may negate the potential for such deleterious maternal and infant outcomes. Similar policies have been implemented in other countries; Australian government now advise the use of the 3-item anxiety subscale of the EPDS (Cox et al., 1987), followed by the Perinatal Anxiety Screening Scale (PASS) (Somerville et al., 2014) if a high score is present. Although this is a promising development, limitations of the PASS were noted in Chapter 7. Along with the evidence presented throughout the thesis for the efficacy of childbearing-specific measures of anxiety in

predicting maternal and infant health outcomes, it is recommended that the UK implement a comparable strategy with a postpartum-specific screening tool. Validation of the Postpartum Specific Anxiety Scale (PSAS) is in its infancy but the tool shows high acceptability in postpartum populations, strong psychometric potential, and good case-finding abilities. Development of a short-form may increase its utility in a clinical setting.

Third, policy makers should consider modification of current infant feeding recommendations in higher income countries. The health benefits of breastfeeding are undisputed, but the benefits of the current infant feeding message may not outweigh the risk it poses to maternal emotional wellbeing. Guidance for mothers to exclusive breastfeed for the first six months is intended to inform international government policies, but is instead used by health professionals and mothers to set universal feeding goals (Hoddinott, Craig, Britten, & McInnes, 2013). Given that exclusive breastfeeding rates in the UK at six months of age have not improved since the inception of these recommendations (Bolling et al., 2005; Mcandrew et al., 2012), it is argued that this is an unachievable approach which disregards the individual woman (Lagan et al., 2014; Schmied et al., 2001) and in many cases, sets women up for failure (Hoddinott et al., 2013). Chapters 5 and 6 provide quantitative evidence to support criticisms of how infant feeding recommendations are framed by policy makers and highlights that the current approach may be paradoxically related to significant issues with emotional wellbeing. Although the physical health benefits of exclusive breastfeeding are extremely important for both mothers and infants, maternal emotional state is being compromised, albeit unintentionally, in efforts to increase rates. It is crucial that future promotional strategies recognise the emotional challenges that these recommendations currently pose and provide a more balanced and realistic target for health professionals to disseminate to mothers. Social reform is necessary to fully support and protect those mothers who do breastfeed, and a different approach to promotion is necessary to minimise negative emotions among the majority who do not. Previous BFI policy prohibited health professionals from providing antenatal formula feeding advice in pregnancy, even to those who expressed intentions to exclusively formula feed before birth (UNICEF, 2010). Under guidelines which were revised in 2012, this has been

adapted so health professionals can provide balanced and individualised formula feeding information to those who choose not to breastfeed in pregnancy (UNICEF, 2017). The efficacy of these new standards in terms of maternal emotional state has not yet been examined but it is hoped that these promising developments in policy will minimise some of the negative emotional experiences observed in Chapters 5 and 6. Infant feeding is a fundamental component of motherhood and a positive feeding experience has the power to not only impact maternal mental health but also influence future infant feeding decisions for the individual woman and those around her.

9.3.2 Health Professionals

The findings also raise important considerations for health professionals working with mothers and infants in pregnancy and the postpartum. First, although there is currently no screening tool for postpartum anxiety in the UK, midwives, health visitors, GPs, and other clinicians are encouraged to be vigilant for symptoms of anxiety occurring in mothers, and aware of the negative impact that they can have on maternal and infant outcomes, including infant feeding. This is particularly necessary when symptoms present independently of depression; to minimise the risk of symptoms being undetected, and to ensure timely treatment. Furthermore, health professionals must be aware that symptoms of anxiety occurring in pregnancy may present differently to those experienced at other times of life. The findings presented in Chapters 7 and 8, along with a body of pregnancy-specific anxiety literature demonstrate that anxieties occurring in mothers are often specific to the period of childbearing. Other work suggests that these anxieties may be confined to topics of the baby and motherhood which means that women do not meet diagnostic criteria for an existing anxiety disorder but are nevertheless experiencing a clinically significant degree of maternally focused worry (Phillips et al., 2007, 2009). Women presenting with chronic anxieties relating to the birth, baby's health and welfare, parenting competence or adjustment to motherhood should be considered at risk even if diagnostic criteria are unmet. Referrals for non-pharmacological treatment are advised in mild-moderate cases of anxiety to minimise the risk of compromising breastfeeding. For instance, there is evidence for the use of cognitive behavioural therapy and

mind-body interventions such as meditation, imagery, hypnosis and yoga in the reduction and prevention of anxiety in pregnancy and the postpartum (Marc et al., 2011).

Second, health professionals are encouraged to be mindful of the specific manner in which anxiety can impact upon breastfeeding practices in order to provide appropriate support. For instance, Chapter 4 demonstrates that women with pregnancy-specific anxiety may present with strong, inflexible breastfeeding intentions. A more balanced approach to prenatal breastfeeding education may provide these mothers with a more realistic attitude towards infant feeding in pregnancy. They may also have a stronger negative emotional response to breastfeeding cessation. Sensitive, non-judgemental reassurance will help to ensure that rather than fearing disapproval from health professionals, these mothers are willing to seek professional advice with regards to the safe preparation of formula and sterilising of formula feeding equipment. Chapters 3 and 8 also highlight that postpartum anxiety can negatively affect perceptions of infant feeding behaviour. Educating women about responsive feeding practices such as timely recognition of infant cues of hunger, and feeding on-demand is advised regardless of feeding method. Normalising other typical infant feeding behaviours, including cluster feeding, frequent night feeding, and day-to-day variability in infant hunger and/or satiety is also recommended. These discussions are now promoted under the revised BFI standards (UNICEF, 2017) and may help to balance distorted perceptions of feeding behaviour.

Finally, health professionals ought to be aware that in non-anxious populations, failure to adhere to current infant feeding recommendations can evoke negative emotional responses such as guilt, stigma, and dissatisfaction, and aim to minimise them. Chapters 5 and 6 found that this is particularly pertinent in cases where mothers intend to exclusively breastfeed in pregnancy, or initiate breastfeeding in accordance with current guidelines postpartum. However, Chapter 5 also highlighted that mothers who intentionally exclusively formula feed may be prone to a different, albeit undesirable, emotional experience. Targeted formula feeding support and information for these women may improve emotional and practical infant feeding experiences given that they are

less likely to engage with professional support and information. Revised BFI policies now feature mother-centred discussions and additional support for mothers who are planning to formula feed in pregnancy which should enhance perceptions of care for this cohort (UNICEF, 2017). Finally, Chapter 5 also highlighted that health professionals were an external driver of these negative emotions. Although it is acknowledged that the vast majority of health professionals strive to support the well-being of mothers, it is critical to ensure that these emotions are not exacerbated by insensitivity or judgement from health professionals about infant feeding decisions.

9.3.3 Mothers in pregnancy and the postpartum

Finally, the literature synthesised in this thesis along with the findings of certain chapters have a number of important applications for mothers in pregnancy and the postpartum. First, mothers should be aware that symptoms of anxiety can present both alongside and independently of depression (e.g. Fallon et al. 2016 [Chapter 7 and 8]) and are often mislabelled as postpartum depression (Matthey et al., 2003). Mothers should seek professional help if anxiety is compromising their quality of life or their experience of motherhood even if their symptoms do not correspond with those of postpartum depression (Matthey et al., 2003; Phillips et al., 2009). Anxiety is a natural response to protect one's baby and while some anxiety in pregnancy and the postpartum is adaptive; chronic anxiety should not be ignored (Guardino & Dunkel-Schetter, 2014). Mothers may also benefit from understanding that symptoms of anxiety in pregnancy and the postpartum may not be the same as anxieties occurring at other times of life and are often specific to the period of childbearing (Fallon et al., 2016 [Chapter 7]; Huizink et al., 2004). Mothers may be less inclined to seek treatment as current laypersons literature surrounding postpartum depression and anxiety does not reflect this specificity (Zelkowitz & Papageorgiou, 2012). Online support groups exist specifically for women with anxiety in pregnancy and the postpartum and can reduce feelings of isolation and function as an effective therapeutic adjunct to treatment (Marc et al., 2011).

Second, breastfeeding is the optimal source of nutrition for the first six months of life with undeniable health benefits for both mother and infant (Victora et

al., 2016) and strategies to increase breastfeeding rates and support breastfeeding mothers are essential. The high levels of breastfeeding intention and initiation observed throughout this thesis and in the general population (McAndrew et al., 2012) indicates that these benefits are well-known among mothers in higher-income countries as a result of promotional efforts. However, at a national level, exclusive breastfeeding rates have not improved (McAndrew et al., 2012). Findings from Chapters 5 and 6 suggest that the current approach to promotion may elicit negative emotional responses from mothers, particularly those who intend to or initiate exclusive breastfeeding, but do not manage to meet these recommendations. These mothers may benefit from a more balanced view of infant feeding in pregnancy and the postpartum as this may reduce the potential for such negative emotional responses. While appropriate infant feeding is very important for physical health, maternal mental health should not be compromised in efforts to achieve it. Mothers should be aware that responsive parenting can still be achieved if breastfeeding is not possible and is ultimately more important for overall infant health and wellbeing than feeding method alone.

9.4 Outstanding issues and future directions

The findings of this thesis highlight a number of outstanding issues and possible directions for future research. Chapters 2 and 3 highlight that the existing literature examining prenatal anxiety and infant feeding is sparse, relative to postpartum anxiety and infant feeding. This is likely because of the challenges associated with designing and implementing prospective research across the transition from pregnancy to parenthood. More work is urgently needed to clarify the relationship between prenatal anxiety and infant feeding outcomes. Given the high correlations noted in previous work between prenatal anxiety and postpartum anxiety (Heron et al., 2004), coupled with convincing evidence for the impact of postpartum anxiety on infant feeding outcomes (Chapter 3), it is likely that similar relationships exist and currently remain unidentified. Chapter's 2 and 3 also demonstrate that many of the studies reviewed tend to use anxiety subscales, operationalise anxiety as a secondary predictor variable, or subsume the findings within a wider analysis. More focus is needed on anxiety as a primary exposure variable in the

literature, particularly while controlling for the effects of depression. Relatedly, Chapters 2 and 3 also highlight wide variability in anxiety measurement. Given the findings of this thesis, coupled with the existing evidence, it is recommended that researchers use child-bearing specific measures of anxiety in pregnancy and the postpartum to aid accuracy and comparability of findings. Regular use of similar measures of anxiety would allow future replication of the reviews with the addition of a meta-analysis allowing a more precise estimate of the effect of anxiety upon infant feeding outcomes. Finally, Chapter 3 supports a funding proposal for a non-pharmacological intervention designed to simultaneously reduce postpartum anxiety and increase breastfeeding rates. A recent pilot study provides evidence for the effect of a mindfulness-based intervention in improving symptoms of anxiety (Perez-Blasco et al., 2013). However, the intervention was designed to reduce various forms of psychological distress, and was not specifically targeted at anxiety. Furthermore it was conducted in a sample of breastfeeding mothers recruited from a breastfeeding support group so it was not possible to examine whether breastfeeding rates were improved. However, a similar intervention in a randomised controlled design using a sample of women who initiate breastfeeding at birth and following them up over the first six months would negate these limitations.

A significant strength of Chapter 4 was its qualitative, longitudinal approach. An exploratory methodology was also appropriate considering the lack of research identified in Chapter 2. It would be interesting to examine how far these findings extend to quantitative longitudinal work. This Chapter generated an interesting framework theory of how pregnancy-specific anxiety may affect prenatal breastfeeding intentions and subsequent postpartum breastfeeding behaviour using a health behaviour framework. This theory now needs to be tested in a prospective, quantitative design using pregnancy specific measures of anxiety alongside a detailed feeding intentions measure (Nommsen-Rivers & Dewey, 2009). Chapters 5 and 6 established that guilt, stigma, and dissatisfaction were common consequences of non-adherence to current infant feeding recommendations. It was noted that some of these emotions are tightly linked to anxiety which suggests that negative infant feeding experiences may be a proximal antecedent of postpartum anxiety.

However, the bidirectional nature of the relationship between maternal anxiety and infant feeding is yet to be explored. Dennis and McQueen (2007) used a time-sequenced analysis to examine the bidirectional nature of the relationship between postpartum depression and diverse infant feeding outcomes. Although their findings indicated that infant feeding method did not predict the development of depressive symptoms, a similar study is necessary to examine this hypothesis in relation to postpartum anxiety. Given that the negative emotions identified in Chapters 5 and 6 are potentially associated with both exposure and outcome, it would also be interesting to examine the mediating effect of variables such as guilt and stigma within the relationship between maternal anxiety and infant feeding.

Chapter 7 makes an important contribution to the literature by developing and validating the first measure of postpartum-specific anxiety. However, validation of a measure is an iterative process and there are several areas for future work which are necessary to continue refinement of the PSAS. First, the study used an online convenience sample. Thus, it will be important to replicate these findings across diverse samples, particularly those at risk of developing postpartum anxiety. Second, the item analyses displayed psychometric potential for the development of a short form which may increase its utility in both clinical and research settings. The author is currently writing a collaborative proposal to develop and validate a short-form of this measure with a view to creating a screening tool which could be implemented in practice. Third, research should examine whether the constructs of postpartum-specific anxiety are distinct to general measures of anxiety to allow clinicians and researchers to address issues of identification, prediction, and prevention more precisely (Huizink et al., 2004). Huizink et al. (2004) used structural equation modelling and found that the constructs of pregnancy-specific anxiety were distinct from general anxiety during each trimester of pregnancy. Replication of this study across key stages of the postpartum using the PSAS is warranted. Chapter 8 also makes a significant contribution to the literature by demonstrating that postpartum anxiety elicits a unique effect upon infant feeding outcomes and behaviours. However, the short-term prospective design precludes causality and it will be necessary to replicate these findings in a longer-term design before firm conclusions can be drawn. The pregnancy-

specific anxiety literature demonstrates that anxiety in pregnancy affects multiple infant health and behaviour domains (Guardino & Schetter, 2014) which suggests that the PSAS could well have applications that extend beyond infant feeding. Examination of the PSAS in relation to other fundamental maternal and infant health and behaviour outcomes will provide an evidence base to compare with the pregnancy-specific anxiety literature and inform interventions aimed at reducing postpartum specific anxiety. The author also collected infant temperament and maternal attachment data alongside the infant feeding measures in Chapter 8. Analyses are ongoing and will form the foundations of this work. Finally, Chapters 7 and 8 provide novel evidence for child-bearing specific measures of mood in the postpartum period and calls for researchers to use these measures when attempting to predict child-bearing related outcomes. Using general measures of anxiety to predict childbearing-related outcomes may underestimate the true effects of maternal anxiety and delay the advancement of knowledge in this field.

9.5 Conclusions

This thesis used an exploratory sequential design to examine the relationship between maternal anxiety and infant feeding from pregnancy to parenthood. It makes several novel and important contributions to the literature and has implications for future research, policy, practice, and mothers and infants. The following conclusions can be drawn from the findings. First, more research which takes into account existing limitations is urgently needed to clarify the relationship between prenatal anxiety and infant feeding. Second, there is convincing evidence for the relationship between postpartum anxiety and suboptimal infant feeding outcomes and behaviours using both general and postpartum specific measures of anxiety. Third, the directional nature of this relationship is yet to be explored. However, when considering these relationships, it is imperative to take into account the wider framework of structural, settings, and individual level breastfeeding determinants, which impact upon women's emotional and practical experiences of infant feeding and potentially influence exposure-outcome variables. Finally, childbearing specific measures of anxiety are more effective methods of measurement when considering any relationship with infant feeding, and should be used to aid

accuracy and comparability of future evidence examining these variables. Ultimately, the evidence presented suggests that maternal anxiety, particularly in the months following childbirth is; like depression (Rollins et al. 2016); an individual-level determinant of breastfeeding. Strategies to identify, manage, and treat anxieties specific to the childbearing experience should also be viewed as opportunities to increase breastfeeding rates. Equally, strategies which target other structural, settings, and individual-level barriers to breastfeeding while taking into account the infant feeding recommendations identified in this thesis should be considered beneficial to maternal emotional states, including anxiety.

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**Examining Maternal Anxiety and Infant Feeding from
Pregnancy to Parenthood**

By

Victoria M. Fallon

(Volume 2 of 2)

A thesis submitted in accordance with the requirements of the University of
Liverpool for the degree of Doctor in Philosophy

Department of Psychological Sciences

University of Liverpool

November 2016

APPENDICES

Appendix 1: *Example of an electronic search strategy*

Full electronic search strategy for PsycInfo

AB ('breastfeed*' OR 'breast feed*' OR 'breastfed' OR 'breastmilk' OR 'breast milk' OR 'infant feed*' OR 'formula feed*' OR 'formula fed' OR 'bottle feed*' OR 'bottle fed') AND AB ('prenatal anxiet*' OR 'antenatal anxiet*' OR 'maternal anxiet*' OR 'pregnancy anxiet*' OR 'perinatal anxiet*' OR 'pregnancy specific anxiet*' OR 'pregnancy related anxiet*')

Appendix 2: PRISMA Statement

Section/topic	#	Checklist item	Page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	TITLE PAGE
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	Unstructured P1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	P2,3,4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	P5
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	P4, 4, 27
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	P6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix 1
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	Prisma Diagram P6, P7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	P7

Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Table 1, P4, 5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	P7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	Table 2
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	P7
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	P7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	PRISMA Diagram
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Table 2, P8, 9, 10, 11, 12, 13
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	9,10,11,12
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	P 8, 9, 10, 11, 12,13
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	P 8,9,10,11,12,13
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			

Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	P 13,14,15,16
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	P 13,14,15,16
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	P16
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	P17

Appendix 3: *Example of an electronic search strategy*

Full electronic search strategy for PsycInfo

AB ('breastfeed*' OR 'breast feed*' OR 'breastfed' OR 'breastmilk' OR 'breast milk'
OR 'infant feed*' OR 'formula feed*' OR 'formula fed' OR 'bottle feed*' OR 'bottle
fed') AND AB ('postpartum anxiet*' OR 'postnatal anxiet*' OR 'maternal anxiet*'
OR 'perinatal anxiet*')

Appendix 4: PRISMA statement

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Title
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	Abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	1
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	1
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	2
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	Table 1
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	2 (plus sup. materials)
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix 1
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	Fig 1 (plus sup.)

			materials)
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	2 (plus sup. materials)
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Table 1
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	2 (plus sup. materials)
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	Table 2
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	2,3
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	2 (plus sup. materials)
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	2, 3, Fig 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	3-11, Table 2
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Table 2

Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	3-11, Table 2
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-15
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	11-15
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	15
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	Title Page

NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE

COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

Selection

1) Representativeness of the exposed cohort

- a) truly representative of the average _____ (describe) in the community
- b) somewhat representative of the average _____ in the community
- c) selected group of users eg nurses, volunteers
- d) no description of the derivation of the cohort

2) Selection of the non exposed cohort

- a) drawn from the same community as the exposed cohort
- b) drawn from a different source
- c) no description of the derivation of the non exposed cohort

3) Ascertainment of exposure

- a) secure record (eg surgical records)
- b) structured interview
- c) written self report
- d) no description

4) Demonstration that outcome of interest was not present at start of study

- a) yes
- b) no

Comparability

1) Comparability of cohorts on the basis of the design or analysis

- a) study controls for _____ (select the most important factor)
- b) study controls for any additional factor (This criteria could be modified to indicate specific control for a second important factor.)

Outcome

1) Assessment of outcome

- a) independent blind assessment
- b) record linkage
- c) self report
- d) no description

2) Was follow-up long enough for outcomes to occur

- a) yes (select an adequate follow up period for outcome of interest)
- b) no

3) Adequacy of follow up of cohorts

- a) complete follow up - all subjects accounted for
- b) subjects lost to follow up unlikely to introduce bias - small number lost - > ____ % (select an adequate %) follow up, or description provided of those lost)
- c) follow up rate < ____% (select an adequate %) and no description of those lost
- d) no statement

Appendix 6: Snapshot of the systematic review change record

D	E	F	G	H	I	J
Journal Title	Vol No	Issue No	Page No	Database	Included	Reason
Dissertation 98357777	n/a	n/a	n/a	Proquest	N	Both case study and support group included p
Maternal and Child Health Journal	n/a	n/a	1573-6628	MEDLINE with full text	N	Compared between preterm and term babies for postpartum anxiety in term infants and fe
Dissertation 8527097	n/a	n/a	n/a	Proquest	FT required	
Annals of Behavioural Medicine	22	1	71-79	Scopus	N	assessed stress rather than anxiety
Dissertation 8527659	n/a	n/a	n/a	Proquest	Y	
Dissertation Abstracts International	52	11-A	3824-3825	PsycINFO	FT required	
International Journal of Circumpolar Health	64	1	55-64	MEDLINE	N	looked at anxiety about food supply in 9 mon
Dissertation 1333461	n/a	n/a	n/a	Proquest	FT required	
Iranian Journal of Reproductive Medicine	12	1	28	Updated Discovery Search	FT required	
Archives of Disease in Childhood	91	12	990-994	Scopus	N	assessed child anxiety rather than maternal a
Journal of Human Lactation	23	4	314-24	MEDLINE	Y	
Pregnancy and Childbirth	12		36	Academic Search Complete	N	does not separate analyses for anxiety and de
PLoS ONE	9	2	01-Jul	Discover (Second Search)	Y	
Journal of Paediatrics and Child Health	44	6	369-73	MEDLINE with full text		
Journal of Pediatric Psychology	36	8	942-950	Scopus	?	assesses anxiety in relation to milk intake, lat differences in parity against main predictor d test to assess differences in parity against anx
Breastfeeding Medicine	12	1	36-41	Discover (second search)	Y	
						Spanish masters dissertation, English abstract

Appendix 7: Example participant consent form



PARTICIPANT CONSENT FORM

Title of Research Project: **The impact of maternal anxiety on acute infant feeding outcomes and appetitive behaviours**

Researcher: **Miss Victoria Fallon**

**Please
initial box**

1. I confirm that I have read and have understood the information sheet dated 01/09/2013 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 rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline.

3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish.

4. I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications. However, In the rare case that there are any disclosures about issues such as safeguarding, exploitation, harm, or drug or alcohol abuse, confidentiality may have to be broken so that the appropriate course of action can be taken.

5. I understand and consent to my GP being informed of my participation in the study

6. I understand and consent to the researcher liaising with my healthcare professional to ascertain the date I deliver my baby and to validate his/her safe delivery.

7. I understand and agree that my participation will be audio recorded and I am aware of and consent to your use of these recordings for audio transcription purposes

8. I understand and consent to my quotations being used in the dissemination of this research.

9. I agree to take part in the above study

_____	_____	_____
Participant Name	Date	Signature
_____	_____	_____
Researcher	Date	Signature

Principal Investigators

Name: Dr Jo Harrold & Dr Kate Bennett

Work Address: Department of Psychological Sciences

Eleanor Rathbone Building

Liverpool L69 7ZA

Student Researcher

Name: Miss Victoria Fallon

Work Address: Department of Psychological Sciences

Room 2.61

Eleanor Rathbone Building

Appendix 8: Example participant information sheet



PARTICIPANT INFORMATION SHEET

Title of Research Project:	The impact of maternal anxiety on acute infant feeding outcomes and appetitive behaviours
Researcher:	Miss Victoria Fallon

You are being invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. Please also feel free to discuss this with your friends, relatives and GP if you wish. We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

Thank you for reading this.

What is the purpose of the study?

Pregnancy and new motherhood is an exciting time in a woman's life, but it can also be demanding and causes anxiety. Although quite a bit is known about depression in pregnancy and postpartum, much less is known about the anxieties faced at this time. This study will examine the anxieties that women may face during pregnancy and after they have given birth to find out more about how these anxieties may affect feeding. The study will also explore how these anxieties might affect how a woman judges their baby's appetite. It is hoped that the results gained from this study will provide more insight into how anxiety affects infant feeding from pregnancy to parenthood.

Why have I been chosen to take part?

You are being invited to take part in this study because you are: over 18 years of age, English speaking, are currently over 28 weeks pregnant, and have no current clinical diagnosis of anxiety or depression.

Do I have to take part?

No - your involvement in this research is entirely voluntary. Not taking part will not affect your rights or treatment and you are free to withdraw from the research at any time without explanation or negative consequences.

What will happen if I take part?

Your involvement in the research will be over about six months, starting from 28 weeks of pregnancy and ending 12-16 weeks after giving birth (postpartum). During this time you will be required to participate in three interviews each lasting approximately one hour. Each interview is like a conversation in which you will be asked for your opinions and experiences in an informal way. There are no right or wrong answers and you will not be judged in any way with what you say. The same researcher will conduct all three interviews which can take place in your home or at your local children's centre (whichever is most convenient for you) and your child will be able to stay with you while the interview takes place. Alternatively, we can conduct the interviews via telephone or video calling if you prefer. Each interview will be audio-recorded so it can be transcribed later, although we will ask for your consent before doing this.

The first interview will take place whilst you are still pregnant. This interview will firstly ask you about any anxieties and concerns you may have faced during your pregnancy and then ask you some questions about your views and experiences of breast feeding and formula feeding.

Between the first and second interview, I will find out when you had your baby and if everything is OK with you. This is to ensure that we do not contact you at what may, under certain circumstances, be a potentially difficult time.

The second interview will take place 4-8 weeks after you have given birth. We will try to maintain an 8 week gap between this interview and the initial interview. This interview is for us to understand any anxieties and concerns you may have faced since having your baby and how these may have changed since the last time we spoke. It will also ask you about your experiences of infant feeding now you have had your baby.

Between the second and third interview, I will find out again if everything is OK with you. This is to ensure that we do not contact you at what may, under certain circumstances, be a potentially difficult time.

The final interview will take place 12-16 weeks after you have given birth and will follow the same format as the second interview. Again, we will try to maintain an 8 week gap between this interview and the second interview. This interview is for us to understand how any anxieties you have may change as your baby grows and examine any developments in your infant feeding experiences.

Alongside each interview, there will be a brief questionnaire to complete comprising no more than 10 questions. These questions will assess your mood and any anxieties you may be experiencing at the time. The questionnaire is intended to complement the responses you give in your interview.

Following all three interviews, you will have the opportunity to ask any questions that have not already been answered regarding the study.

Expenses

Reasonable travelling expenses will be paid to participants who attend a children's centre for their interview.

Are there any risks in taking part?

The care and wellbeing of you and your baby have been given the highest priority in the design of this research. Predicted adverse effects are minimal and it is very unlikely that this study will lead to any physical or psychological adverse effects, risks or hazards. However, if you should experience any discomfort at anytime during the study or you would like to withdraw, please tell the researcher immediately and the study will be halted. Your GP will be informed of your participation in the study with your permission. There are also contact details of various support networks provided at the end of this document should you require any further advice or information about mental wellbeing or infant feeding in pregnancy and motherhood.

Are there any benefits in taking part?

There are no direct benefits in taking part. However, the results that you provide will help us to have a better understanding of maternal anxiety and its impact on infant feeding. This in turn will help to identify what is needed to promote wellbeing in pregnancy and the postpartum period to effectively support women's infant feeding decisions.

What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, please feel free to let us know by contacting the chief investigator or academic supervisor Dr Kate Bennett or Dr Jo Harrold, via email at: k.m.bennett@liverpool.ac.uk or Harrold@liverpool.ac.uk or or via telephone on: 0151 7941146 or 0151 7941410 and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer at ethics@liv.ac.uk. When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher involved, and the details of the complaint you wish to make.

Will my participation be kept confidential?

To ensure confidentiality of your personal data, you will be given a participant number which will be assigned before each audio recorded interview begins. These numbers will appear on transcribed interviews. During the transcription process, pseudo names will be used to replace the names of all the friends, family or health professionals you may mention during the interview.

As the data from this study is intended to be used in future publications, audio files will be kept on a secure university drive until the time of publication. Any participant information stored on computer will be kept in a password protected folder, only accessible to the research team and will be identifiable only by a participant number. Hard copies of information will be kept until the time of publication before being destroyed. Paper records will be shredded and recycled. Records stored on a computer hard drive will be erased using software applications designed to remove all data from the storage device. They will be kept in a locked filing cabinet, only accessible to the research team. Finally, pseudo names will be given to accompany quotes that may be used in publications.

Confidentiality

If you tell the researcher something that makes her think that you or someone else may be harmed, she will have to tell your healthcare team about this.

What will happen to the results of the study?

We hope to publish the results of the study in scientific journals and present the findings at academic conferences. After the study is completed and ready for publication, you will be contacted via newsletter to inform you of the study's findings and details will be provided of how to get a copy of the full report should you wish to read it.

What will happen if I want to stop taking part?

We will only use the information you have given us if you say we can. You can withdraw from this study at any time, without explanation. Results up to the period of withdrawal may be used, if you are happy for this to be done. Otherwise you may request that they are destroyed and no further use will be made of them. As the data you will provide will be anonymised, it is only possible to withdraw results prior to anonymisation.

Who can I contact if I have further questions?

If you would like further information about any aspect of this study please feel free to contact the chief investigator or academic supervisor, Dr Kate Bennett or Dr Jo Harrold or, via email at: k.m.bennett@liverpool.ac.uk or Harrold@liverpool.ac.uk or via telephone on: 0151 7941146/0151 7941410

Further support and advice

Throughout this study the researcher will be sensitive, non-judgemental and provide support and reassurance. However, the researcher is not trained to provide professional advice, nor to diagnose or treat any problems you may have. For this reason, we have provided a list of relevant local and national agencies that will be able to offer professional guidance and support should you feel you need it. For any medical issues relating to you or your baby, your GP, midwife or health visitor is always the best person to speak to. Your GP will be informed of your participation in the study with your permission.

National Support Groups

PANDAS – Pre and Postpartum Depression Advice and Support

Pandas Foundation is the leading UK charity in supporting families suffering from pre (antenatal) and postpartum depression. Offering sufferers and their families support and advice to help aid their recovery.

- Telephone: 0843 2898401
- Phone lines are open 9am till 8pm. Mon – Sun
- Website: www.pandasfoundation.org.uk

MIND

The leading mental health charity in the UK

- Telephone: 0300 123 3393
- Email: info@mind.org.uk
- Website: www.mind.org.uk
- Phone lines are open weekdays 9am-6pm

Anxiety UK

Anxiety UK was established to promote the relief and rehabilitation of persons suffering from agoraphobia and associated anxiety disorders, phobias and conditions, in particular, but not exclusively, by raising awareness in such topics. Also provides support for pre and postpartum anxiety.

- Telephone: 08444 775 774
- Website: www.anxietyuk.org.uk
- Phone lines are open Mon-Fri 9.30-5.30

Family Lives

An organisation providing immediate help from volunteer parent support workers

24 hours a day, seven days a week.

- Telephone: 0808 800 2222 (textphone: 0800 783 6783)
- Website: <http://familylives.org.uk>
- Opening hours: 24 hours a day, 365 days a year

Gingerbread: single parents, equal families

Help and advice on the issues that matter to lone parents.

- Telephone: 0808 802 0925
- Website: www.gingerbread.org.uk

National Childbirth Trust

A leading charity for parents, supporting people through pregnancy, birth and early parenthood.

- Telephone: 0300 330 0771
- Website: www.nct.org.uk
- Open every day, 8am-Midnight, including bank holidays

National Breastfeeding Helpline

An independent source of support and information for breastfeeding women and others.
Run by the Association of Breastfeeding Mothers and the Breastfeeding Network

- Telephone: 0300 100 0212
- Website: <http://www.nationalbreastfeedinghelpline.org.uk/>
- Open 9.30am – 9.30pm every day of the year

Local Support Groups

Healthwatch

Healthwatch will give people a powerful voice locally and nationally. At a local level, local Healthwatch will work to help local people get the best out of their local health and social care services. Whether it's improving them today or helping to shape them for tomorrow. Local Healthwatch is all about local voices being able to influence the delivery and design of local services. Not just people who use them, but anyone who might need to in future.

- **Healthwatch Blackburn with Darwen**
 - Telephone: 01254 504985
 - Email: info@healthwatchblackburnwithdarwen.co.uk
 - Website: <http://www.healthwatchblackburnwithdarwen.co.uk/>
- **Healthwatch Lancashire**
 - Telephone: 0300 303 8811
 - Email: info@healthwatchlancashire.co.uk
 - Website: www.healthwatchlancashire.co.uk
- **Healthwatch Liverpool**
 - Telephone: 0300 77 77 007
 - Email: enquiries@healthwatchliverpool.co.uk
 - Website: <http://www.healthwatchliverpool.co.uk/>

BAMBIS – Babies and Mums Breastfeeding Info and Support

Liverpool's breastfeeding peer support service. A group of volunteers from the local community who offer a breastfeeding support and information service to pregnant women and breastfeeding mums. The volunteers are mums that have breastfed their own babies and have received formal training in breastfeeding peer-support. They work both in the hospital and in the community.

- Telephone: 0151 702 4411
- Website: http://www.liverpoolwomens.nhs.uk/Our_Services/Maternity/BAMBIS.aspx#contactFeature

WHISC – Women's Health Information and Support

WHISC is a Liverpool based charity which aims to promote women's health by providing information, training and support to women and their families.

- Telephone: 0151 707 1826
- Email: whiscdropin@btconnect.com

F.A.B – Families and Babies

Commissioned by Central Lancashire NHS, we provide a breastfeeding peer support service across Chorley, Preston, South Ribble and West Lancashire. Families and Babies (continuing the work of Little Angels) have worked in some areas within Central Lancashire for 4 years but in March 2011 we were awarded a 3 year contract with the NHS to provide breastfeeding support across the whole area. Our team includes hospital peer supporters, community peer supporters, peer support admin and volunteers.

- Telephone: 01254 772929
- Website: <http://www.familiesandbabies.org.uk/>

Specialist Infant Feeding Team Blackburn with Darwen

A breastfeeding support group for mums and their families. A great place to make friends and find mutual support. The group is supported by Sue or Donna from the Specialist Infant Feeding Team from the hospital so some-one is always at hand to help with any concerns.

Run by: [Livesey Children's and All Age Centre](#)

Telephone: 01254 732673

Individual Interviews – Topic Guides

T1 – Exploring maternal anxiety and infant feeding antenatally

Thank you for taking the time to talk to me today about your experience of being an expectant mother. The interview today will be split into two main parts: the first part is for me to understand any anxieties and concerns you may have faced throughout your pregnancy. The second part is to explore the perceptions that you have about breast feeding and formula feeding. I am interested in your own experiences and views which may be different from other mums to be. There are no right or wrong answers and you won't be judged in any way on the basis of your response, so please tell me what it has been like for you personally. I would like to record the conversation with your permission. We will be able to arrange an opportunity for you to hear the recording if you would like. Should you wish to stop the interview at any time, or take a break, please let me know. Because the topic of our discussions is sensitive I can assure you that it will remain confidential. In the rare case that there are any disclosures about issues such as safeguarding, exploitation, harm, or drug or alcohol abuse, I may have to break confidentiality and contact your Health Care Professional so that the appropriate course of action can be taken.

Section A – Demographics

I would like first of all to ask you some brief factual questions, and then ask you some more open questions about your experiences of being pregnant.

1. Can I take your surname? When were you born? Where were you born?
(Ethnicity) NOTE: gender
2. Who do you live with?
3. Do you work, or did you work prior to your pregnancy?
 - 3b. (If yes to 4a) What was your job?
 - 3c. (If husband/partner at Q2) Does your husband/partner work?
 - 3d. (If yes to 4c) What is your partners/husbands job?
4. What is your highest completed education level? GCSE/A Level/Undergrad/Postgrad?
5. Have you ever been diagnosed with a mental health issue?
 - 5b. Would you mind telling me what the problem is/was?
6. Have you had any problems with this pregnancy?
 - 6b. Would you mind telling me what the problem was?

NOTES – Weeks Pregnant, Baby's Due Date

Section B – Anxiety

I would first like to ask you about **your own perceptions of anxiety**.

7a. How would you describe anxiety - what is your understanding of the term?

7b. What, if anything, can make you feel like this?

Prompts: Work?
 Finances?
 Does this happen often?
 Can you tell me more?

7d. What helps?

Prompts: How do you relax?
 Is there anyone you talk to?

I would now like to ask you about what it was like for you **before** you became pregnant:

8a. What was life like?

Prompts: Work?
 Interests?
 Home life?

8b. Can you describe a typical day for me?

Prompts: What would you do?
 Where would you go?
 Who would you see?

8c. How was your mood generally?

Prompts: Did you feel good or bad?
 How were you with other people?

8d. What, if any, concerns did you have?

Prompts: Work?
 Finances?
 Partner?
 How did these make you feel?

I'd now like to move on to your experiences **during** pregnancy:

9a. How did you feel when you found out you were pregnant?

Prompts: Were you excited? Scared? Shocked?
What did you do?
Any immediate concerns?

9b. How has your pregnancy been up until now?

Prompts: How has your physical health been?
How has your mood been?
Have you had any worries or concerns?
All ok with baby?

9c. What have been your main positive and negative experiences?

Prompts: What have you really enjoyed?
Anything that you really disliked?

9d. What do you feel are the main anxieties that women have about being pregnant and becoming a mum?

Prompts: Have you experienced any of these?
How do they make you feel?
What helps?

9e. What do you think are the biggest changes that occur as a result of being pregnant?

Prompts: Have you experienced these personally?
How do these changes make you feel?

9f. How do you think being pregnant can affect a women's mental health?

Prompts: Do you feel your mood has changed?
For better or for worse?
Can you tell me more?

Before moving on to the next stage of the interview, I'd like to ask you about how things are **at the moment**:

10a. How have you felt about being pregnant in the last week?

Prompts: How has your mood been?
Have you had any specific worries?

Do these anxieties affect you physically?

10b. How do you feel about having your baby?

Prompts: How do you feel about labour?
 How do you feel about meeting your baby?
 Do you feel prepared for baby coming home?

10c. I'd also like to ask about the kind of support you are receiving at the moment (Ask participant to fill in a copy of support diagram):

Prompts: Informal, e.g.Partner, Friends, Family, Neighbours. Formal,
 e.g. Midwives, Doctors, Antenatal Classes, Childrens' Centres

Section C – Infant Feeding

I would now like to move the focus of the interview to infant feeding and ask you about your views and experiences of breastfeeding and formula feeding.

I'd like to start with asking you about your **past experiences of infant feeding:**

11a. Are you aware of how you or other close family members were fed as babies?

Prompts: BF/FF?
 Have they talked to you about their experiences?
 How may this impact on your choices?

11b. Have friends or family with children chosen to BF or FF?

Prompts: Did they talk to you about how they made that choice?
 Have they discussed their experiences of BF/FF with you?
 Positive/Negative/Problems?

11c. How may these past experiences affect your infant feeding decisions?

I would now like to ask you about **your own knowledge and opinions** of infant feeding:

12a. What do you know about breastfeeding and formula feeding?

Prompts: How do you know this?
 Have you received any information?
 Have you researched BF and FF at all?

12b.What are your own views on breastfeeding and formula feeding?

Prompts: What do you feel are the benefits/limitations to BF and FF?
 What has influenced your opinion?
 How do you think these views correspond with other pregnant women in the community?

12c. What do you think may influence how a woman chooses to feed her baby?

Prompts: What factors may influence you?
 What factors after birth might change a woman's mind?

12d. What infant feeding support do you anticipate to receive when you have had your baby?

Prompts: **Refer to support diagram (if someone new, add them as infant feeding support)**
 Partner/Family/Friends/Community?

12e. Have you any had any concerns during your pregnancy about feeding your baby?

Prompts: Are these ongoing concerns?
 What helped with these?

13. Is there anything else you would like to talk about before we end the interview?

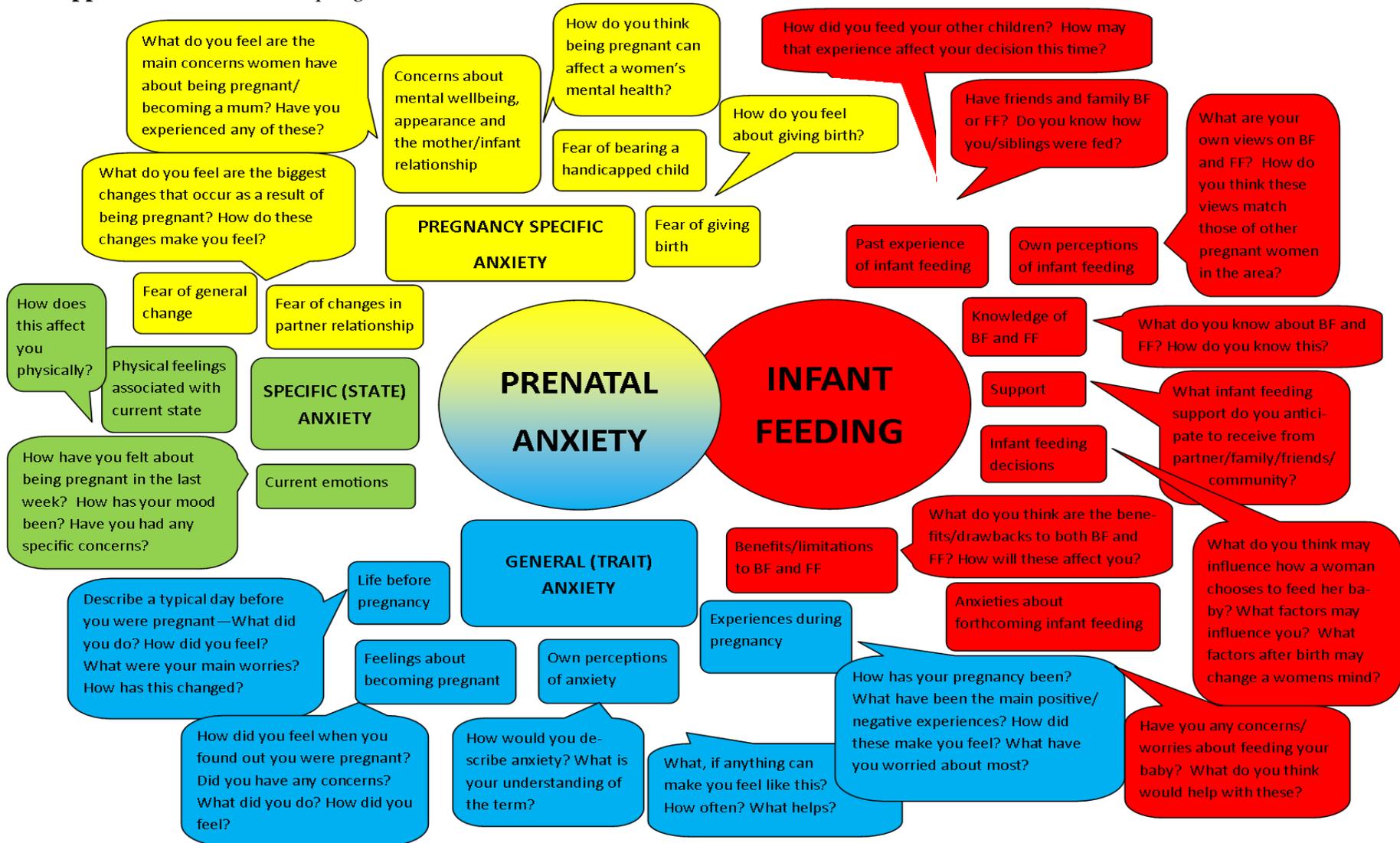
Anything I forgot to ask?

Things you think I should be asking about?

How should I ask these questions?

Confidentiality and use of results

Appendix 10: Prenatal topic guide brainstorm



Appendix 11: NRES Ethical Approval Letter



Telephone: 0161 625 7434

18 February 2014

Dr Kate Bennett
Reader
University of Liverpool
Department of Psychological Sciences
Eleanor Rathbone Building
Bedford Street South, Liverpool
L69 7ZA

Dear Dr Bennett

Study title: The impact of maternal anxiety on acute infant feeding outcomes and perceptions of infant appetitive behaviours.
REC reference: 14/NW/0031
Protocol number: UOL001001
IRAS project ID: 142674

Thank you for your email of 12 February 2014. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 11 February 2014

Documents received

The documents received were as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
GP/Consultant Information Sheets	1.0	18 February 2014
Participant Consent Form	1.1	12 February 2014
Participant Information Sheet	1.1	12 February 2014

Approved documents

The final list of approved documentation for the study is therefore as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Advertisement	1	08 January 2014
Evidence of insurance or indemnity		
GP/Consultant Information Sheets	1.0	18 February 2014
Interview Schedules/Topic Guides	1 antenatal	
Interview Schedules/Topic Guides	1 postnatal 1	
Interview Schedules/Topic Guides	1 postnatal 2	

Appendix 12: *Copy of a time one transcript*

Ok so thanks for taking the time to talk me about your experience in being an expectant mum the interview split into 2 main parts the first part is to explore any anxieties or concerns that you might face throughout your pregnancy and the second part is to for me to explore the views you've got about infant feeding, I'm interested in your own experience and views that might not be the same as other mums to be, there's no right or right answers and you won't be judged in any way, so please tell me what it's been like for you personally, I'd like to record the conversation if that's ok?

Yes, fine.

And we'll be able to arrange and opportunity for you to hear the recording if you'd like, I hate the sound of my own voice (laughs)

Yes (laughs as well)

I'm struggling transcribing it at the moment, I'm like cringing every time that I speak, should you wish to stop being interviewed at any time, you can take a break, if you need the loo or anything just let me know, I can pause it, because the topic of our conversation is sensitive I can assure you it will remain confidential, in the rare case that there are any disclosures in issues such as safeguarding, exploitation harm or drug or alcohol abuse I might have to break that to contact a member of your healthcare team, which should be the case in your line of work (unknown due to laughing) so I'd first like to ask you some brief factual questions, and then ask you some more open questions about your experience of being pregnant, could I first take your surname?

H*****w

When were you born?

The ninth of the tenth eighty one

Where were you born?

Preston Hospital

Lovely, and who do you live with?

Just Paul my partner.

And do you work?

Yes, social work yes

Sorry, can you just expand a bit on what your job is

My job, yes I'm an advanced social work practitioner on the child protection team in Blackburn, so working with children and families.

And does your partner work, I know it's hard isn't it?

(unknown laughing)

He's a joiner yes, he's works for a firm in Blackpool, near Blackpool.

What's your highest completed level of education?

Master's degree.

Have you ever been diagnosed with a mental health issue? And have you had any problems at all with this pregnancy?

Nope

Lovely, so we're going to move on and ask you about any anxious symptoms you've might of have experienced, but I'd first like to ask you about your own views of anxiety, so how would describe the term? What's your understanding of it?

It makes me want to give loads of other words like nervous and all that kind of stuff, but I guess it's more than that and it feels, I have experienced it when I think about it, when I was a newly qualified social worker and the job at the time where I worked was really unsupported, it was a really stressful team, and I used to feel sick every morning before I went to work and sometimes I was physically sick.

Really? (shocked)

Yes and to the point, and it's only just come and you know like I was saying I'm really not an anxious person but to the point where I once went to the doctors to say I just can't be pregnant, but have I thought have I got a hernia or something, it was quite funny when I explained she said "well what do you do, what is your job?" and I told her and she laughed and said "no, it's anxiety that" and I knew it was and I was so worked up about the cases that I had, the time that I had to do it. I'd wake up in the middle of the night and feel like my body was just stiff, I couldn't sleep you know?

Really? (shocked)

Yes and it was due to work, and almost having that understanding that it was anxiety helped me deal with it, yes so yes so I do think I have an understanding of anxiety in that it's a level of stress I suppose.

Yes

That's the best way to describe it I think

Like prolonged?

Yes, four o'clock in the morning every night, wake up think about the same thing and I've had to come up with my own strategies to deal with it.

We're going to ask you about those in the next question (unknown speech due to laughing)

Tell all the newly qualified social workers what to do now.

Does anything make you feel like this, this could be generally prior to your pregnancy, or during your pregnancy so I've got some prompts but I'll let you go?

Anything that makes me feel anxious, there are elements of work, certain cases that might make me feel anxious just the level of responsibility for making decisions, but on the whole on I would say I'm not a particularly anxious person anymore.

So you were involved in the (unknown) of my interests and you involved in the safeguarding so removing children from

Yes

Right

Or more scarily, leaving them there sometimes so things can, the level of those decisions, do you remove a child or leave them at home is you know to make sure you're doing the right thing for the child, because removing a child is huge, I have to say it's rare now to have sleepless nights

Do you think that's because you're so used to it?

Yes, used to it but not so much as desensitised, more like I've worked out ways of being able to switch off.

I guess you trust your own opinion more as you've gone through.

Yes

And know you've done the right thing

Yes and getting the right support and challenge and making sure that managers are checking out well what about this, have you thought about that and that's good on the team.

Yes I can imagine, anything else that can make you feel anxious?

Erm, not that I can think of

You've got fine answers

I suppose that yeah that I think Paul would probably say that I'm more anxious than I say I am but I think it's just wanting to make sure, but I am, we are quite comfortable I suppose, so I guess an anxiety is making sure that I'm on top of it and things like that

Yes

I wouldn't say that it cause me much stress

Does it happen often if you do get anxious?

No, more so in pregnancy than in...

What kinds of things have made you anxious during pregnancy?

It could be anything really and for example we were going on a night out, normally that wouldn't cause me any anxiety what so ever but I just felt that level of ohh I just don't quite feel right.

So it doesn't have to be based around

Yes and it's not anything to do with pregnancy as such it can just be a not quite right feeling and I can feel that's it's hormonal rather than me

Yes

Which is probably like not specific to anything in particular...

How do you relax?

Used to be a glass of wine (laugh)

I'm guilty and all

I like to have a bath, bit of a cliché, just be at home pottering around I quite like to see my friends, go to my mums a lot yes just sort of the norm you know it feels normal to me that just spending time with people

Sometimes that norm helps you a lot

Yes

Doesn't it yes, getting back down to basics, anyone you talk to specifically you mentioned your mum

Yes my mum yes I'm very close to my mum, and handful of girlfriends colleagues, I've missed a girl from work who sits opposite me, these past three months, she's just had a baby

Aw lovely

So we've kind of shared a lot of time

That's really nice

Yes it's been really good so she's now on maternity leave so I'm missing her a little bit

Have you met the baby?

Yes it's absolutely lovely and it's quite lovely that I really felt like I knew him because I'd kind of spent the whole pregnancy with her

Yes

So yes I talk to her a lot really and because she was pregnant, she got it oh this area, am I going mad? Do you did you have this did you feel like this, yes completely

Yes it's lovely

It just reaffirms sometimes that you're not going mad

I can imagine the kind of the ailments

So I talk to her less now just practically but my mum is predominantly my support really

(Inaudible laughter) What about him?

Yes I do talk to him but probably not in the same that you talk to other women I guess

Yes

Not that, he tries but probably doesn't understand it in the same way

Yes

Then I get upset because he doesn't understand it and then it winds me more up then because think you've not seen why I've been upset in the first place

And now you don't care

And I'm now not upset that by that anymore I'm upset that you (inaudible laughter) and then I feel bad because that I know that he's trying and I think and he'll get himself all worked up then

They're just not the same breed are they?

No

(Inaudible laughter)

Well its hard isn't it when you're not so I and try but then I think why am I trying to rationalise this when he's not so

(Inaudible laughter)

I'd like to ask you what life was like before you became pregnant and then we'll move on to your experiences during pregnancy, so what life was like?

Exciting, well it's been a bit of a roller coaster when I think about it because Paul moved in with me a couple of years ago, I have my own house with the two lodgers Paul then moved in you know we'd been together for a couple of years Paul moved in so we were almost

living in a student house, you know me and Paul had the top floor there was Joe a lad and Natalie a girl so we were all living in this house we then bought the house that we are in now and it was a bit manic then so Paul would finish work Paul would come here and I'd come home and start making tea you know things were sort of busy but exciting.

Was it a while before you moved in together?

Yes I think we got the keys in the September last year and then we just had to get one room ready because then I'd got a, we'd rent out the other house so I had to get out of that house ready for them to move in for Christmas so it was just all go

Yes

And within that I got pregnant not like I say quickly so not really like, it got to Christmas.

Was it something you wanted?

Yes, yes definitely, it was definitely planned I've been surprised how many people have asked me, a lady at the airport sat chatting "oo you're pregnant ooo, well was it planned?"

(in audible laughter)

Oh no I can't you know but yes it was definitely something we wanted probably more me, I'm older than Paul, I'm thirty two and Paul is twenty five, so he'd of probably waited until he was a bit older but then we knew that would mean I was older

Yes

So there was a bit of a compromise but yes

With me it's the other way round, I'm twenty eight and he's forty

Right so I want another one but I don't want one yet

Yes

But I can't wait much longer because we don't want him to be too old

Yes that's exactly how we saw it

It's a bit like well what I do?

Yes

(Inaudible laughter)

But then like for me I had a couple of friends that were struggling, really struggling she's just found out that she's pregnant as well

That's nice

That's my best friend she's wonderful, but yeah I knew that they were struggling and I thought I don't know how long it's going to take me so let's see what happens yeah, but within that month it was like oh my god

Your husband must be fertile.

Oh yeah

(Inaudible laughter)

It was really funny; don't come near me (unknown)

(Inaudible laughter)

What interests did you have prior to pregnancy?

I think it was the house really, getting the house sorted was taking up a lot of time so it was sort of daydreaming about the house really, that seemed to be the thing but, I'm quite sociable, I'll see friends a lot and family don't really have a hobby, Pauls really into motor bikes and says I need a hobby but I just busy myself with people all the time, that was my main interest I suppose

Now you've got your aga.

(Inaudible laughter)

I wouldn't call it an interest

(Inaudible laughter)

You know they're not

(Inaudible laughter)

I'll come back when you've been

(Inaudible Laughter)

You've touched on your home life, spending a lot of time getting this place done, are all your plans in place now?

Getting there

Yes

It's exciting, it's been nice to see it sort of develop and stuff.

I'd love to do a big project like that I think I would kill him

Well it's been difficult definitely, like we are secure as a couple but it's definitely testing, you know just like the tiredness and like not communicating about stuff and yes, it's been tough

I think I'd find it harder than having kids with him, seriously because your kind of putting you're trust in him because I'd quite like my house

(Inaudible laughter)

It's hard definitely

Yeah I bet

But when we get through it and we move on with it

And you've both got something you've done together

Yes, and we're good you know we'd have a blazing row and then ten minutes later we'll be friends again and it's forgot and there's no

Yeah I suppose it's not deep when you're arguing over a window is it?

Yeah yeah

(Inaudible laughter)

Could you describe a normal day for me prior to your pregnancy, so what would you do, where you go?

Well work is obviously, a work day would be finishing work at whatever time and that could be five on time six, seven you know it could get late

Is it quite irregular then?

Yeah it depends if something comes in but also its good being in a relationship because being single when your single when you think it sounds it, not in a depressive way but you've got nothing to come home to so you might as well catch up with my work so now can force myself to come home because you know I don't want to be sat at work when I know he's at home so but yeah week nights tend not to plan a lot of things because I can end up getting caught up at work, so would finish work and this is probably pre house as well come home have tea watch a bit of tele might go to my mums one night me and Paul might go out for tea one night so that would be midweek weekend it's probably drinking really, going to the pub or you know going around to friends or something like that

Socialising

Yeah, I love a glass of wine. How was your mood generally prior to pregnancy, quite an upbeat person?

Yeah, yeah positive, upbeat, have the occasional wobble you know but all hormonal really.

Would you say it was mainly work related prior to pregnancy?

No, not really not anymore rarely does work bother me now to an extent that it would upset me or there's the odd case or odd situation that I have to really talk to someone, you

know my mum would be cause she's really interested, and just having to talk through somebody, but that's quite rare but now I'm just generally quite a happy person get on with things.

And you've got plenty of friends and stuff like that?

Yeah, really good support network

What, if any concerns did you have prior to pregnancy then?

About pregnancy?

No this is just prior so

Generally, ohh now then concerns...do you know, not a lot really

Pretty happy go lucky

When I think about it you know like the house and having two houses, is almost setting myself up for concerns but I kind of like the challenge of stuff like that so you know it would have been easy to sell my old house and buy another one but

You was ready to move

Yeah, I quite liked the idea of doing a house up and renting one out and trying to better myself in that sense, kind of nothing concerning me that you know I suppose like I suppose the only concern would be like the health of family and friends you know just that kind of, you know my grandpa wasn't very well and that kind of concern and then I worry about my mum and is she managing all right but nothing deep and worrying.

That's constantly

Yeah, yeah I think that would be classed as normal you know like

I worry about my mum

Yeah, it's that kind of feeling so

I'd like to move onto experiences during pregnancy, how did you feel when you found out?

Excited, happy

Where you?

Yeah, I really was

Immediately?

Yeah, definitely it was two days before Christmas Eve when I found out

Ruins Christmas wine though

Oh, did it ever and so many people guessed that I wasn't going to tell anybody but so many people guessed because they couldn't "but you're not drinking at all?!"

(Inaudible laughter)

Because people kind of knew that we were getting ready anyway, but I mean it was interesting before you know talking about certain cases there was a little girl that I worked with and things weren't going well for her and that was really bothering me because it was a case I'd worked with for a long time and that day I was taking her out for the day, like it rarely happens that you would spend a whole day with a child but things weren't good at all and that morning I found out that I was pregnant just before I spent the day with her so it was quite a strange day, that I was with this little girl thinking, I'm going to have a little girl of my own, like it was my own child but yeah really happy and a bit blown away at how quickly it had happened but really excited and hoping that Paul was as excited as I was

Did you tell him straight away?

Yeah he was with me when we did the test

Oh was he?

Yeah yeah

How did he react?

Probably more fear, I think I saw fear in his eyes that day and within about two seconds of lots of head rubbing said "ohh I'm going to have to sort this house out aren't I?" but I knew that he would be alright with it, because he would of made sure that it hadn't happened

I f he didn't want it to

I he didn't feel alright with it

Yeah, our Ste he, when we found out with Lucy because we were expecting about a year's gap and he didn't speak for a full weekend he looked like grey all weekend and he wanted me to rub his arm

I think you know there was a bit of anxiety I guess, thinking about anxiety a bit like I had to check out a lot, are you sure you're alright are you wanting to get something back to reassure with it, even though I knew I was alright I was a bit like I hope he's alright, I hope he's happy I hoped it's not freaked him out to much and so a bit of that.

Yeah But that's quite natural isn't it?

But it was lovely as well because it was the first year that my granddad wasn't going to spend Christmas with us and I knew we normally have this big Christmas all-round the table at my mums and my grandpa was in a care home and it was just going to be and my brother was working and I just knew it was going to be, we were going for a curry you know like so I knew my mum would just be absolutely over the moon.

Oh that's lovely

Couldn't wait to tell her because I knew that it would lift it, it would make Christmas a completely different Christmas.

Did you tell her in person then?

Yeah yeah

Aw that's really nice

Christmas eve we told her, aw it was fab she was like literally jumping up and down it was lovely

Aw that's really nice

What did you do straight away?

When we found out?

Yeah

Well it was like I say I took this girl this little girl out so I can't remember what Paul did I think he just went and fiddled with his motor bike trying to not think about it I got back from work and do you know I can't remember what we did that night I think we spent a bit of time like trying to get our heads around it and we perhaps wouldn't of told people as quickly as we did but I was so determined that my mum knew before Christmas and because we were telling my mum we had to tell Paul's mum so Christmas eve was lovely because we just did the rounds

Aw that's nice

We went to my mums and his mums and his dad and then my brothers and then his you know we just.

That must have made it Christmas

It was like spreading Christmas cheer

That's really nice

Yeah

Any immediate concerns

No erm no just the general concerns that everything goes ok

How's it been up until now?

Really good I would say

How's your health been?

Great, fine felt healthy and happy all the way through I've had, this is, I like this as positive outlook this at points where I was throwing up early on and morning sickness I was thinking ohh I love this, it means I'm pregnant. So that's where I was at thinking ohh it's a bit rotten being sick but actually I'm quite it's quite good. I was surprised at how much it didn't bother me because I knew I wasn't poorly it was all related to pregnancy.

Yeah

So it was kind of a nice little reminder really.

And it's almost like you know everything is working and that you're normal.

Exactly

Don't you?

Yeah it was quite reassuring in some respects, so I had the morning sickness well it was night sickness, get home from work and start throwing up

That's worse than morning sickness, it's horrible

Well it think work was really good for me because it took me mind off it and I'd get in the car and then start retching and I thought it was almost like my body going uhh right you can be sick now and it was just not like in a middle of a meeting, so I had all the sickness the odd headache and emotionally I have been different, you know I have like hysterically sobbed at programs whereas, I would still cry because I do cry at things on television but they'd turn into full bodied sobs

Yeah

I feel like emotionally I've been a bit but I know it's hormonal so I've not been worried about my mood because I've known it's I'm just rolling with it.

And has it been up and down?

Yeah definitely but I'd say on the whole really positive and I would say I've enjoyed it.

Have you?

Yeah

That's good

That's one of my next ones as well. Have you had any concerns on the way through, at any point?

No, not I rationalise things out so like you read all the apps don't you? All the magazines everything and I haven't, they say you can start feeling movements, theses flutters from about sixteen, eighteen weeks and I still wasn't feeling anything by about nineteen and you desperately thinking ohh what was that, was that something, uh probably not but even though I knew everything was probably alright there was just that little thing, like I spoke to

my friend who's just turned pregnant and I would say that I feel, although I'm not anxious, I do feel that I'm ticking off milestones, so I got to twelve week scan, yeah right great it's got to that then I got to the twenty week scan and I still hadn't felt anything so that was a bit like I hope they tell me that everything is ok

Yeah that's always the biggie isn't it?

It's just that telling me everything is ok, why can't I you know she said "ohh the baby's moving around it's a little girl" . I was like I can't feel it. She should have told me that my placenta was at the front, she didn't tell me that, even though I thought, Inaudible. Then I could start feeling the kicks, I thought great, then I get to 25 weeks oh no twenty four, cos my sister had a baby at 24 weeks, and he is now five, so now I feel like every week, oh a bit stronger now, I don't think it is anxiety but that like if she is born now, she would be, so I..

Yes I would be thinking like that, definitely. How many weeks now?

Twenty nine on Friday. So I feel like, next week it will be like thirty weeks, so like out with the twenties, yeh they are not concerns as such, they are just reassuring stuff for myself.

Yeh but with a forward facing placenta you sometimes don't feel anything, can't you like a lot. Yeh nice feeling, everything been okay with baby? Everything been fine?

Yeh.

What have you really enjoyed about being pregnant?

Erm, oh gosh, I don't know, I've said I have enjoyed it, and I don't know what it is. I think it is the whole thing really, erm, I suppose all the bits I have enjoyed have also been the bits that I found difficult in that, is all I talk about, it's a lovely life changing thing, and it's like, I talk to people that aren't pregnant who are interested, people who have had children and want to talk about their experiences, so all that has been really nice and people are happy for me, you know and that's nice.

And it is all about you innit?

Yeh like the best bit and also the worst bit in some respects, cos you just think, I have got a friend who really all she ever talks about is herself and went to see her to tell her that I was pregnant and " oh yeh that's great", so anywaymuch laughter... and it was great, nothing has changed for you at all, you want me to talk to you about your relationships and I am more than happy to do that, it was refreshing, but it is also lovely that people are really like ... for me and stuff, so I think, yeh that is probably the bit I have enjoyed the most, and I really love it when me and Paul sit and talk about what we think she is gonna be like and what.

It's lovely.

And it's really make me, not to sound soppy, but really love him, you know, he is interested and excited and even, it is like the relationship, but it is nice as well, guess it, I have quite

enjoyed security of thinking, this is it now, me and him now, I know we are not married, but to me I know this is the biggest commitment you can have with somebody.

It is far bigger than marriage.

Massively so, you don't ever leave that person, even if you split up.

We are not married and I used to think I would love to get married, now I have got my girls rather than the other way round, I think it is a nicer, I don't know it seems a bit more right, so.

But yeh I have enjoy that, I have enjoyed people being happy for us and I have enjoyed our relationship sort of changing a little bit, becoming really secure.

That's nice. Anything you have really not liked?

Erm, let me think, having to go to work, just go to Yoga, do crafts around the house, I suppose the emotional roller coaster, the hormones definitely. The getting upset for no reason, you know getting upset at Paul when he doesn't deserve it, or then sometimes he does deserve it and I am feeling frustrated, so yeh the hormones bit.

What do you feel are the main anxieties that not maybe you specifically that Mums have about being pregnant?

Generally, God in my line of work, could be anything,

You see it all, don't you?

Yeh, I suppose I think health really of the baby and that everything is okay, I think is a big one. I think that and finances and is everything okay with the baby.

What about becoming a new Mum? What do you think are the main anxieties?

Can I do it? That responsibility I suppose and I guess that is a big of a one for me, that little baby, that little vulnerable baby that is wholly dependent on you, erm and just I think for me, not too much pressure on myself, but I deliver training on attachment and bonding and you doing this , responding to your baby's needs and all this, and I am thinking, there's me, I do think that kinda, a lot of Mums put pressure on themselves to do too much and be too good and whatever.

When you are pregnant you don't kinda know. You have got this idea, but you don't.

I think that first night feeling, I can completely see what on earth like what am I going to do now.

My second time were like same, got another one what is happening.

Erm, I think I would feel very sorry for Mums who are on their own, I think it has made me really like I would hate anything to happen to Paul now, that is probably like an anxiety if I let it, he goes out on his motor bike and I just think, oh my God, how, I couldn't bear the

thought of not having him around and my child not having a Dad growing up and all that kinda stuff so it is kinda of, I think the people around you become a source of concern of, how I am I going...

I can completely identify with that, somehow they become more important.

Really really important for me and for my baby. I really, I mean my Dad died when I was younger and I just think I don't want my baby to grow up without a Dad, so like his life has become pressure to me now.....too much laughter. It's like you are just trying to stop me going on my motor bike, suspicious mind.

What do you think are the biggest changes that occur as a result of being pregnant? Not just the ...

Erm, physicals, the attention on you, if you are not confident, I think could be quite draining in lots of ways, cos people just want to talk about it, especially when you are physically showing more, I think that is a big change and you change your mind set, I hope people then become more aware that there is something else dependent on you, rather than, you that's where my job comes in, but I guess that is one of the things really, that you are becoming responsible and it does like when if I ever think it, oh my God, this is it, can't just do what I want to do ever again now, it's got to like we can't plan a holiday, because of God what do you do with a baby, do they still go abroad, you know all this planning around the baby, apart from physical ones, probably the biggest changes for me.

We have gone from holidays like Mexico, Cuba to like a static caravan in France. There are no flights involved. But I enjoy it more honestly, yeh, it is what it is all about.

But I think that is, your lifestyle changes doesn't it and I am trying to get Paul to start drinking wine cos like we won't be going out as much, staying in sharing a wine or two, but that kinda thinking right it won't be just, shall we go to the pub and have a pint it will be getting baby sitters, planning and then not being bothered, cos you have been up all right.

My Mum asked me last week, are you and Ste ever gonna go out? Couldn't be bothered, quite happy.

I feel like I am growing old.

It is harder work sometimes getting them somewhere, then you have got to be up early, like I'd sooner stay at home.

Lifestyle changes, I think will be the big one for me.

But kinda like, I don't miss, at all, I am quite happy with.

And I thought I'd really missed it being pregnant either

It is surprising isn't it? You think oh, I don't think I could do that.

Considering, I am not an alcoholic, but weekends alcohol would be involved at some point, thought I would really struggle but there was the odd time, like having a barbeque the other week, thought, dunno, but then I was in bed at half ten and woke up .

Having one of them weekends. And if you do it when you have got the kids, like, hell on earth.

Bad enough when it is yourself.

Yeh it puts you right off, it does. How do you think being pregnant can affect Mum's mental health?

Oh goodness me, that is massive, what a question? Yes I suppose the worry, a baby coming and could stress you out in terms of the baby, being prepared for the baby, having everything, consumerisms, must have everything, and when I think, well actually you can manage with very little, there is all the pressure to have this that, you must have this fancy bit of kit and if you don't your baby is going to suffer, so I can imagine that, you know being a source of anxiety. A source of loss potentially, that previous life, you know, can affect mental health.

You haven't done so bad so far.

Erm, and like I said earlier, about domestic violence, depending on your partner's response to pregnancy could have an impact, cos they are either your source of support or your source of stress.

If there is already stress there, it can really rock.

And I can imagine why, lots of men would be jealous, because there is so much attention on the woman, and I have been disappointed at the midwife's response to Paul in it, I think they could have included him more

It's like they like doing it?

Like really surprised, the first appointment when we were so excited about going, booking an appointment, you know what do they call it, and there was two midwives, I think one was training or whatever, when and I had to go and give a sample, went to the toilet, came back, off we went and afterwards, I said what did they talk to you about while I was in the toilet? He said nothing, they spoke to each other and I was like again, why they could have said, how is she, how are you and are you excited about being a Dad, but no they didn't and it has continued, they don't ask how are you getting on Paul or he sits in this seat that is completely separate, so I can imagine he is not a jealous person, I can imagine some Dads, thinking, in difficult relationships that it is all about her , so I can imagine that being a source of stress and upset I guess. I can imagine as well, like I said, my Dad died when I was younger, I feel sad that my Dad is not around, if I had not got my Mum, I think it would have really been, when you are hormonal and emotional anyway, not have somebody really special in your life, because it is so important to you, it would bring that factor for you

And it is like it comes full circle, doesn't it with your Mum, think when you are pregnant? Then you have got your baby and it really changes, well it has for me, it has brought like me and my Mum a lot closer.

Cos you talk to your Mum about her experiences of expecting you. Like you said full circle, so I know that for some women maybe have shared a good relationship with their Mum and then didn't have their Mum, it could be upsetting for them.

Before moving onto the next stage, I would like to ask you how things are at the moment. So how have you felt about being pregnant in the last week?

Excited, I feel like I am counting down now, I think the last few weeks, but again the last week, I have found it physically more difficult, and a bit frustrating in that just picking things up of the floor, I want to paint the house and I am slowing, I have said the words a lot to people, that I am getting my head round the fact that I need to just slow down and I think naively I thought I would be carrying on the same way throughout, oh I'll be fine, whereas I can't physically do what I want to do even though I am mentally not tired, I just physically can't do it, so I wouldn't say it is bothering me, but that was something that I had to get used to this week, but then I am thinking that means, I have started to feel this last week, I actually feel pregnant now, it is like now, I have got a few weeks left at work, I am going to the yoga thing, you know I am actually doing things, I am thinking about buying stuff for the baby, it is started to feel like it is not a million miles away.

No it will come round soon enough, like I'll be interviewing you again, you'll have baby. Have you had any specific concerns that are central to the last week at all?

No, nothing, just work, just making sure I have got everything covered.

When do you finish?

First of August, so it is seven full weeks, just making sure, that I don't want to leave anything in a mess for anybody else, so just making sure.

And you have got someone coming in?

No not yet anyway, my manager has been off sick, they were meant to recruit somebody and because she has been off, they have not had chance to recruit yet, so it is getting there, but that is sort of a bit like, my God sake I've got no body to hand over to yet.

I bet it is difficult to find somebody to fill as well.

Well what they are doing is they are expanding out little bit of our team, our advance practitioner team, so they are getting another person in, permanent and then they are having one person to cover mine and my friend's maternity, there are always three of us in total, so now there will be four permanent posts but two on mat leave, so back to three, so yeh, it will be fine, like I said work is not stressing me out, but over the last week, it was just a little bit like, right come on, get thing straight now, it is coming up.

Erm, finally, how do you feel about having your baby?

The Birth?

Yeh, we will start with the birth.

Excited, I have from day one, bring it on, I want to , I am not frightened of it, I think my Mum has helped with that, cos she said, oh, it is amazing. Oh I am admitting to this on tape, I almost, I was driving the other day I almost thought and I have spoken to someone who is as psychologist actually, God I feel terrible, I almost wished the baby to come early, cos I thought I am dying to meet her, I want to get this birth, I am excited about giving birth, but I thought, oh my God, I am rushing a premature birth.

You would be surprised how many do.

Well it's not that, it is more..

The excitement of the birth?

Yeh, so I don't feel anxious about the birth, there is some elements of it, that again you want everything to be alright, I think the fact that I am having or planning a home birth, reflects for me, it feels like a real natural, not hippy, but I feel like it is a really natural thing for women to give birth and we should embrace it, and I am looking forward to it. One of my managers was talking today, she said it's the best, it's the hardest but the best days work you will ever do, it's really and we were talking about it and she said you become really animalistic, she said, you think you are going to be al prim and proper, she said, I was stripping off going urgh, she said, like just come on, and she said you are giving your body up and you are just getting on with it, and she said afterwards, you are just absolutely exhausted but oh my God what a wonderful feeling, and as she was talking I was yeh, want to do it now. So I kinda like feel bring it on and have felt like that from day one.

I was exactly the same.

The friend at work, really anxious about it, up until about three weeks before she was due, and I think she had taken all that time to work herself up to being prepared and then I think she felt okay, that was it whereas with me, it's not an anxiety.

It's either a lot or not I found, like you can either be severely anxious about labour and a lot of women I meet have no ideas what to expect and dreading it, and then you get the other side of the coin, yeh, saying like.

I would like to , I think my only worry , the fact that we are having it at home, makes me feel better for Paul, I would want him to be looked after, like I , and he says don't be so stupid, I'll be fine, and he will be fine, but that would a source of stress for me, if I thought they weren't being nice, you know, make him a cup of tea, look after him a bit, and everyone says you be saying that at the time and I was exactly I don't want him to find it a stressful experience and traumatic or have horrible memories.

Generally with our family, just get left to one side.

I know and I don't want that for him, I want him to feel part of it and for him not to feel pushed to one side and I know that there has got to be that focus on you but I wasn't him to feel comfortable and enjoy the birth of our baby, I know it is soppy but it's true, isn't it, so I like the idea of having baby at home and that makes me feel more relaxed, the thought of just being here and making a few calls and people coming to me and so yeh, I am excited about it.

How do you feel about meeting baby?

Oh really excited, yeh, like mental to think that I can't picture her little face but know that she has got one already, that is really weird. Really excited talk about do you think she'll have blue eyes or brown eyes, well brown eyes are stronger, oh will she have blonde hair, we are thinking all the time.

You have got really piercing blue eyes haven't you?

Yeh, well that's like Paul says, you have got lovely eyes.

They are really a lovely colour.

Thank you, well his are really dark and lovely deep brown, so we are both just like ooh,

We have got one with mine, like greeny/hazely colour and then our Ste's eyes are like yours and love bright blue eyes in Lucy.

Yeh, they have got me out of a few situations,

Well they are really blue.

I know when I am hung over, or if I have been crying, they go even bluer. People are like have you got contacts and yeh no.

They are really lovely bright blue.

So I am really looking forward to meeting her and there is that, oh my God, what will I do with this baby, but really excited and looking forward to it.

Do you feel prepared for baby coming? Have you got everything sorted?

No not at all, erm, I don't feel prepared, I haven't bought a single thing for this baby, so people are like, what not clothes or anything and I want me and Paul to go and buy her first outfit together, so although I have seen, and thought oh I could just get that, I want us to go and for us to say, we chose your first outfit together, so I have not bought any clothes, we have no equipment or anything for her, Paul is also quite laid back and we have said if this baby came tomorrow, he would go out and buy with a shopping list and buy everything we needed, so although I don't feel physically prepared I feel emotionally prepared but we would be alright, we would just get it, so bit of a difference.

We bought everything with Sophie really early and with Lucy we were nah, we'll wait. And all our stuff we bought for Sophie we didn't need anyway.

Exactly, so want to talk to other Mums, cos we are running out of time, you can see in the house, the whole house is like this, we have no floors properly.

Really it doesn't matter though, not moving anywhere.

Exactly, but it is more we haven't got anywhere to put things once we have bought them, so in a couple of weeks, the baby's bedroom will be finished and we can start buying tuff to store in there, otherwise, it will be in the way, whilst we are trying to get the rooms ready.

I had a lady on a barge.

And again with work, oh my God I have seen parents in these houses that aren't nice and with baby with attachment and bonding, responding to needs and if I can breast feed, I would love that, I don't physically actually need a lot and that baby will still be well adjusted and happy.

Well a hundred years ago you know.

Yeh so I have my mind set with this.

It is the right way I think. So I would like to ask about the kind of support you are receiving at the moment, just general support. It can be informal, partner, friends, family, neighbours or more formal so midwives, doctors, any ante natal classes, you might not have started those yet or any children's centres that you might attend. You just plot it on.

I do this with clients.

Do you?

Yes, I have never had to do it myself, erm so I would be putting my closest people here.

Yeh the centre of the circle.

So Paul there and Mum, erm and so they are my two closest people and then shall I put individual friends or just friends.

If there are friends who are particularly special then I would put them separately, if you kinda view them all as the same kind of level of support and I would group them together.

Then lots of thinking aloud.....

So I would like to move the focus of the interview to infant feeding, ask you about your views and experiences of breast feeding and formula feeding. So I would like to start by asking you about past experiences. Are you aware of how you or other close family members were fed as babies?

Yes I was bottle fed, my Mum has got inverted nipples and couldn't. So yeh she couldn't.... so much laughter, could not tell anything.....

No my daughter has got one.

But I had my nipple pierced , so my Mum had all these different things to try, we laugh about it, she is not bothered, erm, yes so she had all these like weird contraptions and she had spent a fortune on something that was glass .

What,

Yes to like suck em out, but it dropped and smashed so she thought of sod it, so just bottle fed both me and my brother.

So even attempts so much laughing cannot tell anything..... It is actually a real problem in all seriousness, cos if you have got them, then it is almost impossible attempt to.

And would be a source of anxiety I suppose, you know like you are not going to be able to.

I think they do more for it these days,

So yes that was my Mum, so for me I have one and it used to come out little bit, so like sometimes it would come out and I read about it and they said if you have your nipple pierced it hold it out.

Ah right, never knew that.

I used to have all sorts pierced so I thought, if it works and it did, and then after about six month to a year I took the piercing out and my nipple stayed out, you know like when you get your ears pierced like there is a bit of cartilage and then that must kinda hold it out. So yeh, I did have one.

Have you spoken to your midwife or not at all, cos it is not a problem?

Because it has not come up in questions, I have not been asked really a lot about breast feeding, cos I would bring that up, but not had chance to speak to her about it, so.

Erm, has your Mum spoken to you about her experiences? Has this impacted on your choices at all?

Erm, no I don't think, cos I know my Mum couldn't so it was never, she hasn't really talked about whether , I think her view is, if you can , go for it, but don't put pressure on yourself and that's the approach I am taking, so yes, it has not swayed me either way, cos I think it would have done maybe it is a different question, whereas if she could have done and chose not to, probably would have made me think or could have made me think differently, but I have got my own mind and I would like to think that no matter what I would try.

Have friends or family with children chose to breast feed or formula feed/

I haven't actually got a lot of friends and family with children, which sounds, you know when I look as those people in that circle, the majority of them haven't got children of their own, the closest person I can think of is Sarah , my colleague who has just left and she has chosen to breast feed and we have always had the same view that she would try it, no

pressure on herself, but really go for it and she has managed, and we have had lots of laughs about nipples and must get this cream and she is telling me all that kinda stuff.

That's nice, that you have got that kind of support about, specially about babies, aside from just your generals.

And, when I went up to see her and the baby, she's quite open about breast feeding, she did not feel to cover up or anything like that, and I was like, Do you mind me looking? And so I sat and watched how she did it and she was completely alright with it, and I didn't feel uncomfortable looking at her doing it, so ...

So that's nice you've had like, almost hands on experience isn't it?

And we are close enough that she will tell me and she will swear and she say it comfortably, rather than the professional line.

So she has had quite a good experience?

I think she struggled with the experience in hospital which wasn't good, the response from midwives inconsistent, she ended up having a C section and one midwife would come in and say let baby sleep, don't force him to feed, so she would let baby sleep and the next midwife would come and say, oh no you need to wake him up and feed him, so she found that quite stressful I think, and her advice is just do what you feels right, cos the stress of it, isn't conducive to good feeding so .

Exactly, I'd like to ask you what you know about infant feeding. So firstly what do you know about breast feeding? Anything at all.

Erm, I know its bet for baby, I know gives that colostrum or whatever it is called, it gives them those really early nutrients, I know helps in, there is allsorts isn't there. It is like the ,you know, better for allergies stops you getting obese when you are an adult, it feels like the list is endless, and seems to be proven, for me a lot of it is about attachment and bonding, that said I don't think I have assessed my attachment so much, you know as a social worker, knowing that I wasn't breast fed doesn't then not make me anxious, that you can't form positive attachments without it, so but holding that little baby with that eye contact, feeding is a form of bonding, for me it doesn't, I know they talk about feeding of being a way of bonding, but it doesn't feel, like it is the only way. I know that it is a challenge for many women because of the physical side of it, I know there is a technique to it what that is I am not quite sure yet, I know it is not just the like off we go, erm, I know like girl from work came in with her baby who wasn't planning on breast feeding or probably thought she wouldn't rather than would, she had a C section and said the baby was just, you know ready for it, so she said I tried it, and off we went and I have carried on , so she wasn't even planning on feeding and baby wanted it, so I think there is lots of like, it is not always such a challenged that people make out, I mean she did say it gets easier and if she hadn't been in hospital following a C section, she might have given up, but she got a lot of support in hospital, which made it easier than to just carry on.

What about formula feeding? What do you know about formula feeding?

Erm, more expensive, oh the other thing I know about breastfeeding, it is so vain, but it helps you lose weight, can't believe how thin this girl was when she came, she said it is breast feeding, she said you can almost feel my body shrinking when I am feeding.

Yeh, you can feel like your uterus contracting as you feed.

She said it yeh, you know. I could not physically believe what she looked like, so I thought, Im doing that. So yeh in terms of bottle feeding, I know that your baby is gonna fed and can still be healthy, again I wasn't breast fed and I don't have any allergies, I am not poorly, I was not a sickly child, never had illnesses, like to think I am not obese, you know all the kind of things they say breast feeding is good for, I haven't suffer because of not having.

Well I have got one that was breast fed and one bottle fed and I wouldn't say there are any differences in terms of health or attachment or anything.

So I think if you are bottle feeding, you know my nieces were all bottle fed, I can remember thinking back, oh this is easy, you know, so I know easy in terms of you're not, you know it I three scoops into water and that is quite simple, but I guess the practicalities of it, are more hard work in terms of sterilising bottles and making sure that you have got this in your bag and all that, I do like the idea of just being able to get your boob out without, but then the offset of that is it is more you, it is more you, I know you can express and all that, but they say don't use a bottle, cos they will get used to using a bottle, rather than your breast and so you see this is it, this is your study , but then Paul can't feed, and it is a kind of good way of bonding and then I think, oh he can do the bath and that can be his bonding time, so you are just weighing up those things, so.

You have just completely covered my next question. How do you know all this? Have you received any information?

I would say I have done my own research into it, and probably not specific to breast feeding, I have looked at general parenting, general pregnancy , apps on your phone, a book from the baby centre, talking to pregnant, you know my colleague pregnant, and I guess just I think it is common knowledge, but it probably isn't, but would like to think it is and I think at work, seeing a lot of health visitors and midwives through work, I can't think of a specific time that people have said it, but probably where I have picked stuff up from as well.

Have you received any information from the midwife at all?

Not that they have implicitly talked to me about, so if there had been a leaflet, or pack of leaflets, I can't say there hasn't been, erm, but they haven't sat down and talked to me about it, and said this is a leaflet on breastfeeding, have a look at it?

Really?

Yeh really.

They have not asked you what?

I think they might have asked me really at one of my very very first appointments, oh yeh, at the booking appointment, yes, sorry, I am doing them as disservice, at the booking appointment, she went through breastfeeding, the benefits of breastfeeding and I did feel that I knew when she was telling me, I thought, yeh I know all that which was good, and I said yeh I am planning on breastfeeding, but then after that, it has not been mentioned, so yeh she went through a million things in that hour, breastfeeding was one of them.

I can imagine not twelve weeks.

Seven weeks I think it was, ten weeks, yeh.

I am surprised, I really am, the amount of Mums I have spoken to, they haven't had any information, whereas when I was pregnant they did, they did sit down and talk to you, it's almost like it has stopped.

I remember when I went for a scan, there was a poster up in the hospital, talking about why breast is best and about support and it made me feel that it was, it felt like a supportive, you know how people talk about feeling under pressure, but this poster, I remember thinking, oh that, however they had worded it, it made me feel nice, they are encouraging it, and saying that there I support there, and come and speak to us and it feel like an accessible kind of service.

That's nice.

I wasn't pointed to it, I just saw it, think it was because it as a great big boob, oh what's that? Have been invited to a breast feeding workshop, have been invited to that.

Was that from the midwives?

Yes, when I have asked what's on, you know like what courses and groups and things like that and there was a breast feeding workshop, and Paul is coming to it with me.

Oh you'll get the knitted boob. Everyone loves the knitted boob.

But I did say to Paul, I said there has been quite a few midwife appointments that he had not come to, cos I have said, I don't need you to come, with scans and stuff I want you, I don't need you to come cos I am in and out, and he has said, I don't think I need to be there, but I said, don't come but on the agreement that if I ask you to come to one, it is because I really want you there, and he said fair enough. I have said I know it will be weird for you to sit in group of people talking about boobs, but I want you to come to the workshop with me and I said because there is a technique to it, brilliant you get it like burger, and all these things like that Sarah was telling me and I want you to hear it as well, so that if I am struggling, you heard exactly what I have heard and you can maybe help.

And every man has got to experience the knitted boob.

And it's like to say the sexualisation of breasts and I was like, I have got big boobs, he was attracted to me because I had nice boobs. So for him to turn it round to ...

They are now functional.

Like a motherly thing, it is not just a functional thing, it is like with a baby, it is like completely against sex, you know, to help him to get his head round.

The fact that it has not just been for that, how do you think your views correspond with those with other pregnant Mums in this area?

I don't know, actually I don't really know that I have spoken to other Mums in this area, I think my colleagues are probably the ones I have spoken to most, pregnant ones, it I like a maternity ward our office, think there are six, but there are 30 social workers but, similar I think most people that they will try and if they can do it happy days, but if not, that is not the end of it.

What factors do you think after birth might change how a woman choses to feed her baby? Say if they were planning to breast feed, what might influence a change?

Pain, I think the physical pain of doing it, you know if it is that bad, for me part of it is whilst I am into attachment and bonding and that, I am not just a Mum, you know I will be a friend, a girlfriend's daughter, a colleague and all those things that I think I can imagine finding it quite tying to just be this milk machine for whatever, I can imagine that being.

Being very honest, it is true.

Imagine thinking, I am not just , and I remember Paul's cousin kept trying to keep the baby away from her, cos she said when I come close to the baby it smells me or whatever it is and starts.

Its horrendous, I remember after I stopped, she would go for any nipple at all, my Dad's , and would be like..... too much laughter to hear.

And I remember her friend saying that she was in the supermarket stood close to this baby that started crying and she said my boobs, want to feed a baby.... And I thought, yeh I don't just want to be all about feeding babies, so whilst I want to give, this is my personal thing, whilst I want to do everything I can to give the baby a good start, I do want to define me to the point of tying me completely, so yeh I can imagine that being a influence and yeh that for me would be the main one. And I think if you are just physically finding it difficult and it is not happening, then I think that would put you off and getting into a routine and all that.

Moving back to our diagram, what infant feeding support do you think you might receive when you have had your baby? If there is anyone new you can add them. Anyone that's on there that you think is going to provide the kind of infant feeding support put an IF after them.

Think all of these people, think I am going to add Sarah to this now because Cathy is really good at the moment now that Sarah has gone, that sounds bad, but me and Sarah talked so much about pregnancy, that now Sarah is not there, Cathy is really supportive, but I know once I go on maternity leave, I'm going to see a lot more of Sarah because we will both be off, so Cathy whilst I am at work, but Sarah when I am off.

Just find when we piloted it, the support bit seem to take an age and you weren't really getting an idea of who was providing more support than other people, cos I have got the audio with it, so you get a real idea of what's going on in that person's life.

Someone at work has said there is a service..

Yeh there used to be, on the information sheet, I've got there is the Blackburn with Darwen Infant Feeding Support Unit, have a look at that. They won't cover me see. There is one in Preston as well, think there is one for each area but there is something called Little Angels. When I had Sophie they were brilliant, absolutely brilliant, they used to come round the wards in the hospital, and then they would come out and see you afterwards, with Lucy they had stopped it by then, think they might have got it back again.

I think it would be interesting that, one of my anxieties about home birth is just that, like say I was in hospital there for a few hour after the birth, then there would be somebody to ask about feeding and all that, whereas, once the midwife has settled me and off she goes, who do I ask about breast feeding.

If you want any support groups at all, just let me know, even last week I met with a private lactation consultant, obviously she charges some of the most fantastic support and she really turns it , Mums that have completely stopped breast feeding for weeks, she gets them going again, and things like that, really interesting. So if you do want anything, I am just on the other end of the phone.

Well that's good to know, I mean anything in preparation as well I guess, if you got anyone.

Have a look on the information sheet, have you got it still? The one that you got in hospital, I'll send it over to you, it is fine. I'll send that over to you and I'll have a look and see if there is any actually in this area as well.

Thank you, this is like what I mean like when I got that information sheet, ooh its ages off, yeh I have not put my friends.....

Finally, have you had any concerns during pregnancy about feeding your baby?

Erm, no because I don't feel like I have spoken to anybody about it to make me think, am I worried about this, I guess like the inverted nipple thing, wonder if it will be a problem because it is not inverted now.

I can't see it being.

Me and Paul were laughing about this last night, I don't know how to word it cos, he was like when you have a wee, there is a hole for a wee to come out, male and female, with your nipples you don't have a hole, so where does it come from?

Of the actual nipple, have you not had any leakage at all yet? Have you tried...

No.

Just squeeze your nipple, it might not be now, mine came in at about thirty odd weeks, you won't get a lot at the moment, but you will see how it comes out and you have got tiny little ducts in your nipple that you can see and they just filter almost through, but when I think you have got like eight or something, but when your milk has come in after the baby, if you squeeze like that, it will come through and you will be able to see where it come from.

My friend said I used to have a bath and I would be in the bath, ask her husband to get something, she said I wasn't, she like squirted him with milk.....

We bottle fed Sophie for so long and then we had Lucy and we had got to expressing at some time, he was so used to like, and he tried it in the end. Some women leak like crazy when they are pregnant, but I never leaked but if you squeeze you could, especially towards the end. Don't ask me how I found out? So no concerns?

No just that, just hoping that I can do it really and I will feel a bit of a failure if I can't do it. I know you shouldn't and because I think again, women in third world countries, women hundreds of years ago did it, so how can I accept that I won't be able to do so.

There is where this research like comes in completely, because that was my pure view about it, like how can so many women not be able to do these days when we have been doing it for like since evolution.

And I don't like not being able to do something. I challenge myself all the time and stuff and to me again bring it on, I want to give it a go, but I'll be mad if I can't do it and I know I should, I will be able to rationalise it out, but I would be jealous. Like with Sarah if we go out together, she is breast feeding and I have to get a bottle out, I will feel jealous I know I will and I shouldn't and especially when it is your baby.

Cos that is like the most important challenge that you have got.

Yeh, feeding your baby, that's that basic care, you can get the attachment wrong, but you should be able to feed it.

The emotions that come with it are absolutely, the emotions are so high when it comes to feeding and you got the breast and the bottle.

So I am not worried, what will be will be, but I'd like to think, I am a bit , I mean I am living in a bit of a dream that the birth is going to go really well, I won't need a lot of pain relief.

Why shouldn't you, you are not there yet? Like why not because it might, so there is no point in thinking the worst thing in the world until it happens.

Yeh it really is good.

But then at least you haven't worried about it being the worst thing in the world for ages you know. Anything else you would like to talk about before we end the interview?

No I don't think so.

Anything you think I might have forgotten to ask or you think I should be asking?

No.

Brilliant, just to remind you that everything we have said will remain confidential.

I don't mind you sharing it for the record, and thank you.

Individual Interviews – Topic Guides

T2 – Exploring maternal anxiety and infant feeding postpartum

Thank you for taking the time to talk to me again today about your experience of being a mother. The interview today will follow the same structure as the first one – it will be split into two main parts: the first part is for me to understand any anxieties and concerns you may have faced since having your baby and how these may have changed since the last time we spoke. The second part is for me to explore your experience of infant feeding now you have given birth. I am interested in your own experiences and views which may be different from other mums to be. There are no right or wrong answers and you won't be judged in any way on the basis of your response, so please tell me what it has been like for you personally. I would like to record the conversation with your permission. We will be able to arrange an opportunity for you to hear the recording if you would like. Should you wish to stop the interview at any time, or take a break, please let me know. Because the topic of our discussions is sensitive I can assure you that it will remain confidential. In the rare case that there are any disclosures about issues such as safeguarding, exploitation, harm, or drug or alcohol abuse, I may have to break confidentiality and contact your Health Care Professional so that the appropriate course of action can be taken.

1. I would firstly like to **recap on the key things** that we talked about during our last interview (demographics, anxiety before/during pregnancy, infant feeding perceptions).

Prompt: Anything changed?

Anything I missed?

Anything you'd like to add?

Anything I got wrong?

I would now like to ask what life has been like **since you gave birth to your baby:**

Section A – Demographics

I would like first of all to ask you some brief factual questions, and then ask you some more open questions about your experiences:

2. On what date were you expected to have your baby?
3. When was your baby born?
4. What did your baby weigh at birth?
5. Did you have a boy or a girl?

Section B – Anxiety

I would now like to ask you a few questions about your **experience of childbirth:**

6a. How was your overall experience of the birth?

Prompts: Did it go according to plan?

Natural/assisted delivery?

Short/Long labour?

Pain relief

Best/Worst aspects

Fears/concerns

6b. I'd like to ask about the kind of support you received during your hospital stay (Ask participant to fill in a copy of support diagram):

Prompts: Informal, e.g. Partner, Friends, Family, Neighbours. Formal, e.g. Midwives, Doctors, Hospital Staff

Did you find this reassuring?

Anything that wasn't helpful?

I would now like to ask you what life has been like **since you gave birth to your baby:**

7a. Can you describe a typical day looking after your baby?

Prompts: What is your routine?

How does he sleep – naps/nighttime?

What about crying – little/often/certain fussy times of day?

Coping strategies?

7b. How have you felt generally since baby was born?

Prompts: How has your mood been?

How are you with other people?

7c. What have been your main positive/negative experiences of becoming a new mum?

Prompts: What have you really enjoyed?

Anything that you really dislike?

7d. What do you feel are the main anxieties that women have during the first weeks with their new baby?

Prompts: Have you experienced any of these?

How do they make you feel?

How often?

What helps?

7e. How has life changed for you since baby was born?

Prompts: Relationships
Personal time/hobbies
Positive/negative changes?
How does these changes make you feel?

7f. How do you feel you have adapted to these changes?

Prompts: Has it been how you expected?
Anything that you have struggled adapting to?

7g. What advice would you give to other first time mums who are about to have their baby?

Prompts: What has helped you that you didn't know about when you were pregnant?
What has been difficult for you that you wish you had been told earlier?

Before moving on to the next stage of the interview, I'd like to ask you about how things are **at the moment**:

8a. How have you felt in the last week?

Prompts: How has your mood been?
How has baby been?
Have you had any specific concerns?
Does this affect you physically?

8b. I'd like to ask about the kind of support you are receiving at the moment (Ask participant to fill in a copy of support diagram):

Prompts: Informal, e.g. Partner, Friends, Family, Neighbours. Formal, e.g. Midwives, Doctors, Childrens' Centres
Is this helpful?
Anything that's not helpful?

Section C – Infant Feeding Outcomes

I would now like to move the focus of the interview to infant feeding and ask you about your views and experiences since having your baby.

9a. How did you choose to feed your baby after birth?

Prompts: Breast/Formula/Bottle Expressed/Combination

Was this planned before birth?

How did you make this choice?

9b. Has your feeding method changed since then?

Prompts: What to?

When was that?

What caused you to make this choice?

How do you feel about it?

9c. Since this time yesterday, can you tell me which of the following your baby has received and how frequently:

Breast milk direct

Formula milk

Expressed breast milk by bottle

Other milk – cow's milk, evaporated milk

Plain water

Juice, sweetened water, herbal tea

Vitamin drops/medicines

Anything else?

9d. How confident do you feel about feeding your baby?

Prompts: Have you always felt this way?

Has there been anything which has boosted/reduced your confidence?

9e. What, if any, problems have you faced with feeding your baby?

Prompts: How has this made you feel?

How have you dealt with these problems?

9f. I'd also like to ask about the kind of infant feeding support you are receiving at the moment (Refer back to support diagram, if someone new add them):

Prompts: Informal, e.g. Partner, Friends, Family, Neighbours. Formal, e.g. Midwives, Doctors, Childrens' Centres, Specific Feeding Groups

Is this helpful?

Anything that's not helpful?

9g. How do you feel about your current feeding method?

Prompts: What are the positive aspects of this way of feeding?

What are the negatives?

Can you foresee any changes?

9h. When it comes to feeding time, how do you feel?

Prompts: Do you think it can affect your mood?

How?

Section D – Infant Feeding Behaviours

Finally, I would like to ask you some questions about your baby's feeding routine.

10a. How would you describe your baby's appetite?

Prompts: Big/small?

Demands milk/uninterested in milk?

10b. What is your baby like during feeding time?

Prompts: How does he react during feeding?

Does he enjoy feeding?

Contented/distressed?

10c. How long does a typical feed take?

Prompts: What do you think of this pace?

10d. How often does your baby want to feed each day?

Prompts: Do you feel this is adequate?

Too often?

Not enough?

Would he feed again soon after happily?

10e. How can you tell when baby is hungry?

Prompts: What cues does he give you?

Does he ever want more milk than you can provide?

10e. How often does your baby take a full feed?

Prompts: Does he often get full before taking all the milk you feel he should have?

10f. How can you tell when baby is full?

Prompts: What cues does he give you?

10f. How do you feel about your baby's milk intake?

Prompts: Are you satisfied with the amount that he gets?

11. Is there anything else you would like to talk about before we end the interview?

Anything I forgot to ask?

Things you think I should be asking about?

How should I ask these questions?

Confidentiality and use of results

Individual Interviews – Topic Guides

T3 – Exploring maternal anxiety and infant feeding postpartum

Thank you for taking the time to talk to me again today about your experience of being a mother. The interview today will follow the same structure as the last one – it will be split into two main parts: the first part is for me to understand any anxieties and concerns you may have faced since the last time we spoke. The second part is for me to explore your experience of infant feeding since the last time we spoke. I am interested in your own experiences and views which may be different from other mums to be. There are no right or wrong answers and you won't be judged in any way on the basis of your response, so please tell me what it has been like for you personally. I would like to record the conversation with your permission. We will be able to arrange an opportunity for you to hear the recording if you would like. Should you wish to stop the interview at any time, or take a break, please let me know. Because the topic of our discussions is sensitive I can assure you that it will remain confidential. In the rare case that there are any disclosures about issues such as safeguarding, exploitation, harm, or drug or alcohol abuse, I may have to break confidentiality and contact your Health Care Professional so that the appropriate course of action can be taken.

6. I would firstly like to **recap on the key things** that we talked about during our last interview (demographics, anxiety in early postnatal period, infant feeding outcomes in early postnatal period, perceived appetitive behaviours in early postnatal period).

Prompt: Anything changed?

Anything I missed?

Anything you'd like to add?

Anything I got wrong?

I would now like to ask what life has been like **since the last time we spoke:**

Section A – Anxiety

2a. Can you describe a typical day looking after your baby?

Prompts: What is your routine now?

How does he sleep now – naps/nighttime?

What about crying – little/often/certain fussy times of day?

Coping strategies?

What has changed most?

2b. How have you felt generally since the last time we spoke?

Prompts: How has your mood been?

How are you with other people?

What, if anything has changed?

2c. What have been your main positive/negative experiences of motherhood since last time we spoke?

Prompts: What have you really enjoyed?

Anything that you really dislike?

2d. What do you feel are the main anxieties that women have at this stage of motherhood?

Prompts: Have you experienced any of these?

How do they make you feel?

How often?

What helps?

2e. How has life changed for you since last time we spoke?

Prompts: Relationships

Personal time/hobbies

Positive/negative changes?

How does these changes make you feel?

2f. How do you feel you have adapted to these changes?

Prompts: Has it been how you expected?

Anything that you have struggled adapting to?

2g. Is there anything that you have learnt about motherhood since our last interview that you would give advice to other mums about?

Prompts: What has helped you that you didn't know about when you

What has been difficult for you that you wish you had been told earlier?

Before moving on to the next stage of the interview, I'd like to ask you about how things are **at the moment**:

3a. How have you felt in the last week?

Prompts: How has your mood been?

How has baby been?

Have you had any specific concerns?

Does this affect you physically?

3b. I'd like to ask about the kind of support you are receiving at the moment (Ask participant to fill in a copy of support diagram):

Prompts: Informal, e.g. Partner, Friends, Family, Neighbours. Formal, e.g. Midwives, Doctors, Childrens' Centres

Is this helpful?

Anything that's not helpful?

Anything changed since last time?

Section C – Infant Feeding Outcomes

I would now like to move the focus of the interview to infant feeding and ask you about your views and experiences **since last time we spoke:**

4a. How are you feeding your baby now?

Prompts: Breast/Formula/Bottle Expressed/Combination

Have there been any changes since last time?

4b. If feeding method has changed:

Prompts: When was that?

What caused you to make this choice?

How do you feel about it?

4c. Since this time yesterday, can you tell me which of the following your baby has received and how frequently:

Breast milk direct

Formula milk

Expressed breast milk by bottle

Other milk – cow's milk, evaporated milk

Plain water

Juice, sweetened water, herbal tea

Vitamin drops/medicines

Anything else?

4d. How confident do you feel about feeding your baby now?

Prompts: Has this changed?

Has there been anything which has boosted/reduced your confidence since last time?

4e. What, if any, problems have you faced with feeding your baby since last time we spoke?

Prompts: How has this made you feel?

How have you dealt with these problems?

4f. I'd also like to ask about the kind of infant feeding support you are receiving at the moment (Refer back to support diagram, if someone new add them):

Prompts: Informal, e.g. Partner, Friends, Family, Neighbours. Formal, e.g. Midwives, Doctors, Childrens' Centres, Specific Feeding Groups

Is this helpful?

Anything that's not helpful?

4g. How do you feel about your current feeding method?

Prompts: What are the positive aspects of this way of feeding?

What are the negatives?

Can you foresee any changes until the time comes for complementary feeding?

4h. When it comes to feeding time, how do you feel now?

Prompts: Do you think it can affect your mood?

How?

Section D – Infant Feeding Behaviours

Finally, I would like to ask you some questions about your baby's **feeding routine and appetite since the last time we spoke.**

5a. How would you describe your baby's appetite now?

Prompts: Big/small?
Demands milk/uninterested in milk?
How has this changed?

5b. What is your baby like during feeding time?

Prompts: How does he react during feeding?
Does he enjoy feeding?
Contented/distressed?

5c. How long does a typical feed take now?

Prompts: What do you think of this pace?

5d. How often does your baby want to feed each day now?

Prompts: Do you feel this is adequate?
Too often?
Not enough?
Would he feed again soon after happily?

5e. How can you tell when baby is hungry?

Prompts: What cues does he give you?
Does he ever want more milk than you can provide?

5f. How often does your baby take a full feed?

Prompts: Does he often get full before taking all the milk you feel he should have?

5g. How can you tell when baby is full?

Prompts: What cues does he give you?

5h. How do you feel about your baby's milk intake?

Prompts: Are you satisfied with the amount that he gets?
Are you satisfied with his growth?

Thank you for taking part in these interviews. I have just one more question for you. I'm wondering if you might reflect for one last moment about what these interviews have been like for you. What were your thoughts and feelings during the interviews? How do you think the interview process has affected you? Do you have any other comments about the interview process?

Is there anything else you would like to talk about before we end the interview?

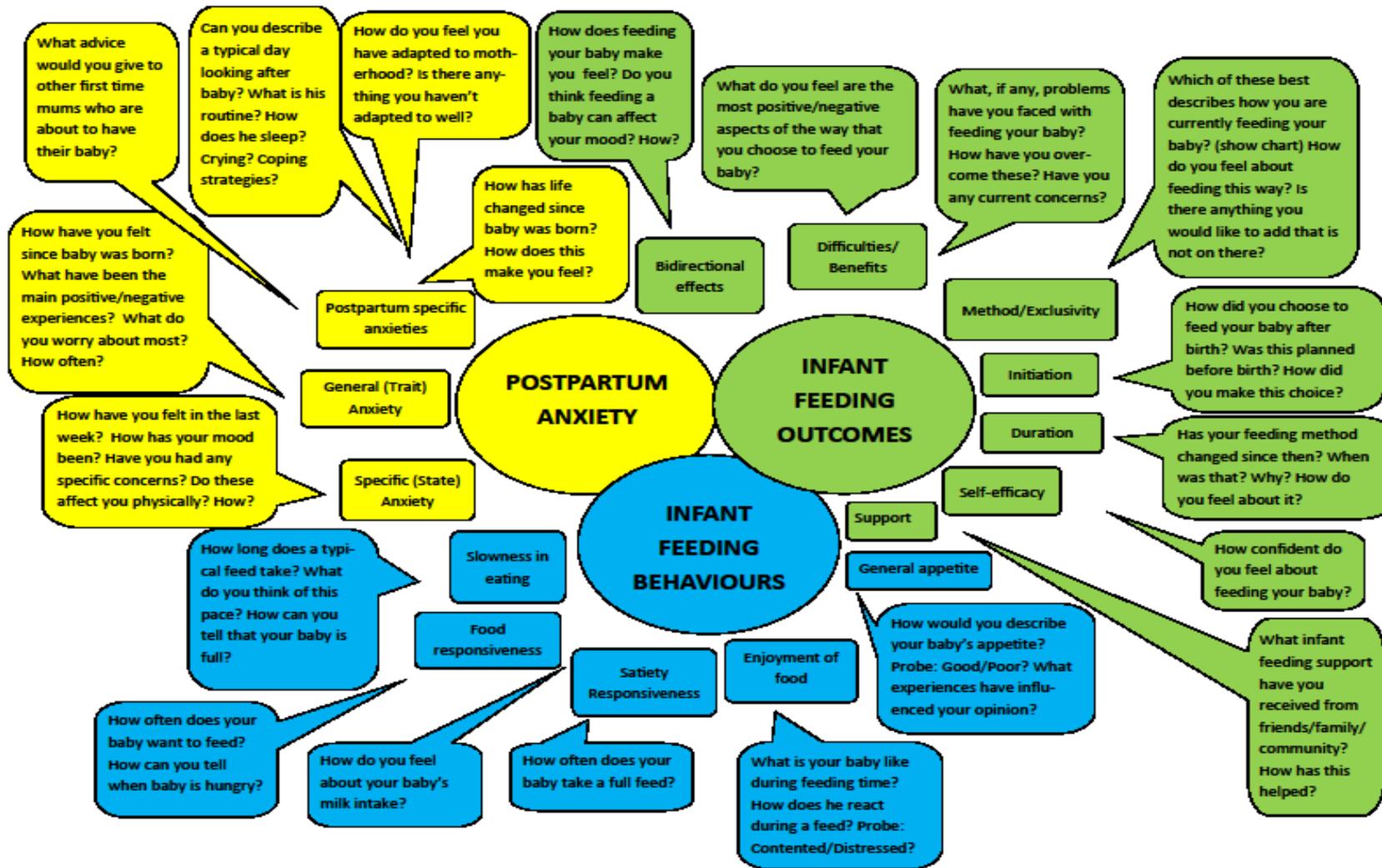
Anything I forgot to ask?

Things you think I should be asking about?

How should I ask these questions?

Confidentiality and use of results

Appendix 15: Postpartum topic guide brainstorm



Appendix 16: Copy of a time two transcript

Okay, so thanks for taking the time to talk to me today , so the interview is going to follow the same structure as the last one, so the first part is for me to understand any anxieties and concerns you might have experienced since you have had your baby. And the second part is for me to explore the experiences of infant feeding since you have actually had your baby. I am going to record it if that's okay. If you need to take a break or whatever, just let me know. So first I would just like to recap on the things we talked about in our last interview. So you have relatively low anxiety, but your first twelve weeks were a bit based on your experience the previous year and you are planning to breast feed, but you were not going to stress yourself over it. We'll see what's changed. Anything I missed there.

Nope.

So I am just going to ask you some factual questions first and then move on to some more open questions. So on what date were you expecting to have your baby?

25th April.

And when was your baby born?

10th May.

And what did your baby weigh at birth?

Eight, seven.

And you had a little boy.

Yep.

I would like to ask you about your experiences at child birth if that's okay. So how was your overall experience?

Not what I expected quite medical, had to be induced. So I had high blood pressure, just before I was induced , I was a bit annoyed with anybody, just frustrated that I had to be induced cos I kinda thought it might be quite medical and things like that, so yes I was a bit wary, bit kind of bottom lip about it, and then I went in. Sunny days with dark wards with people moaning, and then talking about the previous birth experiences and I had to put my head phones on. I had spent nine months trying to chill about it and right at the crucial time I had all these awful people talking about it. So then I had a couple of pessaries which weren't bringing it on, and they took me to Had a warming drip, waters broken, hormone drip and then pain relief because the contractions came on quite quickly and they were relentless, there was no gaps in between them, so I had gas and air and Diamophine and then after that I thought I can't cos I wasn't dilating anymore really, so I thought I can't have another twelve hours of this pain, so I had an epidural and then slept.

How far were you then?

Do you know, I can't really remember, something two or three centimetres.

So you are not really in established labour.

I was only in active labour for 14 hours but I was induced on Thursday and gave birth on a Sunday, sorry Saturday so, you know I had contractions when I had the pessaries, I had contractions every three minutes and I wasn't dilating so.

So like 40 hours of contractions.

So I couldn't sleep, so I think by the time I got into the recovery suite my pain threshold wasn't very good and I was just so tired felt weird, so that was why I had quite a lot of medication and so then kept waking me up all the time to check how dilated I was and monitoring me, but then I started pushing at 3.30 and he was coming down but his head was twisted so the Registrar and everybody had to come in after about an hour to turn his head round and I had forceps and gave birth at 5.30 and then I felt fine

All grand then, much laughter.....

Tea and toast and I was just really relieved he was out.

Cs you just can't eat anything with it, can you?

I didn't really want and I was being sick and stuff so.

Did you find that when you had the epidural it made you sick, makes you vomit like horrendous?

I didn't know whether it was the Diamophine, the effect of all the drugs and then when I was kinda chilled out, then I felt sick, the midwife was saying sometimes you are just sick to empty out your stomach before you start pushing, so I wasn't sure, but I was also tired, it was anxious times, so Yeh I would say my birth experience was medieval. I just left all my dignity at the door, everything happened so, and he smelt really funky when he came out.

Where there any good aspects?

The care was really good, we had some life. It sounds like I was miserable the whole time but I wasn't, it was fine, we had some really funny moments and the midwives were lovely, so my experience of the care that I had was fantastic. But it is just nothing could control what happened so that was the only down point really.

What was the worst aspect?

Erm, I think the pain and I thought I would be quite good with it, cos I am quite stiff upper lip.

It is just because it forces itself. I couldn't handle it at all. They are so strong, like unbelievably strong, many women can't.

I also thought that I was going to give birth when I was two centimetres, I felt loads of pressure. I said to Tom call the midwife cos I need to push, but it wasn't , it was just pressure that I felt, so erm, that was the worst aspect and I really thought cos I'm not a moaner about pain, I really thought I would be alright.

The whole thing was so medical. Any fears or concerns during the labour.

I was worried that he would come out stillborn, cos I knew he was healthy. All the way through, his heart rate was absolutely perfect, and I thought I really don't the process of getting him out to really harm him, so I was like why are we doing all these things when they can just whip him out with a caesarean.

Is that how you felt at one point?

At one point when I was going through the pain but then when I had the epidural, I thought I do want to push actually cos after all of this, and have a caesarean, might as well just had it in the first place. But I am glad I didn't have one, because the stitches were very painful, but it would have been even worse if I had had a caesarean, with being so tired, so might as well have had a planned one.

Probably be struggling for you now, like be up and about, so

That would really done my head in anyway, because I felt frustrated cos I couldn't do anything, yes its fine.

Everything was fine when he came out eventually.

He had a little mark which lasted for a couple of hours and that was it. It was fine, he was really calm, he cried a tiny bit and then they laid him on me and he was just looking at me really calm.

When they broke my waters with Lucy, they managed to, apparently I didn't have much water and they cut all the top of her head, where fontanel was, like big scratches, like dried blood basically, all over where they had tried to get her. Took pictures and everything, with everything else was I going to take it further but with everything that goes on round the birth time, I was oh, by the time I was out of it, she was fine and the scabs had fallen off, so Yeh.

It's really upsetting.

It really was, it was horrible, really horrible. So I would like to ask about the kind of support you received during the birth, remember this from last time?

Yeh.

So if you can just plot on , obviously they will be quite close to the centre of the circle cos it occurred round one time, so the informal, partner, friends, family that were there or formal, such midwives, hospital staff.

So okay, this was at the birth?

Yeh

OK. So my husband.

How did he find it all?

He hadn't slept so he started hallucinating by the end of it, cos 48 hours.

Did he not go at all to sleep?

No. he didn't, just chairs. He read a book and he never reads a book.

That's one thing about labour it is boring innit?

Yeh. Really boring. Erm, I would say midwife was a bit, I'll put an arrow that way, less, because my husband as there all the time, midwives come and go don't they? Erm, and then medical team. My Mum and Dad I met them for coffee just after I had had the first pessary, cos they surprised me they weren't going to come up, but they did. I'll put them on the periphery, they were there in the background, but apart from that, so husband first, then midwives and the medical team came at the end, then parents.

Lovely, thank you. Did you find all the support you received helpful during the birth?

Yeh.

Anything that wasn't at all>

No.

Good stuff, I would like to ask now what life is like since you gave birth? So could you describe a normal day looking after baby?

So the last time I get up, it is about 6.15, and then sit there and feed and watch TV and then just wait for Tom to wake up and I basically give Leo to Tom at ten to eight and have a shower and then take him back again and Tom goes to work and basically the first few weeks, were just watching tele and feeding. And actually my parents were up for a few days at the beginning and when Tom went back to work, Tom had two weeks, we had two weeks together, great, so Tom would do all sorts of things round the house and stuff and basically cook for me and I sat. So there was no structure to that at all, and then just keep feeding him, just passed out in the night time and then there is no structure to when he wakes up at the beginning and then my parents came, I would try to go out a little bit more then, so probably around two, we go out for a little, kinda just go for a coffee, my stitches were so sore, and then come back and just watch TV, so but now it seems to be, seem to go out once a day, so about kinda feed Leo again about nine and then we try to go to sleep about ten and he went down for an hour actually, so sleep when he sleeps, but he doesn't really sleep unless I am holding him, so you can't really sleep, you know, during the day anyway, you need to really hold him to go to sleep. He went down his cot for a little while the other day.

It is nice when they first do it?

Yeh, amazing, like is he going to wake up at any minute and then try and grab lunch and then go somewhere, so been to baby massage and went to see my friend but every day I try and do something and then Tom comes home, cooks my tea.

He is a good un.

Yeh, he is brilliant, well he did that before, cos I am so rubbish at cooking. He has been great, he is not rotter anyway, but I am surprised how good he has been. Been really really good, and I can't believe that any man would, if it was me doing the cooking and stuff, I would be absolutely up the wall cos he won't stop feeding, so nothing would have got done, just been eating pizzas and stuff. So so grateful, he has really kinda shown his worth, really if that makes sense.

That's nice, isn't it?

Really nice, even in the middle of the night, I would be bit grumpy if I had been ... and had to go to work, he's not at all, he's like I'll take him, I'll take him, obviously he can't feed him so just sits and rocks him in the living room just to give me some sleep.

Oh that's so nice. It is really what you need isn't it?

So basically, I could not tell you what a typical day is like really.

No structure at all?

No.

What about sleep? Is he sleeping in naps at night-time?

Not many naps unless we are in the car, that's why he has been asleep now and obviously my Mum is here today so I had like a half hour sleep this morning, because she could hold him and I could sleep then, whereas if I try to put him down on my own, he probably wouldn't have gone, but she kept at it, so I could go for half an hour. So now what seems to happen, well kind of happens, he goes to sleep about one, properly until three or three thirty and then I will have an hour then, and then he will go down again until about 6.15.

So he is getting that night and day now isn't he? If he is doing more in the evening like that, it means he is knowing doesn't it?

Definitely, and the thing with being out, we went for a walk yesterday, he slept the whole walk, thought, oh God he is going to be awake. The other day we went out for a meal cos it was Tom's friend's birthday and he came with us and he was asleep the whole time for like three hours and then I was up till four cos he wouldn't sleep. So the whole thing then do you think I need to wake him up to change his nappy, but then try and do baby led, but if Mums completely tired.

It has got to be a balance hasn't it? It is all a good baby level, when Mums like on the floor.

It's not bad for him if I fall asleep when he has fallen on the floor, so, Yeh.

I remember when first, so when Sophie could not process like lactose, she was on lactose free milk and Ste was feeding her one night and he fell asleep with her on the sofa, but the bottles if you can put the teat a little bit on one side, he must have gone it on one side of her cheek or something and the whole bottle fed. Ste woke up with a wet baby. He didn't tell me until she was about one year old, I would have gone mad. What bout crying? Is he a crier or little often?

He has only ever like active and awake for ten minutes before he cries for something, so it is either he needs to sleep or he needs to feed, well who knows, it might just want pacifying, I don't ever really let him cry, I just put him on the breast to stop him crying and the only time that he has cried for a long time in the car, you know and that was probably yesterday when we were trying to find somewhere to stop, we went on John Lewis car park and got in the back of the car and fed him there. It's great you only need to give him ten minutes and he is like fine again, and asleep so yes he will cry after ten minutes or so if left to his own devices, but that is lengthening it out a bit, the other day he was kind of active and alert without crying for a bit longer.

That's good.

Quite okay, cos I have got two weapons. If he was bottle fed who knows whether the dummy would work either, so I whack him on and that always solves it.

That is your coping strategy, so that was my next question. Do you have any coping strategies?

My Mum is like, he doesn't need feeding any more, and I am like, oh God.

If he is crying and he is on the boob and he is happy on that, give it, and he will gain the weight and he will go longer and not cry as much.

That's what I do Yeh.

Best way I think.

Oh and eating, God that is really, he really makes you feel better. I am not comfort eating, but it just makes me restore myself.

You need the calories as well. I remember being starving when I breast feed. Like more hungry than I was when I was pregnant.

Yeh me too, he goes on and I get really thirsty straight away, I need to drink.

I is amazing how much they take.

Somebody says like you sit on the sofa and I am like no it feels different.

How have you felt generally since baby was born?

Okay, really happy that he is here. Overwhelmed with feelings for him. At the beginning I felt quite anxious and it is more to do with oh God we have got this baby now forever and I

really wanted him to be solid and big quickly and I just kept on thinking of all the horrible things that could happen to him, if I dropped him or something how I would live with myself and that feeling I did not expect, didn't expect that at all and it was debilitating, the fact that we went for the first walk and I always put him in the car seat, I... down the car seat and when home in my arms, kinda transferring him to the pram, I let Tom do it, cos I don't want to drop him on the concrete, he is solid I can carry him, it is just the fear of dropping him on concrete and when we went out for the first walk, Tom was like, pick him up and I'll take a photo of you under this tree, and said no I am not picking him up outside. Wouldn't do it. I think I was so fragile cos my stitches, that was when I felt quite hormonal and tired that it was a bit irrational really, but Yeh, you know.

Has that got better now?

Yeh. Much better. Not man handling him but now he is solid and robust and stuff.

It is funny they come out and they are so little you just think that anything could hurt them, anything at all, even like a little animal could hurt.

Went for a walk and this dog and put myself in-between Leo and the dog, the dog was a Labrador, for God sake, but it was worrying. But as well the midwife, the fact that I am ultra-sensitive we'll say, so well I had a temperature, because he was on me, he was really hot and he had a temperature, we put him in the baby grow that was short legged and we went onto the ward and the midwife was kinda like no he is cold, probably he was a bit cold then, you know cos he didn't have a hat on or anything, you know he was fine, he wasn't crying or anything, but she said alright I think he is cold, it can really harm him to be cold and all this stuff, so now I am paranoid about him being cold, so the things that people say, they don't really realise that ... he lost ten per cent of his body weight in the first week, the midwife said anymore we are talking Alder Hey, and those words made me so upset, I don't want to hospitalise my child just because I am breast feeding, so those things really have had an impact, I think about them now.

About him being cold, it's Summer. He will be fine.

Then obviously I am worried about him being too hot.

Where I went yesterday, they had temperature, you know the room thermometers in every room, cos it's everywhere, got to be between 16 and 21, it is 25 outside, so you know...

There have been days when he hasn't had a blanket on. So Yeh I have got one thermometer and I just always check the temperature, so that's kinda, I did not anticipate that fear, I anticipated feeling tired and ratty, that I would be all like sunshine and laughter, but I didn't expect to feel so frightened I think and that was unexpected. But mental health wise, I am surprised how I feel, I feel very relaxed and generally, and cos I thought oh I will feel isolated you know I'll feel like like I am not there anymore and that and it hasn't bothered me at all. No at all.

Like you anticipated restriction but it's not like...

Obviously it's frustrating sometimes and you can't do lots of things but it has added something rather than taken something away I think.

I think that is a lovely way of looking at it. How have you been with other people? Like those closest to you.

I have been fine with Thomas, but a bit ratty with my parents, they came a bit too quickly, they are both teachers and they are both bossy and I am always very stubborn with them, so they were like, My Mum was trying to stick her finger in his mouth to pacify him, if he is mooching, he needs the feed, I don't want you sticking your finger in his mouth, might damage, you know what I mean, So I was like a bit and I didn't realise that I wouldn't want to leave right now, but when they were there, they were like, we'll take him and you have a sleep, but I didn't want to hear him crying, I want to look after him, so Tom had gone to work, an hour and a half sleep, and I would not let them have it, take him and I was really surprised, I thought my parents were people that I would really trust him with, and I wouldn't, it was just Tom. That was it.

It is weird that, innit.

It only lasted for two weeks, and then I'm alright, but I was just thinking cos it has been so long, my Mum was like with other babies and just whacking them against the side and stuff. When we came out of hospital, they put, we were trying to work out how the car seat worked and it was really loose straps my Dad was like, oh Yeh, be fine. I was like Dad he will fall out, just thinking that was ages ago, he looked after me and my brother, like they haven't got this heightened awareness.

It is hard work, this continues as well. My parents look after mine and like, what was it the other week, honey on their breakfast, Mum was putting honey on the kids breakfast for the last three weeks, and I am like, cos Sophie had a sore throat one week, I am like, are you trying to make them diabetic? Putting honey on their breakfast!!

Anxious mother, oh she is doing really well, but anxious. I said to my mother, Mum you have got to let me lead on this one, she said, just want to support you. I said we have talked about this before, I did say to them that I didn't want them coming up too soon, cos I knew what would happen, I mean I was glad they were there, but I knew that we would be at logger heads. They were like, you need to go out, why do I need to go out? He is three weeks old, if I want to go out, I'll go out, you know, I can't hardly walk.

And you are trying to establish feeding.

Oh like putting finger in his mouth, I am trying to establish feeding here, so I was surprised the way I felt a little, kinda knew a little bit I would be like that but everybody else I had been okay with, but I was anxious about them really.

Tends to be nearest and dearest doesn't it?

Tom I had been absolutely fine with Yeh.

Think is that because he had been so good?

Yeh. He has been there from the beginning, absolute beginning so, he understands and stuff but Yeh.

What have you really enjoyed about being a new Mum?

Everything really, I mean I can't say, I don't not enjoy breast feeding, I am glad I am doing it, wouldn't want to do it any other way at the moment, but sometimes, I get ah, it is really nice, I'm glad that it does bond us I think, I don't know, just him really. That's it, I went out for a trip on my own in the car and I went to Mothercare or somewhere. I was in Mothercare, thinking I haven't got a bump, haven't got the baby with me and I cried. I went out and cried, I came home quickly and I was like, need to latch on, needs to latch on. I thought that I would really want to be independent, but no I just want to be with him.

That's like the job and you thought that that would just continue....;

Definitely. And I have realised the most important things. Big burp – oh he is such a boy. He farts, he puts his face ... wants to hold my hand and he lifts up his leg and goes..... Crazy how boy he is. He gets lads points for it, don't you?

What, is there anything that you have not really liked about being a new Mum?

Think the lack of sleep, I mean, I knew it was going to happen, but I think I just feel a bit less mad if I had some sleep. I don't know, think I would just be a bit more confident or something.

Isn't he a good boy?

So many people watching him.

That's really annoying as well, when you go isn't he good, well no he's not. What do you feel are the main anxieties that Mums face in the first few weeks?

I think breast feeding, if you are going to breast feed, you think about the things that could happen, you don't really know about how you would feel if they lose weight and stuff. Don't think I knew about the cholesterol feeding, and now I know it has got a name, I feel really happy about doing it, before I felt quite stressful about it, cos I was like why he is feeding?

Is this normal?

Think I thought that I thought from day one, you would feed and then you wouldn't need to feed for three hours, don't know why I thought that, ..

It is kinda what they make out though innit?

Yeh,

It is cos I remember when I had them and being awake at night thinking, there is not enough time to sleep between feeds and they are like go to sleep when baby goes to

sleep and I can't because sometimes they don't even sleep in-between feeds, they are awake and then they feed again.

That's the story of my life, its friends that have opened my eyes to that, not midwives and as soon as I like said to my friend, she said oh Yeh totally normal, just know its normal makes you feel better.

You feel like you can handle it, don't you? Anything else apart from breast feeding that you think is an anxiety?

Back with his safety yeh. I mean that's easing off now, my mum was thinking about taking him out, and I'm thinking that zebra crossing over there is really precarious, and telling her about that, and all that stuff and breast feeding and his safety I think.

So in the pram as well, cos the pram goes first into the road, before the person does, that's the obvious thing.

And people park on pavements and you have to go round the car on the road to get to. Nightmare.

How have things changed since baby was born?

Completely, you ask Tom and he says, just an extra thing I need to do, that's what he says. But me it's like my whole life has gone inside out, totally eccentric. So it has completely changed. It will do cos....

Leo collide.

You know it is like he is everything, isn't he? It has totally changed, like totally changed.

Has your relationship changed at all?

Yeh, but for the better. Like not that it was bad, but really close now, like we are a family and I didn't expect him to be so sappy about it.

Its lovely isn't it? What about you time? Are you getting much personal time?

No not really, a shower, I had to bathe my stitches every night, so I did that for like ten minutes and tea and cry again. But then I suppose I do get you time for the fact that I can read my book and stuff while he is sleeping on me. What I have got a baby carrier, like a bomber thing. I haven't tried it out yet, cos I was anxious about it, but I think, well you could him in it from seven pounds but I just wanted to wait until four?

Which one is it?

It's a bomber, it's called a bomber.

Is it like, does it go?

Yeh. It's like..

Goes over ... they are great those.

Yeh it's a good one, so I thought that would actually get me to do stuff around the house, cos I can't do anything, cos he is on me, but if I have him in the sling, then I can do more stuff. I don't what I'll do, but otherwise you are just plant on the sofa aren't you?

How do you feel you have adapted to the changes?

Yeh, okay, I think I have brought a bit of a blitz mentally, so you just get on with it. I think I am okay, I think I am over worrying, thinking oh is it too hot or too cold or whatever, but I am a worrier anyway, so it is probably expected. So yeh.

Then you are meant to be when they are little aren't you? Cos that is how your maternal instinct keeps them safe isn't it?

Otherwise.

What advice would you give to other first time Mums who are about to have their baby?

I would tell them, about the class.... Feeding, you know tell them about what could happen in birth, except for the fact , if people had told me this, don't expect what you expect, just go with the flow, I would definitely not scare people, cos it was fine, I survived it, yeh it was only pain, and I had pain relief so, absolutely fine. I would tell them about cl.... Feeding and also give yourself a break. But then people tell me about giving myself a break.

I think everywhere always says oh breast now and you'll like I don't wanna breast.

Cos it was like he went to sleep at ten thirty and Mum was like, go to bed, I was like, I won't go to bed, I am really awake Mum. And she went to bed and then I woke him up. Didn't go to sleep, don't tell her?

I won't tell her. Before moving onto the next stage of the interview, I would like to ask you how things are at the moment, so how have you felt in the last week?

Better, like it's turned a corner, so still tired, like I get periods of tiredness through the day, but I have been more mobile, I have been going out on my own, you know, and feel much more confident, yeh.

How's baby been over the last week?

Yeh fine.

All good?

He is feeding loads, he is smiling.

I know I saw as soon as I came in he was smiling, I was like aw.

It's weird, he is four and a half weeks.

No it is definitely a smile. He is early but.

Yeh, just going to open the window cos it's hot. Yeh no he is fine, he is funny, I think he is going to have a really dry sense of humour, like he looks out of the corner of his eye at you , I feel like he is a baby , it just feels like he is Leo, and it does not feel like he is really small now.

He doesn't look small.

You are really hot aren't you? Gets really red face pressed against me.

Have you had any specific concerns, say in the last week?

Last week, no, I don't think I have no.

So I would like to ask about the kind of support you are receiving at the moment? This is just general support with baby or just for you, you know anything that is helping you. So anything that's on there if you just add like a G to it for general or anybody new, just add them with a G.

Okay.

He makes some lovely noises, doesn't he? He is proper looking at you.

Oh dear, that's friends who have had children, and then these are all quite close, it is really intense, I don't see anybody else.

Have you had a lot come round since?

Not loads, it was quite soon afterwards and I invited everybody round and then I de-invited them round cos I thought I was not ready, so some I have not seen yet, cos they will be oh, she doesn't want to see us yet, but I am now out and about seeing everybody, so these re people I haven't seen. So sorry I am not ready.

That's good that you can say that, cos some Mums I think struggle saying and they just end up overwhelmed with people and.

I think if I had lived at home still, like where my parents live, then I think it would have been different, still their friends and stuff, but cos I like, not family and stuff and friends I have known for every, so they will definitely be round soon. These ones I can kinda say. They are all flipping working all the time anyway.

So I'd like to move the focus of the interview to infant feeding and ask you about your views and experiences now you have had your baby. So how did you chose to feed baby after birth?

Breast feeding.

And was that planned before?

Yeh.

And has your method changed at all since then?

No.

**A bit of a boring one now, just got to ring off some things, like a 24 hour recall. Since this time yesterday can you tell me which of the following baby has received frequently?
Breast milk direct?**

Yeh.

How many times? Does not need to be exact.

More than eight.

More than eight. Formula milk?

No.

Expressed breast milk?

No.

Other milk?

No.

Cow's milk or evaporated milk?

No.

Plain water?

No.

Juice, sweetened water or herbal tea?

No.

It's a surprise, vitamin drops?

No.

Anything else at all?

Infacol, I wasn't sure, cos somebody told me that when he is c.... feeding during the last few nights, he has been really fussy round the boob, a little bit and looked like he was, so I thought it was just part of ... feeding, spoke to somebody on Saturday night, and said he might have wind, so I just tried him with some Infacol. They say every feed, but didn't do every feed and he is starting more and hasn't been fussing so I think he is did have a bit of colic. I know they say that breast fed babies don't really get wind, but..

They still get colic.

So I don't think, I am not sure whether it was hundred per cent colic, gave it to him anyway, only gave him a little bit and he seems to be better so.

If he is feeding like that as well, he is probably taking in a lot of air, he's on off, on off. He is probably taking wind in with it.

And the latch thing, they say if he start tutting then he is not on properly, but try and try to get him on as much as I can, he will still do it a little bit, so I don't know whether my left breast isn't perfect, he is getting what he needs I think.

Have you had someone to come out and check?

Yeh. But I think sometimes, you know in the middle of the night when it is so fraught, and it's not a massively wide mouth that he has, definitely is getting loads, so I don't know. I think....

I think all the while he is getting full and sleeping afterwards and gaining weight. He is actually fine.

I think he does tut a few times, but I think it is because he moves off a little bit. So that maybe what it is. Cos he was right at the end of it at one point.

I know I love it, they are like little froggies. Proper cute. Love it when you wind em. You put them on your knee and wind em. They look like old people. Bless him. How confident do you feel about feeding your baby?

Now I feel about nine out of ten, at the beginning I didn't feel very confident, no at the beginning I did, in actual everyone was giving me gold stars in hospital, it was all fine and then I think it was when I came home from hospital that first night didn't sleep at all and the midwife came in for the first time at around 8.30 in the morning and I was sitting in bed without a top just like, I don't know what I am doing and that's when she started getting me to show her my nipples all the time, obviously nipples I call her now. Cos she is like, how are your nipples/ They are fine. Show them to me and I was like, no. For the first few weeks, just walking round with just a shirt buttoned up, just like, just like a cow, but then , what was going to say, I really relaxed , like first feed, oh yeh take a photo , and then I think it is because of the intervention, the bambi people came round , you know everybody came round, you know like, show us your nipples, show us your nipples, it was like being unnatural and then he got like urolites in his wee, so I thought it was blood, and I rang the midwife and she came round and she was like no it's cos he is not feeding, he is not getting enough, it's like he is dehydrating , which upset me so much, you know, so but then it was fine, so.

How did you overcome that one?

Just kept on feeding him. It was the same time as ten per centing, so ..

That really compounded it. Has there been anything that has boosted your confidence? You mentioned that really knocked your confidence.

Him gaining weight, well you can see how big he is getting, really is good.

What if any problems you have faced with him? You mentioned the latch.

I think it is because I was looking at the latch too much. When you practise in the breast feeding workshops without baby, it is like a static thing that doesn't move.

With the knitted boob?

Yeh. And it doesn't move and he is like wriggling around, trying to open his mouth, with the nipple just faffing over it and stuff, those things you forget, that you don't know about, it looks like I am wrestling him to the breast, obviously such a natural experience, me.

You have to get his head and then actually place it, don't you?

And then trying to get his hand out, get your blood hand out! So yeh,

It's like they are learning aren't they as well? Exactly the same time as you're learning and if you like, what's going on here?

It gets himself on now, so that's okay. And then obviously not knowing about the c... feeding and when he was feeding so much, not knowing whether that was normal or not.

And you have dealt with them, just by continuing feeding?

Yeh. Getting good advice from friends who have had babies and who are breast feeding, they have been fantastic, like really fantastic. The people that don't know me that much on Facebook or whatever, and have just been emailing me to say, how's it going, do you want any support or do you want to know anything and I am so surprised, you know, friends who I have known for years offering, not patronising or anything, just .

I think once you have been through it and you have had the problems yourself, you really want to offer the Mums support. Infant feeding support, if we can plot that on.

Bambis pretty much go under midwives.

And would the rest be infant feeding support?

Yeh. All have been very supportive about it.

So how do you feel about your current feeding? How do you feel about it at the moment?

Yeh okay, confident with it, and you know fed outside yesterday at John Lewis and feel fine about it, I'm not really that shy, but I did this sort of thing to cover up my modesty. If there is more about it, I'd like to regulate a bit more now. I am ready for like the 12 week, gonna know when he is going to sleep and stuff, when he is fed and..

And start planning, like your life. What do you think are the good aspects of this way of feeding?

Definitely bonding, I feel it as well as him and also the fact that I can pacify him normally without wanting a boob. So they are the main things.

Have there been any downsides?

Just the c..... feeding, I suppose.

Just like the variance in one.

And just having to relentless for five hours sit there.

Can you foresee any changes?

Yeh, hopefully it is going to regulate a bit and it will be far apart and he will be getting good milk.

When it comes to feeding time how do you feel? Like how you think feeding can affect your mood?

Erm, normally it doesn't affect it at all, I think like when it is half twelve at night, been feeding all night, and I think is he actually ever going to sleep or when this feeding is going to stop, cos it is relentless. Every single time it does, somehow he just passes out at some point.

But you don't know when.

Yeh, it is usually about 1.30, but every night I think Tom goes to bed and I am like right see yah, there is no point in me going to bed then, cos, there is no point, might just as well be there, got box set stuff, so I just watch them.

I bet you are box set queen aren't you?

Yeh watching Mad Men which is not too violent, so .

So finally, I'd just like to ask some brief questions about your baby's feeding routine? S how would you describe baby's appetite?

I think he has got big one but then I don't know whether it is just because the way it goes with breast feeding maybe at the beginning that they are just trying to do their job, yeh I wouldn't say that he is particularly greedy, not greedy but nothing to compare it with, so I don't know.

What is he like during feeding time? Is he content?

Yeh, normally he is content, think now he is just a bit unsettled but he is normally just on there and quite happy.

How long does the normal feed take?

Erm, I would say probably 40 mins.

What do you think of his pace?

Pardon?

What do you think of that pace?

It's alright actually, I think that's short cos it was, so long as it is not continual, like it has just been continual now?

No it's not bad, like they say when they are little, about an hour. How often does he want to feed each day?

Erm a lot, I dunno.

Every couple of hours?

Yeh, sometimes every hour and at the night time it does go two hours to 2 -3 hours, but I think also he gets bored, well not bored but he is asleep, then he is awake, right okay what now, a feed.

And that's all they know isn't it, that cycle?

He is aware of like light and stuff, not touch, I am waving something in his face, and he has no idea.

Never thought of that before, but yeh, that is all they are conditioned to do, isn't it, just feed straight away. Do you feel the amount he is feeding alright, is it too often, not enough or?

Ideally it would be a bottle fed baby, but that would be ideal, every four hours thank you very much would be great, but this is what I want to do, is better for him so want to do it. My inconvenience for a few months is nothing is it? When you are going through it, oh God I do want it to stop now, you know, and if I wanted to do it any differently I would.

Would he feed again soon after happily if he had a feed? He'll go back on?

Yeh, yeh. The only time he is like not wanting anything, if he has had a really big feed, and he is tired, otherwise he would be on there all the time, I think.

How can you tell when he is hungry?

Oh he will cry but usually will mooch.

Yeh and hand in mouth?

With his mouth he would just do that baby thing.

Like rooting and that? Does he ever want more milk than you feel you can provide?

No I don't know if that is breast feeding or not, so I feel like I can't really see what is going on, so I don't know how much he is getting each feed and so it is really difficult to say, I like it when he comes off sometimes and he has got milk on face but actually see it working, I am not at the stage where I need breast pads or anything yet, but somebody said it will all happen, so I don't know. If somebody said I was not producing enough milk but I don't know if I am or not.

Think that I the problem a lot of the time, cos you have the weight thing and immediately think, oh I am not producing enough milk then because of that and it's , and then it is almost a vicious circle from there on in.

It seems like they need to stop ten percenting cos, seems that everyone's experience is more or about the same breast feeding, they say 7 – 10 but I think they need to adjust it a bit because.

What they said about Alder Hey is horrendous, for a baby of that size? If he was prem and lost that then fair enough.

And he was happy, he wasn't..., he was fine.

It is just one way to put you off.

I forgive her now. Mrs Nipples.

Is that the same one?

Yeh. And she feels bad I think, said I have been thinking about you all weekend, she had realised I wasn't rude or anything, but I think she realised she should be saying that.

Really?

Yeh, and now she is always like you are doing really well and it's great and like overcompensating.

Can I see your nipples?

Yeh.

How can you tell when he is full?

He falls asleep.

Yeh, that's his main view is it?

Yeh.

How often does he take a full feed or what you would class as a full feed?

Oh I don't know, most of the time except for the evenings, I think he is always on in the evenings a lot more, but apart from that he seems to feed and be satisfied, you know and have a full feed. The best feed is the first feed in the morning and then I know, but apart from that, I dunno.

How do you feel about his milk intake overall? Are you satisfied with the amount he is getting?

Cos of his weight gain?

Yeh is there anything else you would like to talk about before we end?

Appendix 17: Copy of a time three transcript

Thanks for taking the time to talk to me again today, as I just said the interview is going to follow the same kind of structure as the last one that we did. The first part about anxieties, the second part is infant feeding and how it might have changed since last time we spoke. Again if you need a break or anything, just let me know and it will remain confidential, all of it. So first, I would just like to recap on the key things we talked about last time, erm, so you breast fed from birth and continue to breast feed, low anxiety where you had had a difficult birth, but you had managed to come through it alright and he had quite a solid appetite shall we say in the last one. Is that alright? Is there anything I have missed at all?

No No.

So I would like to ask what life has been like since last time we spoke, how would you describe a typical day now.

Right, we normally get up around six, he has feed and a change and then he probably goes back to sleep for a couple of hours. I just tidy up.

Do you not go back to sleep?

No, well once I am up, I am up. So he goes to sleep for maybe an hour, hour and a half and then he will probably want feeding again, and then we kinda go out to shops.

Do you go out most days?

Usually I try to, cos I find it hard to entertain him.

You get cabin fever by the time it gets to afternoon.

There is only so much you can do on play mat and chair, yeh, what else do we do? We come home and probably another feed and make tea, then he gets ready for bed, normally goes to bed about half eight.

Oh so you have got a nice little routine going on now.

Yeh, he has a bath every other night, and that's it really.

Better than bathing every night. I don't bath mine every night.

Oh no, it is quite stressful isn't it?

Well it takes a lot of doing, doesn't it?

Well actually Noel does it, so he does the bathing and I do the feeding and putting him back.

Oh it is nice like, he has got job that is solely like his.

Well only because he says I will scold him in the bath.

Is that what he says?

Not just a thing, I am sure I won't. He says I have got no feeling at him, I don't know what temperatures like, cos when I get out of the bath, I am red raw, like it hot, so he says I'll do it, so no, he does like doing it anyway.

Nice for him to have little something. Nice for you to get a break for half an hour.

Cos we do it in that big bath upstairs, we have one of them seats, rather than a big plastic thing, so it is quite hard leaning over, I do get a bad back now and then since I have had him, don't know if that is part of.

I think so, I have suffered with my back since I have had both of em. Yeh I think it is quite common. And he is quite big isn't he? He looks quite solid, you know what I mean. And you are only little as well. So how is he sleeping now? You mentioned you have got nights about every hour and an hour to two hours.

Two hours probably, every two hours, well before midnight he sleeps more, like three hours sometimes and then as soon as it hits midnight, he wakes up every two hours, then sometimes it is three hours, never less than two hours but never more than three.

And are you coping with that alright? Do you get any naps during the day at all with him?

I could probably try, but I don't.

When you are up, you are up, yeh. And is he having naps during the day?

Yeh, probably in the morning he has a nap, if he is out in the pram, he will sleep all the time he is in the pram.

It is the movement isn't it?

Probably just after three, he has a nap, then four to five he is wide awake then for when Noel comes home.

That's good, so then he is up until bedtime then.

Yeh.

That is pretty good. What about crying now? Is it little, more often, same time of day.

You know I say to people, he doesn't really cry much. Even when he wakes up for a feed during the night, he doesn't cry, he just stirs and moves his legs.

And you know that's what he wants?

Yeh, sometimes, I don't know, he cries, but not like some babies all the time, you know when you hear em.

He is pacified quite easily, you will pick him up and he will, perhaps you know what he wants before he starts.

Yeh he doesn't seem to cry, next door say they never hear him, so.

That's good, that's really really good. Any coping strategies for when he does cry, what does he like?

What is he liked? Think he likes being rocked in his bouncer. He likes being walked around, to have a look round, or maybe if he is really, well he did a few nights when he cried quite a bit and took him out in the pram and he was fine then.

Got him off to sleep that way.

Yeh don't know what that was about.

We used to take ours out in the car seat. As soon as you got them in the car seat and set off, they would start... What has changed most in general since last time we spoke?

Not a lot really, I don't know, nothing really. Not that I can think of.

Just he has got bigger. Do you feel like you understand him? More what he needs now?

Yeh, I know what I am doing better now.

And how have you felt generally since last time we spoke?

Alright.

Couple of concerns about like his snuffles and things like that, do you feel more.

Yeh I feel more confident now, it is other people, like Noel's Mum came round when he had that cold last week, she was going, oh you must take him to the doctors, and I knew he wasn't ill enough to go to the doctors, but she would not let it drop, so I ended up taking him just to keep her quiet, and I got there, and they said, oh he has just got a cold, it will soon go and I felt stupid then.

You know don't you?

I knew he weren't ill, cos he was still smiling, he was still well in himself, just snuffles and. What's this noise? He doesn't like being ignored.

So how has your mood been, has it improved since the post-natal period or have you been fairly constant?

Constant, really.

Fairly stable.

I did feel a bit sad, think because my periods had started a week before, felt a bit down, yeh and I thought I wonder what it were, but now I think that's what it were.

Take a while when you are break feeding to kick back in don't they?

I didn't think they would at all until I finished.

Sometimes they don't.

Mine did, and it made me feel a bit off.

Are you using any contraception?

No not yet.

That's what happened to me. I thought exactly the same, I am breast feeding it will be fine and as soon as I had my period, I had one and then I was pregnant again.

Oh my God. We want another one, but not that soon.

That was the only reason I asked.

We haven't, he hasn't been near yet.

Takes a while, dunnit? Last thing on your mind. And how have you been with other people?

Alright yeh.

All getting on okay?

Yeh yeh.

What have you really enjoyed about being a Mum since last time we spoke?

Just looking after him, I don't know. Just that really, just off work.

Being off work yeh? Have you any plans to go back?

Yeh, I go back in January.

Oh well you have got a while then haven't you?

It is going quick though.

When have you been off since?

Just before May.

So you are like taking nine months off?

Yeh nine months, I have got two jobs, gonna take twelve months in one, and back to my other one.

Part time for a little bit.

Yeh.

Yeh, you said you worked as a classroom assistant weren't you, but you also worked at Marks and Spencer's.

Don't know whether to try a few months at Marks and Spencer's and then just go back to school first, don't know, gonna see. Not liking the idea of going back in either one. Don't know.

You can take a year, it is just whether it suits you financially isn't it? It is a tricky one, it is a hard decision to make. What hours do you have at?

I do half eight to twelve at school and then normally one till five at Marks and Spencer's.

I would definitely take one back on.

But if I don't go back to Marks and Spencer's, I have to pay back all my maternity pay and you get paid in full for nine months, so that is what like having to go back really for a little bit, three months I have got to do before I can quit without giving back my money.

Could you not go back to Marks and Spencer's first?

Yeh I could do.

Then do that for three months , then you could leave Marks and Spencer's and start back up at the school and just do that, and that way you are not gonna do a full timer.

It's the job that I hate really.

Which one?

Marks and Spencer's.

What do you do? Are you just on checkouts?

Yeh, on the clothing department.

I never used to like the retail. I used to work at Dorothy Perkins when I was younger on the shoes. I hated it.

At night time the pair of you mope, used to do anything to avoid it.

Oh my job, just shoes. Anything that you really haven't enjoyed about being a Mum since last time we spoke? Anything that you thought I could do without that or I wish this was not happening?

No not really, cos I have been wanting to be a Mum for ages, so....

Everything has gone as you expected?

Yeh, I think I have said this before, cos I am older I don't know, I just think I was ready for it.

And you are coping with lack of sleep?

Oh yeh.

You look really bright faced? You are like you get more sleep than me.

I have been in bed since half eight though. I don't actually go to sleep, I wait for about an hour, on the internet, you know how you are,

I am tablet mad at the moment. Started reading that Game of Thrones on Kindle on tablet, just like obsessed with it, going to be real early, but like last night I went to bed at nine but I was up until twelve reading it. What do you feel are the main anxieties than women might have at this stage of being a Mum opposed to earlier stages? I know you touched upon being, saying that you had concerns or

Well yeh, had concerns, not really, but hadn't read, and not looked into, but then I think they will help, cos I go to massage on Monday and they all talk about weaning.

That's nice, you had just started that hadn't you last time?

Yeh still going.

Everything alright.

Some weeks, more enjoyable, every week I can see he is doing something different, like he wasn't opening his eyes when I was massaging him, and he does now and he laughs at the humpty dumpty and he were doing that before.

So he is responding to stuff?

And I know people there now, and that's nice.

Really good isn't it, a few other Mums and stuff.

Yeh gonna go to some of the other groups on Wednesday.

Do you have to, I was reading that one of my other Mums showed me the baby massage, is it one of them where you have to ask permission to massage the baby? It did make me laugh.

No we just get on with it.

You'll have it anyway. Any other anxieties other Mums may have, not you specifically, anything that you think or have heard from other Mums at this kinda stage, not sure about that or not sure about this?

Not that I can think of.

How's life changed since last time we spoke? So I have got a few prompts like relationships, personal time and whether the changes have been positive or negative.

I can't do anything without taking him now can I, now I am breast feeding I find it is really hard, I can't just nip out for the afternoon cos I have to think in advance of expressing milk.

Have you done that at all? Have you taken yourself out for the afternoon on your own?

No have I eck, no.

So just cos it is easier to take him.

Yeh I think so yeh.

Do you feed him in public?

I have been doing, yeh, well it took me a while to do it. On holiday I were doing it all the time, but since I have come back to Burnley, I don't know if it is because I know people out and about in town, I know that some of the Marks and Spencer's customers feel about breast feeding in public and it put me off, I don't know.

Really, is that from prior to you having him that you saw that, cos they are supposed to be breast feeding friendly as well aren't they?

It's not staff, it is the customers, cos they are elderly, they tut, and give you some looks.

So that has put you off.

Cos I know, cos when you work at Marks and Spencer's you go in town, you know loads of people, well they know you, so everywhere I go there is always someone that I know, so it has put me off so, I try get home.

No I don't blame you. It is awful to have to feel like that isn't it?

And you don't want to go in the toilets do you, cos they are filthy aren't they? And in Burnley there's not, like in bigger towns they have places where you can feed your baby but in Burnley there is nowhere.

Nowhere you can go and sit and anything?

No I have looked, so we always end up in Marks and Spencer's changing room, cos I know I can go in there.

At least you have found somewhere. How has life changed for you, we mentioned personal time, not really getting a lot of that with him constantly feeding, with only feeding from you.

And when I go out with my friends as well. I have been out once and I felt like I needed to get back in case he weren't settling cos now that I have said that he weren't settling properly.

Off a bottle.

Yeh.

Is he taking a bottle?

Oh yeh he takes it alright, he drinks it, I think he drinks more when he has a bottle, whether he is worried cos I am not there, I don't know.

Possibly, they are a lot more dependent on you when they are breast fed.

Cos he will drink four ounces and more well he wouldn't have that much off me would he? Would I be giving him four ounces?

Possibly.

Would I?

You will be giving him equivalent. It is different composition in breast milk, cos like four ounces of formula you can probably get what he needs off three ounces of your milk, cos it obviously has a lot more nutrients and fats like that, that he will get from it. So no I am not sure. What about your relationship? Has that changed at all since last time we spoke?

What with Noel?

Yeh, you mentioned he is doing something now, you are sharing certain roles.

Well, yeh, cos he is doing the bathing, I don't know, but at weekend when he is at home, I tend to just do more , just feeding, where he will play with him and whatever, and I can potter on and do other things, that I could not do during the week. But they say you should just let them entertain themselves, but he didn't like it. And I feel guilty so, end up sitting with him and stuff till he is asleep, and he is only asleep for a little bit, so I don't get anything done , so on weekend Noel takes over, and I have a rest or do little things that I can't do.

It is nice that he is giving a bit back at weekend and stuff.

Oh yeh he tries to.

And he is getting plenty of sleep during the week.

Oh yeh he doesn't even wake up, he goes how many times did he wake up last night. He sleeps through it, but it is cos he doesn't cry isn't it?

Are you all the same room as well and he doesn't wake up at all.

No.

That's alright. Would you say the changes since last time we spoke are for the better?

Yeh, definitely.

Things have got easier.

Yeh, cos I hear a lot of people asked how's it going, and he goes, yeh it hasn't really changed much, he has fit in really well.

So he is basically fitting in with you rather than the other way round? You haven't had to change a lot to fit in with him. Has it been how you expected at this stage?

Yeh.

Is it how you thought it would be?

Yeh.

Anything that you have struggled with adapting to at all? Or that it is taking you a while to get used to?

Well, yeh, like not being able to go out and I think that is probably the only thing really.

Just the restriction of not being able to go quickly to go and get something without it being a major operation?

I know yeh. Had to go to the shop earlier for bread, put it off, so don't have bread today. Just have a pie out of fridge. Isn't that lazy?

No. all you need is bread then it is hard work to go out for just one item isn't it?

All the way to Tesco's and that. And that is with the pram.

I know I would brick it on there, if you let go.

Noel says that, don't let go make sure them brakes are on.

Is there anything that you have learned about being a Mum since our last interview that you would give advice to other Mums, so anything that has helped you that you didn't know about earlier.

I don't know, no cos I haven't really done anything, have I?

Anything that you have found easier, like a tip or a trick, do this because I know it settles him easier, I don't know.

I can't think of anything, there is, but can't think of anything off the top of my head.

Anything that has been difficult for you that you wish you had been told about earlier, you hadn't received information about.

No not really. I think I have had loads of information.

The help you have received has been good, would you say?

Yeh, lot leaflet upon leaflet.

Have you been reading through em and stuff? Has your health visitor been round?

Yeh.

Is she giving you plenty of advice?

Yeh, I have had two so, a trainee one and another one. I think the trainee one seemed a bit jumpy, every time she would come, she would tell me stuff and then ring up and double check that she had said the right thing, so it put me off a bit.

What, said like...

They said his foreskin tight, did the doctor and she was like next time you go to the doctors, when he goes for his injections, ask about it, and what they are gonna do, and I weren't gonna ask cos I looked it up on the internet, it is quite common and so then she rung up to, like don't ask the doctor about it, I would just leave it. I thought why would you ring up saying I don't know, she did it before as well when I told you about putting the hairdryer on the bellybutton didn't I?

Yeh you did.

And she rang up about that, saying something about that, I can't remember what it were now, yeh going back on herself.

And make sure it's.....

Not that I would do that, but.

I know we said last time.

So yeh apart from that, but when the other lady came, the other one who has been doing it for a while, was really helpful, yeh actually she gave me some tips, can't remember what it were, something about breastfeeding. Oh yeh the tip were that cream that were a good tip, that I give to other Mums, the good quality breast pads, not them cheap ones, found they really helped, cos cheap ones you end up wet through don't you?

You really do as well.

That's it really.

Yeh, that's good, that lanolin, I thought was just of immense help. Do you get any pain at all?

No not now, don't have to use that cream now, sometimes they get a little bit dry and I put a little bit on, but no everything is fine now, I did have a bit of that mastitis once, but I carried on and persevered and it went away.

Did you get it on both?

No just in one.

Did you get a temperature or anything with it?

No, it just seemed to pass, really painful though.

One of my Mum's, had to stop because of it, she had really, you can get like flu symptoms with it and it can make you really poorly. Before moving onto the next stage, I would just

like to ask how things are at the moment during the last week. How have you felt in the last week, think you mentioned that you came on your period and was a little bit down? Do you think just hormonal?

Yeh definitely, yeh.

And what did that just make you feel?

Just like, you know everything was annoying you and then I was alright after that, I cried as well and that was it.

And how has baby been during the last week?

Yeh, he has been fine this week, alright.

You mentioned he had a bit of a cold, has he got over that?

Yeh. Since he has finished with his cold, he has been fine.

Just administered a bit of Calpol and bits like that?

Yeh, nasal drops and that for babies. I love it myself, it smells really nice. And yeh he got through it, he is still sleeping and whatever, it was just the noise he was making.

Did you catch it?

Noel had it first, and then he got and then I got it.

I got one in the Summer, you know when it was really hot, full blown cold in the middle of Summer, never had one of that before, awful it were. How has he been with his jabs? Been alright with his injections?

Oh yeh he was fine, he just slept when he got home after that first set. Could it have been him the jabs that gave him a cold.

His immune system might have been lowered a bit, cos they give you a weak dose of the virus don't they, so if he is fighting that and there is cold about, he might just caught it, that is all, they can make you snuffle a bit.

He were fine apart from the cold.

And they can get a cold or have a cold when they start teething.

Yeh like I was thinking that, he started sucking his fingers, putting his hands in his mouth more than he did before, didn't know whether that was just one of the things.

Really snotty, they can get really snotty and they can get lose poos, you will know when it happens and he will be a grumpy git.

He can be quite grumpy already, I thought he was just taking after his Dad.

Is his Dad grumpy?

Yeh.

Our Ste is pretty grumpy. So no specific concerns during the last week?

No.

Just like to ask about the kind of support you are receiving at the moment, it might not be as much as it was on previous ones, so again anything formal, so you mentioned he is doing the bathing, that might be helping you a little bit, any friends or family, more formal so, health visitors or children's centre, your baby massage or anything like that.

Finished with my health visitor things now.

When does she next dome?

Eight months isn't it?

Yeh. Make sure he is sitting up and stuff.

Yeh, he don't like going on his front, you know they keep saying do that.

Neither of mine did?

Did thy?

No, they hated it, like tummy time, tummy time, and you put them on their tummy and they go.....

He goes mad, he is like...

I wouldn't worry about it, he will get his strength from other things, he will learn to roll and then when he does it himself, he will be a bit happier then, cos he has done it himself to get there. If he doesn't want to be plonked on his tummy, I wouldn't make him, if he prefers it on his back.

He hates it.

I got like a toy that promoted it, and still both of mine hated it.

I was thinking about you can get them rugs things with a bump on em, he rolls forward and that distresses him. It was good for getting when he had a cold the other week, when I put him on his belly, a lot of snot used to come out, so it were good for that.

Yeh, he is eating his hands isn't he?

Yeh. I used to suck my two fingers and he is doing it as well. Did you give yours dummies?

One of them I did.

I didn't know whether I should give him a dummy, cos my teeth stick out now with sucking my fingers and he is gonna be the same.

Dummy is the same. I mean I took our Sophie down to dentist, cos our Sophie had it, oh God it was a nightmare to get her off it as well. Horrendous to get her out of it and yeh her teeth have bucked forward at the front, said it is fine cos she has stopped now and it will go back again, but I wouldn't worry, if he is gonna do it, he will do it.

Yeh he will do it in his sleep and anything won't he?

I used to suck one finger, like that, just one. I did it till I was about ten and I had to sit on my hands in class to stop myself from doing it.

Think that's it.

Good, all the help you have received been helpful? Anything you have received that has not been, you mentioned the health visitor in a couple of bits there.

Yeh everything has been helpful, and I can ring up for the next six months to get help with weaning or I can go and see them about weaning. And if I want to do it before six months, then to get in contact, you know.

Yeh cos they advise six months, but Say four months which is a bit confusing.

I have got this feeling that I will know when he is ready.

Yeh you will do, he will start staring at your food.

You know he is doing that now when I am eating my tea.

Does he?

Yeh.

They get really interested in food and then after a while he might try and grab at your food. But ye you will know. And it is easier when they are sat up, cos they can pick themselves at stuff, it makes it a bit easier. So I would like to move the focus of the interview to infant feeding. Still exclusively breast feeding? No changes at all since last time. The boring question again, since this time yesterday can you tell which of the following your baby is receiving frequently. So breast milk direct?

How frequently.

So you are running off every two hours during the day as well?

No three hours during the day, it is less during the day, probably three hours during the day.

Is that from like six?

Yeh.

Going to be about ten to twelve times a day, does that sound about right.

Yeh.

It is a lot isn't it?

Yeh what time is it now? Yeh three o'clock, probably why he is sucking his hands.

No formula milk at all?

No.

Any expressed breast milk in the last twenty four hours?

No, I haven't done it for a while that.

Any other milk at all?

No.

Any plain water?

No.

Any juice, unsweetened water or herbal tea?

No.

Any vitamin drops or medicines?

Yeh vitamin drops yeh.

He has those on a daily basis?

Five drops on a spoon.

Lovely, yeh I know the ones you mean. Is it the ones you get free?

Yeh.

How confident do you feel feeding him now?

I am very confident, yeh, apart from in public.

Yeh, has that changed since last time, do you feel like you have got more confident as you have gone along with it.

Yeh I used to worry about am I latching on properly and all that, but now I don't. Cos he is putting on weight, so he must be, it must be right.

I mean if it is not causing you any pain, then no problems with it. Is there anything which has boosted your confidence, you mentioned weight gain, think that has helped you?

Yeh. Cos I was taking him to get his weighed every week, getting a bit obsessed, but now I file fine, I don't take him very much now.

Once they set you up, put them on the scales.

You get a bit obsessive with it.

You can, I think especially with the breast fed, cos it is just you who is doing it, you kinda want to know that you are doing it right, don't you. I think that is what it is. If you need to feed him we can take a break.

No you are alright.

Are you sure?

Yeh.

Anything which has reduced your confidence with feeding since last time? Have you had like any hiccups or anything?

No not really.

Any problems at all with feeding since last time?

No.

Are you receiving any infant feeding support at all now?

Well not now, but do you mean for breast feeding? No not now.

Lovely, so we would add anybody on for that. I'll make a note. With breast feed does it get to the stage where you just get on with it?

Well like there was only the health visitor, she checked first time and that was it. I said I was alright for the rest.

So how do you feel about the way you are feeding now?

What do you mean?

What are the good aspects of this way of feeding?

Well I think it is a lot easier at night, instead of having them crying while you get the bottles ready, you can just get em out of bed and feed straight away.

A lot more convenient.

He doesn't wake up then, he goes straight back to sleep after a feed, where I think if he were bottle fed, he would be awake for a little while.

You would have to like let him get awake while you are getting the bottles.

And he has had no stomach problems, he hadn't had wind, trapped wind or anything like that.

So you feel that it has really helped him. Gastro intestinally and things like that with his stomach.

Yeh cos, my other friend at Marks and Spencer's, she left at the same time as me, her baby cries nonstop at night and he is bottle fed.

It does really reduce the chances of colic, so, any other positive aspects?

I don't know it just makes you feel good, doesn't it. He is gaining all this weight and growing with your milk, I don't know.

Like you are solely responsible for it.

And you are not worried about what chemicals or whatever you put in.

It is like just natural, yeh. Any negatives, any downsides to this way of feeding?

Yeh, just the not sleeping for four hours like some.

So lack of sleep? Yeh.

Just not being in public places, I don't know I just feel like there is not enough places where you can just do it.

Confident feeding in public, which is a real shame isn't it?

It is really. Probably why a lot of people give up isn't it?

Yeh. They start wanting a bit of their own life back and stuff. And you also touched on like, you are solely responsible for him.

Yeh, you can't just leave him and nip out, where with a bottle, you can just give the formula, can't you and off you go.

Can you foresee any changes until the time comes for complimentary feeding?

No. I want to try and feed breast feed for at least six months. I am gonna try to yeh.

Well done, that is really good.

If he gets his teeth early, might not.

I don't blame you.

I know, it hurts enough when he clutches on, you wouldn't believe they could hold that hard.

Oh God yeh, you have to get your finger in, to get.

Noel jumps on bed when I am feeding him, oh my goodness.

When it comes to feeding time, how do you feel? Do you feel the act of feeding can affect your mood at all?

Sometimes I think oh no not again, and I try to put it off for a little bit, you know when you are busy doing stuff, no I think most of time it is alright, I think it's worse at night when you

are trying to get the tea ready and you have got to feed him, and only you can do it and then I don't know. I think oh again.

Noel not cook either?

Sometimes he does but I would rather him not cos he uses knife and fork, he makes it worse cos he is not washing up, anyway yeh.

Finally, some questions about your baby's feeding routine and appetite since last time we spoke. So how would you describe his appetite now? Would you say he has got quite a big appetite or is he on the small side?

No think he has got a big appetite, cos he always seems to be wanting, two hours, three hours, but sometimes he has small feeds and sometime bigger ones.

And that changes throughout the day?

Yeh.

Are they quicker at night than during the day or?

No, it varies, sometimes he can be like five mins and he is back down like he were just thirsty and sometimes he can be there for ages, you can never tell really.

Quite variable throughout the day? Is he quite demanding of milk or is he more uninterested now?

See that varies as well, sometimes he is, sometimes he is not, I don't know.

It just depends on where you are in the day with him? How has that changed since last time?

Yeh I think when he was younger I think he were more demanding, he was always rooting for more then, he doesn't seem to be as bad as that now.

Is he with feeding being established, he would want to feed more.

I think he has got better at it now hasn't he and he is feeding quicker.

And how does he react during feeding, is he quite contented, does he enjoy it?

Sometimes he does, and then sometimes he fidgets a lot when I am holding him, he will be fidgeting like that with his head for some reason, and I didn't know if he was latched on wrong but then sometimes he is happy, I don't know. Sometimes I think I get too much milk and he is choking on it.

My other breast feeder says that, she says she can feel it coming in and then he coughs like.

So I don't know sometimes I don't know if there is enough milk, cos sometimes when I am tired I don't whether I have not drunk enough water during the day, I don't think I make enough, or if I haven't eaten enough.

Yeh you need to eat plenty.

I have to make a note to myself to eat regularly.

Do you get really thirsty when you are feeding him?

I am thirsty all the time.

How long do the normal feeds take now?

Sometimes it can be ten minutes, sometimes like twenty.

Depending where you are during the day and you don't know which one is gonna be ten minutes and which one is gonna be twenty five.

Sometimes it depends what we have done, if we have been out, you know, or if it is hot.

If he has had a big sleep. You said he feeds between ten and twelve times a day. Do you feel that is adequate, too often, not enough?

Yeh I think it is just right really.

Would he ever feed again, shortly after you have fed him?

Yeh I think so. I think he would you know. I don't think he would feed a lot, he would just do a bit and then go asleep, like for comfort. Yeh

How can you tell when he is hungry now?

Well it is not as easy now, cos with him sucking his fingers, you can tell if he just, or if he is hungry, so I kinda go off the times now, how long he has been and what actions he is doing.

Does he ever want more milk than you feel you can provide?

Yeh always think, yeh think so, cos sometimes I'll feed him and an hour later he will want feeding again and I don't know if he has had enough or if he is extra hungry, I can't always tell.

He might be more hungry on that particular feed. Does he ever get, how often does he take a full feed?

Gosh I don't know, maybe twice a day, I don't know.

Does he often get full before taking all the milk that you think he should have?

No, I don't know, when he is full Baby crying cannot tell.

He takes himself off. And is that his cue to stop feeding when he is full, he will just pull himself off? And how do you feel about his milk intake overall?

I seem quite happy, with his weight growth, think he is getting enough.

Are you plotting it on the growth chart and he looks absolutely fine? And you are happy with his growth overall?

Yeh.

That's it, I have got like one last question. First of all thank you for taking part in all three of em, I really do appreciate it. I am wondering if you might reflect for a minute what these interviews have been like for you. So what are your thoughts and feelings during the interviews, how do you think the interview process has affected you if at all, or any other comments about how you found it.

I quite enjoyed it actually, it's good to chat about things, I don't know, you give me tips on loads. I have enjoyed it.

Lovely, anything else you would like to talk about?

No think that is it really.

Anything I have forgot to ask or think of things that I should be asking?

No.

Lovely, just to remind you that everything that you have said will remain confidential and thank you.

Appendix 18: Ethical approval (Chapter 5)

Dear Jo

I am pleased to inform you that IPHS Research Ethics Committee has approved your application for ethical approval. Details and conditions of the approval can be found below.

Ref: IPHS-1415-110

PI / Supervisor: Jo Harrold

Title: An online study to investigate the opinions and experiences of mothers who formula feed their infants (Formula Feeding Mothers: Opinions and Experiences)

First Reviewer: Michael Humman

Second Reviewer: Jon Cole

Date of Approval: 30.1.15

The application was APPROVED subject to the following conditions:

Conditions

- 1 All serious adverse events must be reported to the Sub-Committee within 24 hours of their occurrence, via the Research Governance Officer (ethics@liv.ac.uk).
- 2 This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, IPHS REC should be notified as follows. If it is proposed to make an amendment to the research, you should notify IPHS REC by following the Notice of Amendment procedure outlined at <http://www.liv.ac.uk/researchethics/amendment%20procedure%209-08.doc>
- 3 If the named PI / Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore please contact the Institute's Research Ethics Office at iphsrec@liverpool.ac.uk in order to notify them of a change in PI / Supervisor.

Best Wishes

Liz Brignal

Secretary, IPHS Research Ethics Committee

Email: iphsrec@liv.ac.uk

Appendix 19: Ethical approval (Chapter 6)

Dear Jo

I am pleased to inform you that IPHS Research Ethics Committee has approved your application for ethical approval. Details and conditions of the approval can be found below.

Ref: IPHS-1415-LB-197

PI / Supervisor: Jo Harrold

Title: An online study to investigate the opinions and experiences of mothers who breastfeed their infants

First Reviewer: Franklin Chang

Second Reviewer: Ben Ambridge

Date of Approval: 30.3.15

The application was APPROVED subject to the following conditions:

Conditions

- 1 All serious adverse events must be reported to the Sub-Committee within 24 hours of their occurrence, via the Research Governance Officer (ethics@liv.ac.uk).
- 2 This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, IPHS REC should be notified as follows. If it is proposed to make an amendment to the research, you should notify IPHS REC by following the Notice of Amendment procedure outlined at <http://www.liv.ac.uk/researchethics/amendment%20procedure%209-08.doc>.
- 3 If the named PI / Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore please contact the Institute's Research Ethics Office at iphsrec@liverpool.ac.uk in order to notify them of a change in PI / Supervisor.

Best Wishes

Liz Brignal

Secretary, IPHS Research Ethics Committee

Email: iphsrec@liv.ac.uk

Appendix 20: Ethical approval (Chapter 7 and 8)

Dear Jo

I am pleased to inform you that IPHS Research Ethics Committee has approved your application for ethical approval. Details and conditions of the approval can be found below.

Ref: IPHS-1415-LB-233

PI / Supervisor: Jo Harrold

Title: Development and Online Validation of a Postpartum Specific Anxiety Scale (Postpartum Specific Anxiety Scale)

First Reviewer: Graham Wagstaff

Second Reviewer: Michael Humann

Date of Approval: 22.6.15

The application was APPROVED subject to the following conditions:

Conditions

- 1 All serious adverse events must be reported to the Sub-Committee within 24 hours of their occurrence, via the Research Governance Officer (ethics@liv.ac.uk).
- 2 This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, IPHS REC should be notified as follows. If it is proposed to make an amendment to the research, you should notify IPHS REC by following the Notice of Amendment procedure outlined at
- 3 If the named PI / Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore please contact the Institute's Research Ethics Office at iphsrec@liverpool.ac.uk in order to notify them of a change in PI / Supervisor.

Best Wishes

Liz Brignal

Secretary, IPHS Research Ethics Committee

Email: iphsrec@liv.ac.uk

Appendix 21: Snapshot of participant responses used to generate the scale items

Participant	Time-Point	Response	Anxieties	Products of anxiety
Miss CL	2	Not knowing what to do, I think. Or if they are doing things, or breast feeding, they can get a bit anxious with knowing whether ... like at first with him I first thought is he getting enough and then I knew obviously, cos he is getting weighed every week and he is putting on a lot every week so, that that has made me feel better in myself. That's the only bad thing, you can, or if you don't know how to, it's like I know in hospital they used to show first time mothers about bathing and stuff, they don't do that now.	Breastfeeding Milk Intake, Routine infant care	Feelings of inadequate support, frequent weigh-ins
Miss SH	2	Probably about a week after he were born and I was paranoid that something was going to happen to him, I don't know if that was a part of baby blues. I kept thinking to myself, I was getting worried like, my health visitor came round and she mentioned cot death well that were it then, I were on internet looking what might cause it and do you know what I mean and apparently they were saying on the internet most common between 2 – 4 months, I am thinking of my God, what am I going to do when he gets to two months. I were like getting right paranoid. Like something were going to happen to him.	Paranoia about Infant Wellbeing, Cot Death	Internet research
	2	I was worrying about thinking that he was not getting enough milk and even though he were, like even when he was first born, he took about 20 mils, my midwife said that's really good, he was like only an hour old, and I said look how much he's took and she was like that's brilliant. She said they don't usually take anything. So then after a bit, cos he was only feeding two ounce every three hours, I was thinking he's not getting enough, like ringing people up, how much does your baby feed, you know what I mean?	Formula Feeding Milk Intake	Phone calls for reassurance
Mrs D	2	Are they feeding right, so I have been worried about actually is he getting enough milk, cos breast feeding you can't tell? Probably, how are they going to cope when their partners go back to work on their own	Breastfeeding Milk Intake, Isolation (partners returning to work)	
Mrs OB	2	At the beginning I felt quite anxious and it is more to do with oh God we have got this baby now forever and I really wanted him to be solid and big quickly and I just kept on thinking of all the horrible things that could happen to him, if I dropped him or something how I would live with myself and that feeling I did not expect, didn't expect that at all and it was debilitating, the fact that we went for the first walk and I always put him in the car seat, I... down the car seat and when home in my arms, kinda transferring him to the pram, I let Tom do it, cos I don't want to drop him on the concrete, he is solid I can carry him, it is just the fear of dropping him on concrete and when we went out for the first walk, Tom was like, pick him up and I'll take a photo of you under this tree, and said no I am not picking him up outside. Wouldn't do it.	Ruminations of infant accidents	Fear of Handling Baby
	2	so now I am paranoid about him being cold, so the things that people say, they don't really realise that ... he lost ten per cent of his body weight in the first week, the midwife said anymore we are talking Alder Hey, and those words made me so upset, I don't want to hospitalise my child just because I am breast feeding, so those things really have had an impact, I think about them now. Then obviously I am worried about him being too hot.	Paranoia about Infant Wellbeing, Infant Weight Loss	Sensitivity to Comments
	2	I think breast feeding, if you are going to breast feed, you think about the things that could happen, you don't really know about how you would feel if they lose weight and stuff. Don't think I knew about the cluster feeding, and now I know it has got a name, I feel really happy about doing it, before I felt quite stressful about it, cos I was like why he is feeding so much?	Breastfeeding Problems	gaining knowledge
Miss S	2	Most people had I don't know, to be honest everything, if I had just had the normal delivery with him and all that, I think my thing would be is he meant to be doing all this or should he be doing that. Is he having enough milk, because, like this was my thing before, how do you know how much milk to give him?	Infant Behaving "Normally", Formula Feeding Milk Intake	

Miss Mo	2	Probably with the breast feeding, erm, because I did that for four days, and on the fourth day I found a pile and my boobs were just , nipples were just ripped to shreds and I was just like, because he, the only way he would feed was the way he wanted to feed, which is what would hurt me, and like I got discharged on the Wednesday, and the midwife didn't come until quarter past five on the Thursday, so I had over 24 hours on my own and I know they say you can ring that number, and maybe I should have rung it, I thought what if somebody on the phone gonna do, they can't show me what I am supposed to be doing, I just thought they need summat 24 hours not wait until the next day when your midwife comes	Breastfeeding Problems	Feelings of inadequate support
	2	Erm, just not knowing that to do, cos I come out and I were like, never changed a nappy, and I had no idea. And like I went six weeks to ante natal classes and you just think, that literally the basics of when you change a nappy and what to do when they are not winding.	Routine Infant Care	
	2	As though when you have breast feeding you have no idea in take, so that is why I was expressing, put it in one of the bottles and I were like, how much will he have.	Breastfeeding Milk Intake	Expressing to monitor intake
Miss Ba	2	Maybe if they are crying a lot, not knowing what to do and you know if they have done everything they can and they are still struggling to settle them. Or some people like their sleep a lot	Unable to settle crying infant, Sleep Deprivation,	
Miss C	2	I was saying to my mum and dad in the first few weeks, all other mums know why their baby is crying but I just don't know why hes crying. Theirs sleeping as well, hes been in the moses basket, the cot and in bed with me and I'm still trying to figure out which one is best	Unable to pinpoint crying (maternal instinct), sleep arrangements	Feeling like other mothers are superior
Miss He	2	Getting it right, I think there's lots of contradictory stuff about breastfeeding, about routine, about controlled crying, do you pick them up, do you not. I think that's formal stuff that you read and what people talk to you about. I read too much and I've got too much knowledge, I get myself tied in knots and I say tied in knots because sometimes I wish there was just one thing and it was right. So yeah that's one of the main anxieties, theres too much and you love them that much you just want to get it right. And not to create something for the future as well, I mean I'm picking her up and I want to pick her up but I keep thinking oh god what if I am creating this spoilt child	caring for the infant correctly, optimal parenting, contradictory information, future development	reading too much about infant care
		Not showing yourself up as well, I took her into work the other day and I was anxious about that, and whenever I think about anxiety I think of you now. But I was thinking about why I was anxious and I was anxious about not showing myself up, I was like god don't cry	judgement from others	worrying about novel situations with infant
Miss Le	2	I think every little thing when they are crying, you think oh my god whats wrong at first, you know you panic don't you. In terms of health, if they have a skin problem or whatever, just something minor you think its more serious I think feeding probably as well, you know if youre set on breastfeeding and it doesn't work out then that would be a worry.	crying causes worry, Infant Health anxieties, breastfeeding problems,	catastrophising minor health problems
Miss Lo	2	getting into a routine, sleeping patterns and things like that, and I think partners going back to work, that's a big thing, well it were a big thing for me anyway, I just panicked cos I thought it were going to be just me and her, you know rather than someone else being with us	establishing routine, sleeping patterns, isolation (partners returning to work)	fearing being alone with infant
Miss M	2	I don't know if its normal but I getting disturbing images in my head, like really disturbing images of things happening to him, not harming him but me doing things, I feel like an absolute nutter. Like he's gone there now and I know theres a dog there and it makes me feel sick, and he doesnt understand you saw what he was like before he just doesnt understand how it makes me feel. I feel dizzy now, I actually feel dizzy just thinking about it, its really bad	Ruminations of maternally driven infant accidents, ruminations of infant accidents whilst not present, feelings of partner not understanding - isolation from relationships, physical dizziness	physiological anxiety, isolation

		That's another thing that I'm worried about, wasps and bees, I've got a net for the pram for when we take him out in the garden, but its when you are in the house, the other week two got in to the house and I don't know how they had got there cos the windows were shut, it only takes two seconds though when you run up to the toilet or something so yeh that's another worry	ruminations of infant accidents	buying additional safety products				
		making sure that they are getting the right amount I suppose, you know cos they cant communicate with you, and if they are still crying, you know is it hunger or is it wind, or something else, cos you can't tell and its difficult. With breastfeeding definitely, not knowing how much theyre getting, you can't tell can you.	Breastfeeding milk intake, unable to pinpoint crying					
Miss Ze	2	God, like all of it, like how are you going to possibly cope with this human, how are you going to feed it, how are you going to not get it wrong, for people that aren't aware of certain common sense aspects of the world it must be even more frightening, you know if they think that if you touch a sterilised bottle without sterilising your hand you are going to kill your baby, the fear that these people must go through, you know theres not a lot of common sense that goes about these days anyway is there. Yeah just being perfect and doing it right	being the "perfect mum", caring for infant correctly					
Miss Br	2	I think if you are breastfeeding it's a case of are they getting enough cos you just don't know do you. I'd fed her, cuddled her, changed her bum, rocked her and I had no idea that it was because she needed feeding again so it must be the same for everyone	breastfeeding milk intake					
Mrs CB	2	Just are you doing everything right, you know, cos he was on the fomrula, sterilising and you've got to make it and you've gotta have it and you can't leave it. And then just like when we firstgot him home and he was crying, I was like does he want feeding cos you dont know so I think its all, that not knowing, and youre just hoping that you are doing the right thing.	caring for the infant correctly, optimal parenting, unable to pinpoint crying					
		another one is are they having enough formula or breast milk, having enough sleep, I mean I've been constantly on the NHS website thinking is this right and is that right because you just don't know	milk intake (breast or formula), infant sleeping enough	using internet for reassurance				
		its like winding, how do you know when they have had enough winding, just little bits like that	winding infant, day to day care of infant					
Mrs H	2	I think everything I was paranoid about everything, are they sleeping alright, every sound they make, checking if he was alright, has he got a temperature, is he eating alright, is he well fed, is he sleeping properly, is he happy, am I doing the right thing. i dont think i slept for that first week i was just awake all the time checking on him. i feel more and more confident every day, i know now, i dont feel as paranoid, theyre just so fragile. i mean i just loved it when the midwife came, i was like great shes here ive got someone who knows what they are doing, i just felt like am i doing this right, is everything alright, i just needed that reassurance. i worried about absolutely everything, i wasnt bothered about myself, still not now, i feel a bit under the weather today, ive had stomach ache for about 5 days and sam was like go to the doctors. im just bothered whether he will get it.	infant sleeping properly, infant wellbeing, infant happiness, caring for the infant correctly, generalised worry, complacency about personal health	checking on infant, losing sleep due to checks, needing reassurance from midwife, delaying personal health checks				
Miss JH	2	whether they are doing the right things, how they are doing stuff, washing, changing, are they doing enough. I think one thing is when she does scream I can see how that might be quite stressful but luckily we havent had anything that's too long or thats too much, that we havent been able to cope with. i can see that scream could be quite stressful. yeah ive experienced the what do i do factor a little bit but then im like oh ill just google this, is this right just google it. its like oh we've been feeding for an hour or shes been sleeping for four hours, is this right. in the early days it was us timing her a bit more.	Infant Behavior "Normally", infant developing normally, excessive crying, caring for the infant correctly	using internet for reassurance, timing sleeps/feeds				
Mrs LI	2	the one thing I wasn't prepared for is how much id worry, I knew id worry and its this kind of well im gonna worry for the rest of my life and I wasn't prepared for that and I don't know why but im never going to be as carefree as I was. And I don't think i was prepared for that and if i was i probably would have just enjoyed not having those worries for a bit longer when i wasnt pregnant. and like not over excessively worrying but literally worrying about everything.	generalised worry, prolonged worrying					

Appendix 22: Snapshot of the face validation

Item	Mothers and Fathers			Statisticians/Psychometricians			Researchers		Midwives	
	BM	SH	CH	BB	MG	GMC	KB	JH	KR	AP
General Comments										
1. I have felt tired even after a good amount of rest	General?			Item 1 is unclear what constitutes a good amount of rest, especially post-partum.					1. (I wouldn't start with this. I'd start with a question that will engage the new mother and make her feel like she wants to continue answering the other questions. I'd recommend a different question that will really engage from the offset as many will be tired and have had little sleep) (maybe change this to 'I have had very little sleep since my baby has	
2. I have worried that my baby is feeding too much					Similar to Q12					
3. I have worried that my baby will stop breathing in the night									'I have worried that my baby will stop breathing whilst sleeping' Maybe use this rather than 'I have worried that my baby will stop breathing during the night' I don't think both questions are needed.	
4. I have worried about caring for my baby correctly e.g. nappy changing, bathing, dressing		I feel this should be reworded to I haven't felt confident or capable to meet my baby's basic care needs.	should no. 4 include 'feeding'?			You might want to separate this out into individual questions here and be more specific. It seems a very general concept backed up by specific examples, why not just include a battery of items for each the				
5. I have worried about my baby's routine				Item 5 - do babies have a routine? This could be reworded to emphasise the parental control over the baby's routine and the perceived appropriateness of	Similar to Q10					
6. I have felt that I am not a good parent								The term bad parent has a very broad range of understanding from bad as in will harm/hurt the baby or bad as in establishing bad habits e.g. picking the baby up too much. Is the participant's perception of the term relevant or is sufficient for this to be perceived as negative?		
7. I have had negative thoughts about my relationship with my baby			I have felt that my baby doesn't like me.			Reword to be more specific, perhaps?				How will a negative response be acted upon?
8. I have felt isolated from my family and friends				Item 8 - difficult to relate this to post-partum anxiety, the opposite could be true that the perceived isolation is beneficial while having too many interruptions from friends and family may be the				Number 8 and number 43 appear to assess the same aspect		May cause an anxious mum to worry about this aspect even if they had no previous concern

10. I have worried that I will make mistakes when caring for my baby					Similar to Q4				
11. I have worried that my baby is ill without good reason						Hmm, having a 3 month old and having this experience with my wife, I think what constitutes a "good reason" is subjective. Perhaps "taken my baby for medical help but the staff said she was fine" or something like that. I would also bet that this varies greatly with regards to whether it is the woman's 1st			
12. I have had difficulty sleeping even when I have had the chance to									
13. I have felt that motherhood is much harder than I expected					Similar to Q1				
14. I have worried about the bond that I have with my baby									
15. I have worried about my appearance						Not very specific. Interesting question to put in but I can't see how it relates to post baby anxiety. I would say you risk confounding a state than a trait. Maybe "I have worried about my appearance			
16. I have worried about my baby being accidentally hurt by someone or something etc			I am worried that someone may purposefully harm my baby in some way without good reason. (people with jobs dealing with child abuse or mums who have been abused themselves may have disproportionate risk						How would this be followed up?
17. I have worried that my partner finds me unattractive				Item 17 raises a point, is there the potential that this could be administered to single mothers? An N/A optional response might be					
18. I have felt the need to do things in a certain way or order				Item 18 - This is less relevant unless you are aware of previous behavioural states. An option might be "I have been more ordered in my					
19. I have worried about returning to work				Item 19 - This is good, but could be explored further, returning to work is more complex and might reflect the type of job rather than the single behaviour of returning			Wouldn't responses to the question regarding return to work be influenced by the intended duration of maternity leave and therefore how imminent the return to work is?		
20. I have worried about accidentally hurting my baby									How will a negative response be acted upon?
21. I have worried about childcare									
22. I have used the internet for reassurance about my baby's health									
23. I have worried about my baby's appearance									
24. I have felt like I never get any free time				Item 24 - during analysis, this item might moderate the			Question relating to availability of free time is included but do you need to distinguish between free time (which could be perceived as		

25. I have worried about my baby's weight										
26. I have repeatedly checked on my baby while they are sleeping without good reason										
27. I have worried about being alone with my baby										
28. I have felt that I should not need to ask for help										
29. I have been unable to concentrate on simple tasks										
30. I have felt that other mothers are coping with their babies better than me				I think I'm finding it harder than some other mums.						
31. I have worried that other people think I am a bad parent										
32. I have worried about being unable to settle my crying baby										
33. I have felt resentment towards my partner										
34. I have worried about my relationship with my partner										
35. I have worried about my relationship with my family										

Item 26 - It could be argued that there is always a good reason to check on the little munchkin, "checking" may also be interpreted as listening in through audio monitors to check they are functioning appropriately.

Item 27 - might moderate item

Item 28 - remove item, it could be problematic as responses may reflect self-worth (I should be able to do this by myself) or support situation (my partner should be doing chores around the house).

Item 29 - reword item to reflect change in concentration rather than current concentration levels; e.g. I am less able to concentrate on

Item 30, 31 - likely to reflect generalised anxiety rather than specifically post-partum.

Item 30, 31 - likely to reflect generalised anxiety rather than specifically post-partum.

Item 33 - fine, but move away from items 34 & 35.

Items 34, 35 - separate these. Also, items could reflect change rather than current levels, potentially as unplanned addition to the family will strain partner or family relationships more than

Items 34, 35 - separate these. Also, items could reflect change rather than current levels, potentially as unplanned addition to the family will strain partner or family relationships more than

Confusing wording, and not specific, help with what specifically?

Assumes that the interviewee has other mother's to compare themselves to.

I wonder about the settling crying baby question - there may also be times when the baby won't settle but isn't crying - is whiney or restless

36. I have felt that my baby would be better cared for by someone else	Can relate to guilt and going back to work - that's very stressful						There is a question regarding feelings of the baby being better cared for by someone else. Would a specific question about the participant perceiving their partner as being better at this aspect or even the baby preferring/liking their
37. I have worried that my baby is not behaving like other babies							
38. I have worried about the way I feed my baby i.e. breastfeeding, formula feeding, etc						Be more specific in the question, don't use I.E.	
39. I have worried about my health without good reason				Item 39 - similar comments to item 26			
40. I have worried that my baby is not developing as quickly as other babies							
41. I have worried about completing household duties		reword, I have felt a sense of failure not being able to keep on top of household chores / I feel like I am not as productive managing housework as I was before I		Item 41 - this could be affected by partner?			
42. I have felt that I have no control over my day						Be more specific	
43. I have worried about how much sleep I am going to get at night							
44. I have worried about finances	Finances - work and childcare costs are a big stress			Item 44 - reword to reflect change in personal circumstances rather than general financial hardship. Item 45 - too general, financial help, day-to-day help or specialist help reflect different aspects of			
45. I have felt that I do not get enough help							
46. I have felt a sense of dread when my baby is not with me							
47. I have worried that my baby is not getting enough milk			Does no.47 link with 38?				I have worried that my baby is not feeding enough
48. I have felt unable to balance caring for my baby with my other responsibilities				Item 48 - see comments for item 41.			
49. I have worried about my relationship with my friends							Number 8 and number 49 appear to assess the same aspect
50. I have felt that when I do get help, it is inadequate or inappropriate						Be more specific	
51. I have not taken part in a normal activity with my baby because I feared they may be							

Appendix 23: Snapshot of the content validation

Construct and Item	Mothers and Fathers								Statisticians/Psychometricians						Researchers					
	WJD		BM		SH		CH		BB		MG		GMC		KB		JH		Rating	
	Rating	Comment	Rating	Comment	Rating	Comment	Rating	Comment	Rating	Comment	Rating	Comment	Rating	Comment	Rating	Comment	Rating	Comment		
Infant Wellbeing Anxieties																				
1. I have worried about accidentally hurting my baby	4		4		4	Possibly reword too I am concerned about accidentally hurting my baby	4		4		4		4		4		4		4	
2. I have worried about my baby being accidentally hurt by someone or something else	4		4		3	I worry I will find it difficult to trust other people to look after my baby	3	Maybe 'harmed' rather than 'hurt' might be better	4		4		4		3	could drop the else	4		4	
3. I have felt a sense of dread when my baby is not with me	2	Respondent has to infer that dread refers to parent worrying about baby's wellbeing. Not sure how you would reword this.	4		4	I have felt a sense of panic?	3	I take this to mean the worry of leaving your baby with someone else and that they won't know how to care for them in the same way as you. Not sure about the word 'dread' but might be a personal thing and can't think of another way of wording it!	3	I get the premise of this item, but "dread" may need changing as it is a strong term. Maybe "unease" might be more encompassing?	2	this could be interpreted as to do with health of baby rather than safety/wellbeing	3	Sense of dread seems a bit strong and wordy. Maybe "very worried"	4		4		3	
4. I have worried that my baby is ill without good reason	4		4		4		2	'Would participant be able to acknowledge it was without good reason? I suppose the whole questionnaire relies on reflection and time since the first 6 months.	4	"without good reason" - fine if this is being administered to parents of healthy children only. If there is a health problem with the baby, this item is not	4	3 what is a good reason?	3	Without good reason I have worried that my baby is ill	4		4		3	
5. I have worried that my baby will stop breathing in the night	4		4		4		3	'Hurt' suggests physical impact/pain. 'Harmed' might include more concerns about emotional impacts (i.e. frightened by noises or less direct physical	3	again, I get the premise of the item, but an example "shopping, cooking etc." may be beneficial to the participant	4		4		3	may be use 'everyday' rather than normal	4		1	
6. I have not taken part in a normal activity with my baby because I feared they may be hurt	2	Question phrased with emphasis on the activity.	4		2	Not sure this will be experienced by the majority of mothers?	3	If they've been checking to see if they are breathing they might feel this is a 'good reason' even if not necessary. That said, hard to reword - maybe drop the 'without good reason'.	3	This is relevant, but is there not always a good reason for checking on the baby?	4		2	Maybe mothers just like looking at their children when they are asleep.	3	Again I might put the without good reason first because it makes it clearer that it is the parent rather than the baby	4		4	
7. I have repeatedly checked on my baby while they are sleeping without good reason	4		4		4		4	I think many mums will google things for info on their baby's health. I think the inclusion of 'reassurance' conjures up the	4		4		2	Maybe mothers just like looking at their children when they are asleep.	3	Again I might put the without good reason first because it makes it clearer that it is the parent rather than the baby	4		4	
8. I have used the internet for reassurance about my baby's health	4		4		4		4	impression that they was some	4		4		2	Maybe mothers just like looking at their children when they are asleep.	3	Again I might put the without good reason first because it makes it clearer that it is the parent rather than the baby	4		4	
9. I have worried that my baby is not developing as quickly as other babies	2	Indirectly relevant to infant wellbeing, but development is different from health.	4		4		4		3	this may be dependent on socialising with other parents and their families. May be less relevant to people with smaller social support networks rather than relating to general health and wellbeing.	2	this seems to be less relevant in the early period than the other questions	4		4		4		4	
10. I have worried that my baby is not behaving like other babies		Indirectly relevant to infant wellbeing, but development is				I have worried that my baby is not developing at the		I think this is less anxiety provoking than the comparison in												

11. I have worried about what my baby will be like in the future	I think this is a common experience among parents. Not health-specific.	3 Academic, Socially?	2	Not sure anxiety will be experienced so far in the future unless the child has an ongoing condition?	2	this item may encompass more than health and wellbeing, parenting styles and socialisation will also be involved in how a baby will turn out in the future.	I am not sure how relevant this is	: I don't think this will be a good one (i.e. won't discriminate well)	4 how	2	Can mum's see beyond this period of demand. Also 'what the baby will be like' is a very broad term and might not always be interpreted in terms of	2
12. I have worried about my baby's appearance	Loosely relevant to infant wellbeing, granted the respondent interprets appearance as a proxy for health.	4	1	Just my own opinion, but unless jaundice which falls into a health issue do mothers worry about the appearance of child?	3	there may be some social desirability in responses to this item. It is also more subjective than other items, variance might be lower when scoring.	4	'What specifically about their appearance? How beautiful they will be? Or a facial birthmark? Two different constructs conflated here I think.	4	2	It is debatable whether appearance is a proxy for wellbeing?	2
Infant Wellbeing Adequately Covered?	Yes. Some questions could be clarified as they rely on respondent making the link between health proxies.	Yes		Yes - good range	Yes	Yes, although items could reflect more about current health anxieties rather than future anxieties.	Yes	Yes	yes		Consider including question about Happy/contented baby vs a baby that always seems	
Parenting Ability Anxieties												
13. I have worried about being alone with my baby		I have worried about being alone with my baby and being able to balance parenting tasks.	3	I have worried how I will cope with my baby when others aren't around to support me	4							
14. I have worried about my baby's routine	Relevant, but could be reworded with emphasis on the parenting ability, e.g. 'I have worried about getting my baby into a routine'	4	2		4	this may need clarifying, sleep routine maybe or feeding routine?	3	does this need a qualifier i.e. day to day routine, also some parents don't have a routine	3	not specific enough	again this is something many of us do, and especially when BF and comparing with formula fed.	4
15. I have worried about caring for my baby correctly e.g. nappy changing, bathing, dressing		4	3		4	feeding may also be relevant here, so could be mentioned or as a separate item?	4	3	not specific enough	4	3	4
16. I have worried that I will make mistakes when caring for my baby		4	4		3	good, but "mistakes" may need qualifying, mistakes can be big or small and these will have different effects.	4	4		2	again we probably all think that - what might be important is the degree	4
17. I have felt unable to balance caring for my baby with my other responsibilities	Relevant, but 'balance' perhaps not the most salient indicator of parenting ability.	4	3	on occasion found it difficult to juggle motherhood with daily	3	this item may show neglect of other responsibilities, not neglect of the parenting.	4	4		2	as above	4
18. I have worried about being unable to settle my crying baby		4	4		4			Does that mean worried about being able to settle the crying baby at some unspecific point in the future, or in reality in the past 7 days, they are two different things.	2	as above	4	3
19. I have worried that other people think I am a bad parent		1	4	I have worried that other people think I cannot cope with my baby	4	this may reflect personality traits rather than parenting ability	4	I think this is more a reflection of the personality of the mother than their current needs points of comparison	4	4	4	4
20. I have felt that other mothers are coping with their babies better than me		4	4		4	2 as item 19	4		4	4	4	4
21. I have felt that I am not a good parent	Relevant but open to interpretation. Being a 'good parent' is culturally entrenched and not necessarily synonymous with parenting ability.	4		I have felt I am not the parent I want to be	4	this item may reflect perceived parenting ability better than items 4, 19 - 20.	4	How about putting in "I have felt I am a bad parent". A slightly harder version of this, alongside this wording?	4	3	4	4

32. I have worried about completing household duties	4	4	I have worried about the state of my home when visitors pop round to see the baby	3	As a feminist I don't like the word 'duties' even though mums sometimes see them as such - 'chores' might be more suitable?	maybe more relevant to parenting ability anxiety, e.g. providing a clean and safe environment.	4	4	4	4	4		
33. I have worried about my appearance	1	Not specific to health and wellbeing	4	1	Cant imagine any new mother caring about what she looks like	Women worry about their appearance all the time so I don't think the wording reflects postpartum specific anxiety in this area. Maybe reword to 'I have worried about my appearance since having my baby' - is that too obvious?!	this is relevant, is there a difference between personal appearance (e.g. looking tired) and temporary experience (e.g. having food on ones sleeve after feeding)?	4	3	3	4	4	
Personal Wellbeing Anxieties Adequately Covered?		Yes, could make the distinction between (in)formal support, and be clearer about responsibilities	Yes Clear questions. Could you link 'guilty' feelings with the work question?	Yes	Yes	partly, this has been covered well, but may need to be inclusive of some baseline health items - "I am generally in good health" - answering positively to this may make these items more relevant, but if they are not in such good health,	yes	yes			I am not sure about which are highly relevant and which aren't. So I'd include them all in pilot.	yes	
Relationship Anxieties													
34. I have worried about my relationship with my partner	4	4	4	4	4	assuming this is to be administered to people in a I think this is a very important social support network.	4	4	more than usual	4	4	4	
35. I have worried about my relationship with my friends	4	4	3	4	4	4	4	4	more than usual	4	4	4	
36. I have worried about my relationship with my family	4	4	3	4	4	4	4	4	more than usual	4	4	4	
37. I have worried that my partner finds me unattractive	2	Could have fleeting worries about this and still have what would be considered a 'healthy' relationship.	4	4	3	Not sure question reflects the initial 8 month anxiety about body changes since birth. This could be an ongoing anxiety.	4	4	4	more than usual	4	4	
38. I have felt isolated from my family and friends	4	4	4	4	4	good, but isolation is not always a negative thing.	4	4	4	more than usual	4	4	
39. I have felt resentment towards my partner	4	4	3	4	4	could this cause upset in an unplanned pregnancy?	4	4	4	more than usual	4	4	
Relationship Anxieties Adequately Covered?	Yes	Comments: Yes, I think it would be an idea to add an intimacy question and how this may	Yes - strong section	Yes	Yes, good.	yes	yes				You need questions about other children unless it is intended only for first time mother	yes	
Mother-Infant Relationship Anxieties													
40. I have worried about the bond that I have with my baby	4	4	4	4	4	4	4	3	more specific	4	4	4	
41. I have had negative thoughts about my relationship with my baby	4	4	4	4	4	4	4	3	more specific	4	4	4	
42. I have felt that my baby would be better cared for by someone else	2	Indirectly relevant, feeling that the baby would be cared for better by someone else says more about self-efficacy than it does the	4	4	4	4	4	4	4	good one	4	4	
43. I have felt that motherhood is much harder than I expected	1	Not specifically relevant to the relationship or bond.	4	4	4	This is good, but maybe not restricted to motherhood, many tasks are harder than perceived.	3	not sure that everyone would just answer yes to this, does it need "I have	4	I like this one too	Again I think this may be an issue of degree.	4	4

43. I have felt that motherhood is much harder than I expected	Not specifically relevant to the relationship or bond.	4	4	4	This is good, but maybe not restricted to motherhood, many tasks are harder than perceived.	not sure that everyone would just answer yes to this, does it need "I have	4	I like this one too	Again I think this may be an issue of degree.	4		4
Mother-Infant Relationship Anxieties Adequately Covered?	Yes, but a bond is bidirectional; could have an item from perspective of baby? E.g. I have felt that my baby feel secure in my care.	Yes		I feel there should be one or two extra questions as I believe this is a vital section, a good question would be I have worried I will not love	Yes	yes. Good section	yes	yes	yes		Specific question addressing fears that the partner is better at caring for the baby or is liked more by the baby	
Infant Feeding Anxieties												
44. I have worried that my baby is not getting enough milk		4	4	4	4	4	4	3	Maybe the mother doesn't produce enough but is otherwise unanxious.	4	4	4
45. I have worried that my baby is feeding too much		4	3	Comments: Maybe just explain this is looking at too little/too much weight?	3	4	3	Assuming items 44 and 45 will be negatively correlated, are you measuring the same thing twice, means of these items cancelling each other out?	4	4	3	4
46. I have worried about the way I feed my baby i.e. breastfeeding, formula feeding, expressing		4	3		4	4	3			4	4	4
47. I have worried about my baby's weight	Relevant, but could be reworded, e.g. I have worried that my feeding choice is affecting my baby's weight	4	3		4	would this reflect lack of knowledge about physical development rather than specifically feeding behaviours?	4	4		4	4	4
Infant Feeding Anxieties Adequately Covered?	Yes	Yes		Maybe an extra question such as, I have felt pressured to feed my baby a certain way because of other	Yes	Yes	yes	yes	yes		yes	
Psychosomatic Symptoms												
48. I have felt the need to do things in a certain way or order		4	4		4	routine could be anything from a form of OCD to a coping strategy.	3	I think this is confusing and needs qualifying	4	4	4	3
49. I have had difficulty sleeping even when I have had the chance to		4	4		3		4		4	4	4	4
50. I have felt tired even after a good amount of rest		4	3		4		3		4	4	4	4
51. I have been unable to concentrate on simple tasks		4	4		4		4		4	4	4	4
Psychosomatic Symptoms Adequately Covered?	Yes	See ideas		Yes this section has been covered well, although a question such as, I haven't been washing myself as I can't be bothered would be a good question as this is a	Yes	yes	yes	yes	yes		Most things are covered. I wonder whether some will differentiate between the normal anxieties of motherhood and anxieties which	yes

Appendix 24: The Postpartum Specific Anxiety Scale

Postpartum Specific Anxiety Scale

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

All responses will be made on a 4 point Likert Scale:

Not at all **Not very often** **Often** **Almost**
Always

Infant Wellbeing Anxiety

1. I have worried about accidentally hurting my baby
2. I have worried about my baby being accidentally hurt by someone or something else
3. I have felt a sense of dread when my baby is not with me
4. I have worried that my baby is ill without good reason
5. I have worried that my baby will stop breathing in the night
6. I have not taken part in a normal activity with my baby because I feared they may be hurt
7. I have repeatedly checked on my baby while they are sleeping without good reason
8. I have used the internet for reassurance about my baby's health
9. I have worried that my baby is not developing as quickly as other babies
10. I have worried that my baby is not behaving like other babies
11. I have worried about what my baby will be like in the future
12. I have worried about my baby's appearance

Parenting Ability Anxiety

13. I have worried about being alone with my baby
14. I have worried about my baby's routine
15. I have worried about caring for my baby correctly e.g. nappy changing, bathing, dressing
16. I have worried that I will make mistakes when caring for my baby
17. I have felt unable to balance caring for my baby with my other responsibilities
18. I have worried about being unable to settle my crying baby
19. I have worried that other people think I am a bad parent
20. I have felt that other mothers are coping with their babies better than me
21. I have felt that I am not a good parent

Personal Wellbeing Anxieties

22. I have worried about my health without good reason
23. I have felt that I have no control over my day

24. I have felt like I never get any free time
25. I have felt that I do not get enough help
26. I have felt that when I do get help, it is inadequate or inappropriate
27. I have felt that I should not need to ask for help
28. I have worried about how much sleep I am going to get at night
29. I have worried about finances
30. I have worried about childcare
31. I have worried about returning to work
32. I have worried about completing household duties
33. I have worried about my appearance

Relationship Anxieties

34. I have worried about my relationship with my partner
35. I have worried about my relationship with my friends
36. I have worried about my relationship with my family
37. I have worried that my partner finds me unattractive
38. I have felt isolated from my family and friends
39. I have felt resentment towards my partner

Mother-Infant Relationship

40. I have worried about the bond that I have with my baby
41. I have had negative thoughts about my relationship with my baby
42. I have felt that my baby would be better cared for by someone else
43. I have felt that motherhood is much harder than I expected

Feeding Anxiety

44. I have worried that my baby is not getting enough milk
45. I have worried that my baby is feeding too much
46. I have worried about the way I feed my baby i.e. breastfeeding, formula feeding, expressing
47. I have worried about my baby's weight

Psychosomatic Symptoms

48. I have felt the need to do things in a certain way or order
49. I have had difficulty sleeping even when I have had the chance to
50. I have felt tired even after a good amount of rest
51. I have been unable to concentrate on simple tasks