A MIXED METHODS STUDY EXPLORING UK MOTHERS' EXPERIENCES OF BOTTLE REFUSAL BY THEIR BREASTFED BABY

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Abstract

The UK has one of the lowest breastfeeding rates in the world, with the majority of UK mothers feeding their baby by a bottle at six months of age. However, for one group of mothers circumstances are very different. When they wish to introduce a bottle to their breastfed baby, their baby refuses to accept it. Little is known about bottle refusal by breastfed babies, however a review of UK online forums and social media reveal large numbers of mothers experiencing the scenario. Online discussions illustrate negative consequences of bottle refusal, including mothers delaying their return to work, spending time and finances on methods to overcome it, and experiencing stress, anxiety, and resentment of breastfeeding. In addition, some mothers describe not wanting to breastfeed with a subsequent baby due to the negative impact of bottle refusal. This programme of research aimed to explore UK mothers' experiences of bottle refusal by their breastfed baby in order to generate an understanding of the scenario. A mixed methods research study was undertaken, comprising of an online questionnaire completed by 841 UK mothers, semi-structured interviews with 30 mothers, and 597 posts captured from three UK online parenting forums. The overall findings show that mothers introduce a bottle to their breastfed baby due to breastfeeding not always fitting with their lives. The majority of mothers view bottle refusal as a problem that needs to be solved, however there is no easy solution and for some mothers their baby's bottle refusal is permanent. Support for mothers experiencing bottle refusal is not always helpful, with breastfeeding appearing to be the priority rather than mothers' individual circumstances. Most mothers experience bottle refusal negatively, experiencing stress and anxiety, however some mothers are able to frame it more positively. The reasons why mothers believe their breastfed baby refuses to feed from a bottle include the physical differences between bottle and breastfeeding, their baby's individual personality, and the delaying of the introduction of a bottle to prevent nipple confusion. The research findings point to bottle refusal being a complex scenario with negative outcomes for mothers. It requires greater recognition within infant feeding literature and practice, in order for mothers to be better supported when experiencing it. In addition, a 'normalising' of bottle refusal as a natural response by a baby could help mothers to frame it more positively.

Presentations

Harris, J, Germain, J, Maxwell, C, Mackay, S (2018) Online research methods: the world at our fingertips? Public Health Institute, Liverpool. (Oral presentation and workshop)

Maxwell, C (2018) Exploring mothers' experiences of bottle refusal by their breastfed baby. Infant feeding: policy, politics and best practice, Royal Society of Medicine, London. (Oral presentation)

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Maxwell, C (2017) Mothers' experiences of bottle refusal by their breastfed baby: A mixed methods study. Midwifery Research Conference, Liverpool John Moores University. (Oral Presentation)

Maxwell, C (2017) A UK online survey investigating mothers' experiences of bottle refusal by their breastfed baby, Royal College of Midwives Conference, Harrogate. (Poster).

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Maxwell, C (2016) An online survey investigating mothers' experiences of bottle refusal by their breastfed baby, Royal College of Midwives Conference, Telford. (Poster)

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Abbreviations

BC	Babycentre
bf	Breastfeeding
BFHI	Baby Friendly Hospital Initiative
BFI	Baby Friendly Initiative
BPS	British Psychological Society
CASP	Critical Appraisal Skills Programme
CI	Confidence interval
CM	Childminder
DD/dd	Dear daughter
DH	Department of Health
DS/ds	Dear son
EBM	Expressed Breastmilk
ff	Formula feed
GQR	Generic Qualitative Research
IFS	Infant feeding survey
IPA	Interpretative Phenomenological Approach
IQR	Interquartile range
IYCF	Infant and Young Children Feeding
LO/lo	little one
Mdn	Median
MMR	Mixed methods research
MN	Mumsnet
N/n	Number
NCT	National Childbirth Trust
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NM	Netmums
OH	Other half

OMG	Online Methods Group
ONS	Office for National Statistics
PHE	Public Health England
pnd	Postnatal depression
RCM	Royal College of Midwives
RCN	Royal College of Nursing
RCPCH	Royal College of Paediatrics and Child Health
RCT	Randomised Controlled Trial
RR	Risk ratio
rr	Response rate
SEM	Socio-ecological model
TA	Thematic analysis
UK	United Kingdom
UNICEF	United Nations Children's Fund
US	United States
WHO	World Health Organisation

Chapter 1 – Introduction

1.1 Introduction

This programme of research aimed to explore UK (United Kingdom) mothers' experiences of bottle refusal[1] by their breastfed baby, to gain an understanding of the scenario. The knowledge generated by this research contributes to the literature surrounding infant feeding, and ultimately informs practice. This chapter will provide the background and context to bottle refusal by breastfed babies. It will discuss the aim of this programme of research, the research questions developed, and the rationale behind the research. An overview of the research approach will be given and the position of the researcher will be explored. In addition, the contribution to research will be considered. This chapter concludes with an overview of the subsequent chapters in the thesis.

1.2 Background and context

The UK has one of the lowest breastfeeding rates in the world (Victora *et al.* 2016). Despite 81% of UK mothers initiating breastfeeding, less than 1% of mothers exclusively breastfeed (McAndrew *et al.* 2012), to the WHO (World Health Organisation) recommended six months (WHO 2001). The UK has been described as a 'bottle feeding culture' (Dykes 2006; Renfrew *et al.* 2007), and a 'formula feeding nation' (Brown 2015). Such descriptions are effectively borne out by data from the 2010 Infant feeding survey (IFS) showing that 80% of UK mothers have fed their baby with a bottle by 4 -10 weeks of age (McAndrew *et al.* 2012). Thus, a picture is painted of the majority of babies within the UK feeding by bottle rather than breast. For one group of mothers however, circumstances are very different. They are breastfeeding and when they wish to introduce a bottle to their baby, the baby refuses to accept it. Little is known about bottle refusal by breastfed babies, however online discussions within UK parenting forums illustrate thousands of posts and threads in relation to the issue e.g. (Babycentre.co.uk; Mumsnet.com). In addition, YouTube contains thousands of videos in relation to breastfed babies refusing a bottle, which in turn elicit hundreds of

[1] In the case of a healthy, well baby.

thousands of online views, e.g. https://www.youtube.com/watch?v=gIusa0o9mRE (YouTube.com). Furthermore, hundreds of posts are evident in UK breastfeeding Facebook groups concerning bottle refusal by breastfed babies. Although it is not possible to ascertain prevalence from this information, it strongly indicates that bottle refusal by breastfed babies is not uncommon among breastfeeding mothers.

References to bottle refusal by breastfed babies in current literature are limited. Furthermore, there is no single definition of bottle refusal by breastfed babies. Neifert *et al.* (1995) refers to it as 'nipple confusion type B', whilst Egan (1988) refers to it as simply 'nipple confusion'. A review of the literature identified only one study in relation to bottle refusal, a PhD thesis undertaken with six mothers in 1988 in the US (United States) (Egan 1988). A search of the literature identified no published papers in relation to this thesis. Although Egan's study gives some insight into the scenario, its findings and conclusions are now dated in relation to current UK infant feeding practices.

Few studies have focused exclusively on why mothers combine bottle feeding with breastfeeding. However a mother's return to work (Gatrell 2007; McAndrew *et al.* 2012; Skafida 2012; Johns *et al.* 2013), her need for a break (Ryan *et al.* 2013; Crossland *et al.* 2016), and wanting to spend time with other children (Andrew and Harvey 2011), have been cited. In addition, a dislike of feeding in public (Johns *et al.* 2013), physical pain (Lee and Furedi 2005), and tiredness (McInnes *et al.* 2013) have also been reported. Online discussions illustrate the decision for some breastfeeding mothers to introduce a bottle can be complicated by illness, hospitalisation, or by taking medication contra-indicated in breastfeeding. Such circumstances can present further challenges to breastfeeding mothers when their baby refuses a bottle.

Owing to the lack of evidence surrounding the subject of bottle refusal by breastfed babies, it is difficult to determine what mechanisms mothers are using in order to try to introduce a bottle. Online discussions suggest a range of strategies such as using expressed breastmilk (EBM) in a bottle, asking someone else to feed the baby, trying different bottles and teats, and going 'cold turkey' (Babycenter.com; Netmums.com). Egan (1988) described mothers putting sugar on the teat, trying different teats and

formulas, and stopping breastfeeding entirely. Due to a paucity of knowledge surrounding the scenario of bottle refusal, methods appear to be anecdotal and un-evidenced. In addition, there seems to be little discussion or advice in relation to mothers continuing to breastfeed and 'managing alongside' their baby's bottle refusal.

It is clear that large numbers of mothers are consulting online sources of support in relation to bottle refusal by their breastfed baby. However, little is known about the nature of the advice and support mothers receive online. In addition, other mechanisms of advice and support for mothers, particularly concerning health professionals, are unknown. Health professional recognition of bottle refusal may be limited due to a lack of literature and evidence. This was evident in Egan's study, and led to poor support for mothers (Egan 1988). Furthermore, advice regarding the introduction of a bottle to a breastfed baby may present a potential dilemma to those who have a role in promoting and supporting exclusive breastfeeding (Battersby 2014; Trickey and Newburn 2014). In essence, although mothers appear to be accessing online support in relation to their baby's bottle refusal, the content of this support, and support from others is as yet undetermined.

How bottle refusal impacts upon mothers is uncertain due to a lack of evidence. Egan (1988) found bottle refusal affected family life, and that the mother's relationship with her spouse suffered. Mothers also experienced frustration, anger and resentment with potential financial and career implications (Egan 1988). In addition it has been mooted on online forums that some mothers will not breastfeed again if they have another baby due to the experience of bottle refusal being so negative (e.g. Breaking Mom on Reddit.com 2015). This would deny both mother and baby the health benefits breastfeeding brings.

Physical consequences may occur if a mother decides to go 'cold turkey,' a phrase used frequently on online forums to describe mothers who cease to breastfeed until their baby accepts a bottle. Not only could this be detrimental to a baby nutritionally (Staub and Wilkins 2012), physically it could lead to engorgement and mastitis in the mother as

she has undergone an acute cessation of feeding rather than the advised gradual process (Noonan 2010).

Why breastfed babies refuse to feed from a bottle is difficult to determine. The 'non-nutritional' properties of breastfeeding are a potential contributor, as are the differences between the mechanics of bottle and breastfeeding. However, why mothers themselves think their breastfed baby refuses a bottle is an important yet unknown entity.

This research has evolved from a significant gap in knowledge regarding bottle refusal by breastfed babies, which appears to affect a number of breastfeeding mothers in the UK. Although online sources provide a picture of the scenario, this is anecdotal and to an extent fragmented. Moreover, the only substantive study on the topic was undertaken three decades ago in the US (Egan 1988), with dated findings that are not wholly applicable to the present day UK context. This programme of research, therefore, intends to explore mothers' experiences of bottle refusal by their breastfed baby in order to provide a greater understanding of the scenario.

1.3 Aim of the research and research questions

The aim of this mixed methods research was to explore mothers' experiences of bottle refusal by their breastfed baby, with a view to providing an understanding of why mothers wished their breastfed baby to feed by a bottle, how they managed bottle refusal, and the support they received whilst experiencing it. In addition, an understanding of the potential impact of bottle refusal on mothers, and why mothers believe their baby refuses a bottle would be generated. The following research questions were developed in order to answer the research aims:

1. What is the context surrounding why mothers want their breastfed baby to feed from a bottle?
2. How do mothers manage bottle refusal?
3. What support do mothers receive when experiencing bottle refusal?
4. What is the potential impact of bottle refusal?

5. Why do mothers think their breastfed baby refuses to feed from a bottle?

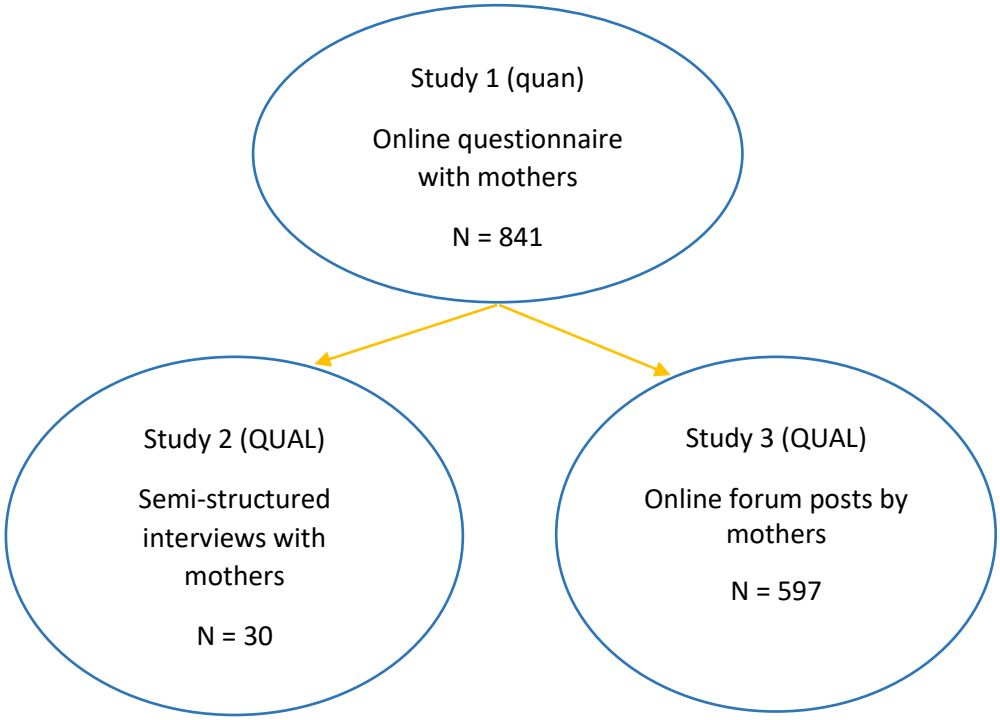
1.4 Rationale for the research

At present, bottle refusal by breastfed babies appears to have limited UK recognition, with knowledge of mothers' experiences being heavily reliant on anecdotal evidence via online discussions. From these online discussions, it appears that the scenario is not uncommon, and has the potential to affect mothers physically, psychologically, and financially. Evidence is needed to show that bottle refusal by breastfed babies is a valid concern for mothers, and by undertaking this research the scenario will be afforded recognition as a potential challenge of breastfeeding. By legitimising the scenario of bottle refusal, mothers will be given a 'voice' concerning their experiences, which at present are almost non-existent when consulting infant feeding literature. Furthermore, by generating an understanding of mothers' experiences of bottle refusal, this has the potential to enhance the support mothers receive, and enable them to experience the scenario more positively.

1.5 Overview of the research approach

This programme of research used a Socio-ecological model (SEM) (McLeroy *et al.* 1988) as a theoretical framework to explore mothers' experiences of bottle refusal. It employed a mixed methods sequential design with the priority given to qualitative data (see figure 1). It comprised of three studies exploring mothers' experiences of bottle refusal by their breastfed baby. Ethical approval was gained from the local University ethics committee. An online questionnaire containing open and closed questions was initially completed by 841 mothers. Semi-structured interviews were then undertaken using telephone, SKYPE, FaceTime or face to face with 30 mothers. All mothers who had completed the online questionnaire and interviews had experienced bottle refusal by their breastfed baby in the last five years. Lastly, 597 mothers' posts in relation to bottle refusal were captured from three UK parenting forums.

Figure 1 Overview of research design



Each of the three studies were analysed separately. Online questionnaire responses were imported directly into SPSS v 23.0 and preliminary analysis was undertaken using descriptive statistics. Further analysis was undertaken to explore associations and differences between bottle refusal/eventual acceptance and independent variables. Interviews were transcribed verbatim and imported into NVivo 11 (QSR 2015). Online forum posts were imported directly into NVivo 11 using NCapture (QSR 2015). Qualitative data were analysed using a six stage approach to thematic analysis (TA) as described by Braun and Clark (2013). A final integration of the findings of the three studies was undertaken using a narrative approach of 'weaving' as described by Fetters *et al.* (2013). From this, five overall themes emerged linked to the research questions. In order to ensure a transparent process of trustworthiness, each stage of the research was mapped against a mixed methods quality framework (Tashakkori and Teddlie 2010). The process for the final integration of all three studies was mapped against a set of criteria for interpretive rigour (Tashakkori and Teddlie 2009).

1.6 Position of the researcher

Upon commencement of this research, I reflected upon the multiple positions I congruously held, and how they could shape and influence the undertaking of it. I am a registered midwife and midwifery lecturer, I am also a mother who has breastfed my own children and experienced bottle refusal with one of them. In essence, I had experiential knowledge of the scenario of bottle refusal, and had accrued quite extensive professional knowledge of infant feeding practice and theory over the years. This knowledge and experience provides an essential underpinning to the research. I am also aware however, that this knowledge and experience could 'frame' the study, potentially affecting its exploratory nature.

To ensure that the study was not adversely influenced by my own knowledge and experiences, I employed a number of practices. These included consulting a colleague who is an infant feeding expert to peer review the three studies for any potential biases, particularly in relation to my interpretation of the findings. The conceptual framework I had developed enabled me to focus on what was important and meaningful to the study, and was an *aid memoire* to refocus if need be. In addition, the application of a SEM as a theoretical framework ensured I explored mothers' experiences from a broad context. However, the most important practice I employed was the undertaking of a process of self-reflection and reflexivity throughout. This is evident explicitly within the thesis in the form of 'reflective' and 'reflexive stop offs' taken from a reflective diary I used during my three years of study. The reflective stop offs enabled me to explore my thoughts concerning different events and stages during the research, whilst the reflexive stop offs detailed how I acted upon the reflections I made. This process enabled me to view the programme of research from a researcher position, which I considered was my primary position. It did not dismiss my other positions however, and as is evident within the stop offs, I was able to utilise my knowledge as a midwife and experience as a mother to enhance the research. In essence, I employed a process of '*critical subjectivity'* (Reason 1988, p.45), whereby my existing knowledge and experiences were neither supressed nor allowed to overwhelm the programme of research.

1.7 Contribution to research

This programme of research is the first of its kind to explore UK mothers' experiences of bottle refusal by their breastfed baby. It turn it has provided a unique insight into the mothers' experiences, and its findings can make a valuable contribution to infant feeding knowledge and practice.

The findings reveal a detailed picture of the reasons UK mothers wish their breastfed baby to bottle feed. Few studies have previously focused on this, and none have been undertaken in such depth with so many mothers. Reasons range from 'mundane' activities such as food shopping, taking a bath and having a haircut, to challenging situations such as maternal illness/hospitalisation, jury service and wanting to attend a job interview. These findings illustrate that the individual circumstances of breastfeeding mothers can be complex, and need to be taken into consideration by those supporting breastfeeding mothers who are experiencing bottle refusal.

The findings also reveal that the context surrounding bottle introduction is influenced physically, psychologically and socio-culturally. They highlight the competing demands made on mothers in contemporary UK society whilst they are breastfeeding. They also depict the UK environment as one where breastfeeding is not the norm, and where a bottle feeding culture prevails. These findings add to the growing body of evidence that infant feeding is a multi-faceted practice, which is strongly influenced by the environment a mother resides in.

The research findings provide a unique and detailed insight into the methods UK mothers use to manage their baby's bottle refusal. These methods have not been investigated in such detail previously, either in the thesis undertaken by Egan (1988), or by studies exploring weaning from the breast. The current research depicts mothers going to great lengths to 'solve' bottle refusal, at times employing practices that are potentially hazardous to their own, and their baby's health. It also illustrates that bottle refusal is not easily solvable, and for some mothers it can persist permanently.

Results from study one (the online questionnaire) evidence that timing of bottle introduction, intended frequency to feed by bottle, previous experience of bottle refusal and impact on breastfeeding experience are associated with bottle refusal/eventual acceptance. This research is the first to investigate and subsequently find such associations. These research findings generate valuable knowledge concerning the management and impact of bottle refusal that can be transferred to mothers and those supporting them, providing a more realistic picture of the complexity of the scenario.

The research findings show current support for mothers experiencing bottle refusal by their breastfed baby is not helpful, particularly in relation to health professionals. This is similar to findings from Egan's study (Egan 1988), with both studies showing support to be hindered by a lack of recognition and knowledge of bottle refusal. However, this research differs from Egan's in that support is found to be affected by a bias towards breastfeeding, and by bottle feeding being viewed as a 'taboo' practice. Furthermore, the 'withholding' of information by health professionals concerning bottle refusal is also described by mothers. These findings expand those described by Egan, and highlight the need for a more individualised approach to support for mothers experiencing bottle refusal. In addition, the research shows that little attention is given to supporting mothers to manage alongside bottle refusal, a gap in support, which if reduced, can enable some mothers to continue to breastfeed.

Importantly, results from study one (the online questionnaire) highlight that the scenario of bottle refusal, whether solved or not, can have a negative impact upon mothers. Although the mothers in Egan's study also experienced bottle refusal negatively (Egan 1988), the current research finds that bottle refusal can impact negatively upon mothers even when their baby eventually accepts a bottle. An understanding of this can help those supporting mothers who are experiencing bottle refusal to do so in a more informed way. In addition, the research finds that for some mothers bottle refusal can have its positives; an important and unique finding, that is not described by mothers in Egan's study (Egan 1988). This is knowledge that can be cascaded to other mothers and those supporting them.

The research illustrates the various reasons as to why mothers believe their baby refuses a bottle, which has not been explored previously. Mothers describe their baby's individualised behaviour, the non-nutritional properties of breastfeeding, and the differing mechanics of breast versus bottle feeding. In addition, mothers also believe that delaying the introduction of a bottle to prevent nipple confusion can lead to bottle refusal. These findings present a thought provoking insight into the complexities of infant feeding which can contribute to bottle refusal. They open up a new debate concerning why breastfed babies refuse to bottle feed, and from a practice perspective, challenge the information given to mothers surrounding nipple confusion, which is at present inconclusive.

1.8 Overview of the thesis

Chapter 2 presents a review of the literature concerning bottle refusal focusing on relevant areas pertaining to the scenario. Current infant feeding practices in the UK are investigated and the context surrounding them. The literature regarding breast with bottle feeding is also reviewed. In addition, the literature concerning the scenario of bottle refusal is explored. This includes weaning from the breast, the use of bottles/teats to manage bottle refusal, and non-nutritional properties of breastfeeding. A review of theories and concepts used to understand infant feeding practices is also presented. The literature review concludes with the conceptual and theoretical frameworks, which were used to develop and guide the research.

Chapter 3 presents the methodology underpinning the research. It includes a discussion of pragmatism, which guides the research philosophically, and the mixed methods design selected to frame the research. It also describes how a generic qualitative research (GQR) approach is used in relation to the qualitative stages of the research. The data collection methods of an online questionnaire, interviews and forum posts are presented, and the sampling strategy for the three studies is included. How the data was analysed is also described, including the final integration strategy for all three studies. The application for ethical approval is discussed, including the potential challenges

concerning the use of online forum posts. The chapter concludes with a discussion of how 'trustworthiness' was ensured throughout the research.

Chapters 4, 5 and 6 present studies one, two and three. They include discussion of the data collection techniques: an online questionnaire, semi-structured interviews and online forum posts. They describe recruitment strategies used, how data analysis was undertaken, and present the findings of the individual studies. They conclude with an interpretation of the findings and limitations of each study.

Chapter 7 presents how the three studies were integrated, using a narrative process of 'weaving'. It includes the five overarching themes developed from the integration process, and a framework used to ensure rigour in relation to the interpretation of findings. It concludes with a discussion of the overarching themes in relation to relevant infant feeding literature and the key messages from the programme of research.

Chapter 8 presents the conclusions of the programme of research, including how understanding was enhanced by using the conceptual and theoretical frameworks. It also discusses the overall strengths and limitations, and recommendations for practice. Further research is considered, and a reflection upon the undertaking of the programme of research is presented. This chapter closes with concluding remarks.

The following chapter will discuss the literature reviewed in relation to the scenario of bottle refusal and relevant areas of infant feeding.

Chapter 2 – Literature Review

2.1 Introduction

This chapter will present a critical review of literature relating to the scenario of bottle refusal. It will discuss the aim of the literature review and the areas the literature review focused on. The literature review search and appraisal strategy will be presented, and the complexity of defining infant feeding practices described. The literature reviewed will then be critically discussed. This chapter will conclude with the conceptual and theoretical frameworks used to guide the study.

2.2 Literature review framework

Kable *et al's* '12 steps to developing a search strategy' were used as a framework to conduct the literature review (Kable *et al.* 2012). The 12 steps were developed in response to a shift in publication expectations from the traditional narrative literature review, to a more systematic approach. Kable *et al*. (2012, p.878) describe the steps as '*providing the reader with evidence of a clear structure'* on how the literature review is performed. In relation to the current thesis, by employing the 12 steps as a framework, a detailed and methodical approach was adopted.

The steps commence with the development of a purpose statement for the literature review, described as the 'aim' in this thesis. This was created around the central theme of bottle refusal and is discussed in more detail under heading 2.3. Kable *et al's* next steps focus on the construction of a search strategy (Kable *et al.* 2012). This was conducted by the development of search terms, the setting of parameters on the literature to be searched, the creation of inclusion and exclusion criteria, the documenting of search engines/databases used, and the detailing of levels of literature included (discussed in more detail under heading 2.4).

Kable *et al's* final steps highlight the need for a quality appraisal and critical review of the retrieved literature (Kable *et al.* 2012). Quality appraisal was undertaken using CASP (Critical Appraisal Skills Programme) tools (casp-uk.net), as advocated by Kable *et al*.

(2012). Relevant CASP checklists were used to appraise both qualitative and quantitative studies, the latter including checklists for RCT's (Randomised Controlled Trials), systematic reviews, case control studies and cohort studies. Studies were critically reviewed in relation to aims, recruitment, methodology, ethics, rigour/validity, and value and application of results and findings. In addition, each source of literature was reviewed for relevance to the study's five research questions, detailed in chapter 1. Critical review of the literature was undertaken by presenting the studies in detail, discussing similarities and differences, and by using headings to synthesise the studies' findings, as described by Kable *et al.* (2012). In addition, gaps in the literature and recommendations concerning future research were discussed.

2.3 Aim of the literature review

The literature review aimed to create an understanding of the influences and context surrounding bottle refusal by breastfed babies. Only one study was identified in relation to the scenario of bottle refusal, a thesis undertaken by Egan (1988) in the US. However, five areas were recognised as being significant to the research questions: current UK infant feeding practices, influences surrounding infant feeding practices in the UK, combining breast and bottle feeding, the context surrounding bottle introduction, and bottle refusal and weaning from breastfeeding. In addition, theories, concepts and models that have particular relevance to mothers' experiences of bottle refusal were reviewed. The rationale for these chosen areas is discussed under their relevant headings.

2.4 Literature search strategy

The literature was searched using both key words and combinations of key words (descriptors). Truncation (*) was used in order to include words that shared the truncated root word e.g. breastfed, breastfeeding, breastfeed. Search expanders were used to search for terms within text, as well as title, and Boolean operators were utilised. Search terms included the following: bottle refusal, bottle rejection, bottle resistance, breastfeeding weaning, breastfeeding cessation, nipple confusion. No time parameters were set in relation to the search, due to the subject of bottle refusal by breastfed babies

having a relatively narrow literature surrounding it. Literature needed to be in English or presented in the original language but with access to translation. The review focused on studies pertaining to UK infant feeding, however references to global literature were included where pertinent. The review was limited to healthy infants, born at term, which were comparable to those in the current programme of research.

Primary literature was searched for using online databases via institutional access. In addition, a manual search of textbooks, citations and references from identified papers was undertaken. Key UK personnel in the field of infant feeding literature were searched for by name, and a search of theses' was employed. Grey literature was searched, with conference proceedings and key documents specific to infant feeding being reviewed. In addition, websites and social media relating to key national and international supporters of breastfeeding were searched. Due to the nature of the subject of bottle refusal, additional 'Trade literature' was also searched pertaining to the main bottle manufacturers in the UK. The literature review was ongoing throughout the three years of study, and alerts were set up with databases and journals (see table 1 for details of search strategy and sources searched). Due to the paucity of literature concerning bottle refusal, the majority of studies were included for review.

Table 1 Search strategy and sources searched

Literature classification	Search strategy	Source
Academic literature	Online databases	Web of science Psychinfo Medline Maternity and Infant Care Cinahl plus Cochrane Library (reviews and trials) NHS (National Health Service) Evidence
Academic literature	Manual search, search by citation/reference	Textbooks, Journals
Academic Literature	Google Scholar	Amy Brown, Fiona Dykes, Patricia Hoddinott, Mary Renfrew, Gillian Thomson
Grey Literature	Google Scholar, OpenGrey, Dataset	UNICEF (United nations children's fund) Baby Friendly Initiative (BFI), Royal College of Midwives (RCM) World Health Organisation (WHO) Department of Health (DH) National Health Service (NHS) Public Health England (PHE) National institute for Health and Care Excellence (NICE) Nuffield Trust Royal College of Nursing (RCN) Royal College of Paediatrics and Child Health (RCPCH) Office for National Statistics (ONS) Ethos, Pro Quest (Theses')
Online breastfeeding support	Google, social media (twitter, Facebook, YouTube)	National Childbirth Trust (NCT) La Leche League GB and USA Breastfeeding Network Lactation Consultants of Great Britain Baby Milk Action
Trade Literature	Google	Tommee Tippee, Medela, Phillips Avent, Mimijumi, Minibe, MAM

2.4 Benchmark data

The UK IFS (2010) (McAndrew *et al.* 2012) is referred to extensively throughout this literature review. The IFS has collected data every five years concerning infant feeding practices in the UK since 1975. However, the last survey due in 2015 was cancelled by the Government due to a lack of funding. Thus, benchmark data in relation to infant feeding practices in the UK is reliant on data collected in 2010. McAndrew *et al.* (2012) used a survey (hard copy and online) delivered in three stages to UK mothers to investigate their infant feeding practices. Babies were between 4 weeks and 10 months old. An initial unclustered sample of 30,760 mothers was taken from all registered births for stage one, (August-October 2010), 15,724 mothers responded. Young mothers and mothers from lower socio-economic groups were 'over sampled' in England and Scotland due to predicted low response rates and in order to enable sufficient numbers for data analysis (McAndrew *et al.* 2012). A total of 12,565 mothers responded to stage two, and 10,768 mothers responded to stage three, 35% of the initial sample. There was a low response rate from young mothers and those from areas of high deprivation leading to non-response bias, although this was countered by the samples being weighted to correct them.

A methodologically robust survey, which accounted for confounding factors such as age, profession, ethnicity and socio-economic status, the IFS presents the only complete picture of infant feeding practices in the UK at present. Due to the cancellation of the IFS in 2015, Scotland undertook its own Maternal and Infant Nutrition survey in 2017 (GOV.SCOT.UK 2018), referred to in this review as the Scottish IFS. A questionnaire was completed by three separate groups of women, antenatally (N^2 = 2,523, rr^3 =10%), when their baby was 8-12 weeks old (N = 2520, rr =30%) and 8-12 months old (N = 2747, rr = 30%). Similar to the IFS in 2010, young mothers and those living in the most deprived areas were underrepresented, and older mothers and those living in the least deprived areas were overrepresented. However, samples were weighted to correct for this. Consistency of response was highlighted by the authors as problematic at times. In

[2] Number
[3] Response Rate

addition, some analysis was based on very small samples, although the study did not report results based on a sample <30, and those <50 were highlighted to be viewed with caution.

The Scottish IFS (2017) remains the most recent complete picture of infant feeding in Scotland. Although rates of breastfeeding were slightly lower than those in the UK and England as a whole, and the methodology of the Scottish IFS was not totally comparable to the UK IFS, it provides an important reference in relation to trends in infant feeding practices, which may be transferred to the rest of the UK.

2.5 Defining Infant feeding practices

Reviewing the literature surrounding infant feeding was not straightforward due to the differing terminology used to describe the various practices. A review of the indicators for assessing Infant and Young Child Feeding (IYCF) (WHO *et al.* 2010), and terms used in the studies found in this literature review was undertaken. A range of infant feeding practices mothers would use, attempt to use, or want to use, when experiencing bottle refusal were included as a reference point (see table 2). The table depicts a wide and interchangeable use of terminology, which made comparisons between studies challenging. This is not a new issue however. Labbok and Krasovec (1990) noted the inconsistency between infant feeding definitions and infant feeding practices. They devised a schema and framework to denote mothers' infant feeding practices, however neither were universally adopted. Renfrew *et al.* (2007), in their systematic review of 80 interventional studies in relation to increasing breastfeeding duration, also noted inconsistent definitions of breastfeeding in many of the studies reviewed. Furthermore, Thulier (2010), undertook a review of terms used to describe breastfeeding and found numerous differences between studies. In addition, consideration of changes in the way mothers feed their babies is not always recognised or defined within or between studies. An example of this is the act of feeding solely by expressed breastmilk (usually using a bottle) which has been termed '*breastmilk feeding'* by Thorley (2011, p.5). In an effort to differentiate between 'breastmilk feeding', (which is defined as breastfeeding using the IYCF definitions) and the physical act of breastfeeding, some studies are now using

the term '*feeding directly at the breast*' (Pang *et al.* 2017, p.2). Recently, Davie *et al.* (2018), have added to the discussion surrounding the complexity of defining breastfeeding within research, with particular reference to the UK. They describe how,

> '*…breastfeeding behaviour has been conceptualised as an 'all-or-nothing' health behaviour and drastically oversimplified as an operationalised variable as a result. Such dichotomous and categorical measurements of infant feeding are no longer fit for purpose in current investigations*' (p.7).

Table 2 IYCF infant feeding practices and how they are referred to in the literature

Infant feeding method	IYCF definition (WHO et al 2010)	Referred to in the literature as:
Breastfeeding only	Exclusive breastfeeding	Breastfeeding, Any breastfeeding Exclusive breastfeeding, Total Breastfeeding, Direct feeding at the breast
Breastfeeding and bottle feeding (formula)	Breastfeeding, predominant breastfeeding, partial breastfeeding	Breastfeeding, Combination/combi feeding, Mixed feeding, Supplementary feeding, Partial breastfeeding, Predominant breastfeeding, 'Top ups/topping up'
Breastfeeding and bottle feeding (EBM)	Breastfeeding, Exclusive breastfeeding	Exclusive breastfeeding, Breastfeeding Any breastfeeding, Direct feeding at the breast, Breastmilk feeding, Supplementary feeding
Breastfeeding and bottle feeding (EBM and formula)	Breastfeeding, predominant breastfeeding, partial breastfeeding	Breastfeeding, Any breastfeeding Combination/combi feeding, Mixed feeding, Supplementary feeding, Predominant breastfeeding, Partial breastfeeding, Complementary feeding
Bottle feeding (EBM)	Breastfeeding, Exclusive breastfeeding	Exclusive breastfeeding, Breastfeeding Breastmilk feeding, Expressed milk feeding, Bottle feeding
Bottle feeding (Formula or formula and EBM)	Liquid fed by bottle (irrespective of nature of liquid)	Bottle feeding, Formula feeding, Artificial feeding, Expressed milk feeding

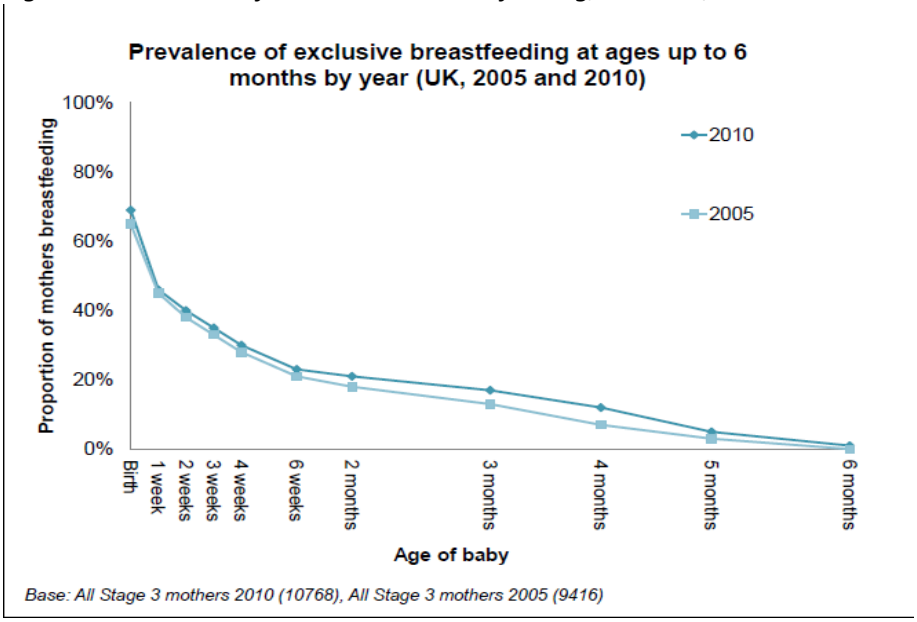
2.6 Infant feeding practices in the UK

In order to begin to understand the scenario of bottle refusal, it is pertinent to review the literature concerning current infant feeding practices in the UK. This provides a picture of who feeds their baby by which method. In addition, it gives background data to refer to and compare with in relation to the sample of mothers in this programme of research.

2.6.1 How UK mothers feed their babies

Although breastfeeding is clearly associated with short, medium and long-term benefits for infants and mothers in high-income countries, breastfeeding prevalence in the UK is amongst the lowest in the world (Victora *et al.* 2016). WHO guidance recommends *'Exclusive breastfeeding for the first six months of an infant's life'* (WHO 2001, p.2) and '*Continued breastfeeding alongside appropriate complementary foods up to two years of age or beyond'* (WHO 2002, p.5). However, <1% of mothers are exclusively breastfeeding in the UK at six months and no data are collected at two years. (McAndrew *et al.* 2012). The IFS found that although UK breastfeeding initiation rates were 81%, they rapidly decline by the first week after birth (McAndrew *et al.* 2012) (see figure 2)

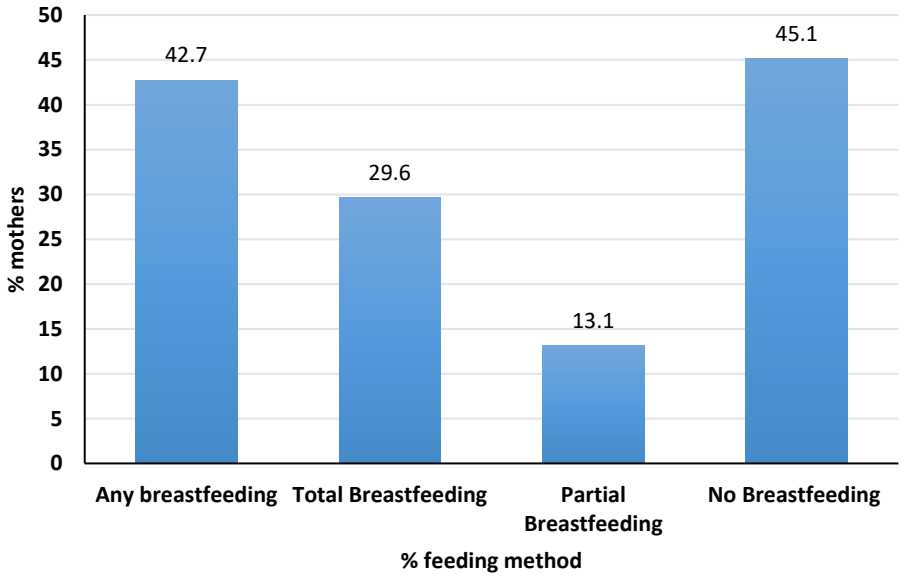
Figure 2 Prevalence of UK exclusive breastfeeding, IFS 2010,



McAndrew et al (2012) (with permission).

As discussed previously, due to no new IFS having been undertaken since 2010, it is difficult to ascertain if breastfeeding prevalence in the UK has changed. However, data from the Scottish IFS shows initiation rates have remained static 74% (2010) v 75% (2017) (GOV.SCOT.UK 2018). PHE are currently collecting infant feeding data for England as part of the maternity data set, prior to it being collected by local authorities as part of the recommissioning of children's services. Latest figures for 2017/2018 are displayed in figure 3. There is a decrease on 'any breastfeeding', from 44% in 2016/17, to 42.7% (PHE 2018). However, the data set is incomplete due to it being based on 140/150 local authorities. In addition, PHE (2018) describe the statistics as 'experimental' due to significant changes in reporting, thus the figures should be viewed with caution.

Figure 3 Feeding methods 6-8 weeks, England, 2017-2018.



(PHE 2018)

2.6.2 Maternal socio-demographics and infant feeding practices

It is evident that maternal socio-demographics are strongly associated with UK mothers' infant feeding practices, an association that is comparable to other high-income westernised countries (Victora *et al.* 2016). The IFS (2010) found that mothers from ethnic minority groups were the most likely to breastfeed in the UK, both in terms of initiation and prevalence (McAndrew *et al.* 2012). However, once this group of mothers is removed from the data, the 'profile' of a mother most likely to breastfeed in the UK

comprises of well-educated, older mothers, who experience the least social deprivation and are most likely to undertake managerial or professional occupations in ONS categories 1-3 (McAndrew *et al.* 2012). This is a profile replicated in the Scottish IFS (GOV.SCOT.UK 2018). Conversely, the IFS (2010) and Scottish IFS (2017) show that the mothers most likely to never breastfeed (and to formula feed instead) are less educated, younger, experience greater levels of social deprivation and are employed in ONS categories 4-6 (McAndrew *et al.* 2012; GOV.SCOT.UK 2018). The profile of mothers most likely to breastfeed in the UK is also reflected globally across high-income countries (Victora *et al.* 2016). In addition, the greatest increase in any breastfeeding rates is seen in this group of mothers (Victora *et al.* 2016).

2.7 Potential influences on infant feeding practices in the UK

In order to more fully understand UK mothers' infant feeding decisions and the possible part they play in mothers' experiences of bottle refusal, their potential influences require scrutiny. From a socio-cultural perspective, the literature concerning the impact of the perceived UK bottle feeding culture was reviewed. In addition, from a support perspective, literature that addresses how the Baby Friendly Initiative (BFI) has influenced UK infant feeding practices was appraised. This 'sets the scene' in relation to the infant feeding environment a UK mother resides in and the support she receives.

2.7.1 The UK: a bottle feeding/formula feeding culture

The UK has been described as a 'bottle feeding culture' (Dykes 2005; Renfrew *et al.* 2007) and a 'formula feeding nation' (Brown 2015). Formula feeding in the UK is now viewed as the cultural norm (Thomson and Dykes 2011; WBTi 2016; UNICEF 2017), and has been for generations of UK mothers. These descriptions are in effect reflected in data from key infant feeding reports. The UK IFS (2010) found that 80% of mothers had already used a bottle at stage one of the study, when their babies were 4 to 10 weeks old (McAndrew *et al.* 2012). The Dietary and Nutrition Survey (2011) found that 88% of mothers had fed their baby with a bottle by 4 to 6 months old (Lennox *et al.* 2011), and the WBTi study found the median (Mdn) duration of breastfeeding in the UK was just

three months, with 88% of UK babies having been fed with a bottle by 12 months of age (WBTi 2016).

Bottle feeding was described as a 'cultural issue' in VAS Goncalves' secondary analysis of the IFS 2010 (VAS Goncalves 2017). Results showed that the decision to bottle feed was the only infant feeding practice not influenced by socio-economic status for mothers from ethnic minority groups. VAS Goncalves (2017) suggests that bottle feeding in this case '*could be more of a cultural choice than an economic one*' (p.447). VAS Goncalves described young, white, unsupported and less educated mothers in particular, as being influenced culturally to bottle feed. However, the use of a bottle to feed a baby is not exclusive to young, poorly educated mothers. It transcends the majority of the socio-economic and ethnic groups in the UK well before their baby reaches six months of age (McAndrew *et al.* 2012; WBTi 2016; PHE 2018).

Rollins *et al.* (2016) undertook a comparative case study between the UK and US, both high-income countries. They found UK breastfeeding rates to be lower than those of the US. They described how strong civil and society engagement was missing from countries whose rates of breastfeeding were stagnant or in decline, as in the case of the UK. In addition, a recent report by the Nuffield Trust in association with the RCPCH found that although UK breastfeeding rates were 'stable', they had actually worsened in relation to 14 comparable European countries (Cheung 2018). Rates of giving 'any' breastmilk at six months were 34% in the UK, versus 62.5% in Sweden (Cheung 2018). It should be noted however, that Cheung discusses the need to exercise caution in making any comparisons between the UK and other countries, due to societal, population and economic differences.

Dykes (2006, p.206), refers to breastfeeding in many communities as a '*marginal and liminal activity, rarely seen and barely spoken about'*. This observation is supported by data concerning certain 'wards' in the UK, with Knowsley in Merseyside exhibiting a 6-8 week breastfeeding rate of just 18.9%. Not only is this well below the national average of 42.7%, it differs starkly from other wards such as Tower Hamlets, where the breastfeeding rate is 81.6% (PHE 2018). Such disparities were also evident in a UK study

by Peregrino *et al.* (2018, p.1), who found breastfeeding duration was associated with the '*neighbourhood context'* a mother resided in. This inequality in UK breastfeeding practice is likely to continue, with evidence that subsequent feeding practices in the UK are replicated (Bailey *et al.* 2004; McAndrew *et al.* 2012), and targeted interventions aiming to change infant feeding behaviours are being met with little current success.

Further evidence to support the 'norm' of bottle feeding in the UK is noted in qualitative studies. A mother in a qualitative study undertaken by Thomson *et al.* (2015) described her thoughts about breastfeeding in public, '*Sometimes I think it would be easier to have a bottle, you can go anywhere and do anything. Nobody has an issue with a baby having bottled milk'* (p. 39). Bailey *et al.* (2004, p.240), who undertook semi-structured interviews with low-income mothers in the UK, found a '*give it a go'* breastfeeding culture was prevalent, with mothers expecting difficulties and failure. The authors linked this to the presence of a *'powerful and pervasive bottle feeding culture'* (Bailey *et al.* 2004, p.240). In essence, although UK infant feeding practices are strongly affiliated with maternal socio-demographics, the effect of a bottle feeding culture, where breastfeeding is not the norm, cannot be underestimated.

2.7.2 The UK Baby Friendly Initiative (BFI)

The Baby Friendly Hospital Initiative (BFHI) (termed the Baby Friendly Initiative (BFI) in the UK), is a global initiative introduced in 1994 in the UK, with the aim of increasing breastfeeding rates and to standardise advice and guidance in relation to breastfeeding (UNICEF 2010). The Ten Steps to Successful Breastfeeding (see table 3), followed later by a Seven Point Plan, were devised to guide health professionals and women both in and out of hospital in relation to breastfeeding practice (UNICEF 2010). Hospitals, community services and universities were encouraged to achieve 'Baby Friendly Accreditation' via assessment undertaken in relation to the ten steps/ seven point plan. In 2012, revised BFI standards were produced, exclusive to the UK (Entwistle 2013). They took on a broader approach in relation to the evidence surrounding infant feeding and also responded to the particular social context of infant feeding in the UK (Entwistle 2013).

The BFI is an important influence on infant feeding policy and infant feeding support in the UK and underpins key practice-related documents. The NICE guidelines for maternal and child nutrition recommend BFI to be used as a minimum in relation to the implementation of a programme to support breastfeeding (NICE 2014). The DH 'Healthy Child Programme' recommends BFI standards to be adopted in the delivery of services (Shribman and Billingham 2009). The BFI have jointly written guidance with PHE in relation to the commissioning of infant feeding services (PHE 2016). They have also jointly published information with the DH for mothers concerning bottle feeding (NHS and UNICEF 2015a), the introduction of solids (NHS and UNICEF 2015b), and breastfeeding (NHS and UNICEF 2015c), as part of the widely promoted NHS Start4life campaign. To add to this, the number of health providers working towards BFI accreditation in the UK is extensive, with 91% of maternity services, 89% of health visiting services, 73% of midwifery university programmes and 20% of health visiting programmes registered (UNICEF 2018).

Table 3 UNICEF Ten Steps to Successful Breastfeeding

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practise rooming-in - that is, allow mothers and infants to remain together - 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Reflective stop off

I had spent a large amount of time studying the literature relating to the UK BFI, however I was confused! The UK BFI had revised its standards in 2012; the ten steps were no longer being used as a benchmark in the UK. However, on reviewing the literature I noted recent papers continued to refer to them as indicators. I contacted UNICEF to clarify if the new UK BFI standards had in fact superseded the ten steps, and received confirmation that this was the case. I also sent them UK studies post 2012 which were still referring to the ten steps as a benchmark, in response to UNICEF's request to do so. Although this clarified my understanding of the ten steps no longer being used in the UK, which is important in relation to this research - I also recognised that a confusing picture might prevail both in terms of research and practice. In addition, I was aware of a potential 'legacy' to the ten steps, again important in relation to this programme of research.

Globally, there is strong evidence to support the BFHI being instrumental in increasing breastfeeding rates and duration in high-income countries (Groleau *et al.* 2017; Lubbe and Ham-Baloyi 2017; Patterson *et al.* 2018; Spaeth *et al.* 2018). Since the introduction of BFI to the UK, breastfeeding initiation rates have increased from 62% to 81% (McAndrew *et al.* 2012). However, few studies have been undertaken in the UK in relation to impact of BFI upon breastfeeding rates, and duration, and none were identified in relation to the impact of the 2012 revised standards.

Broadfoot *et al.* (2005) undertook an observational study in Scotland with 464,246 infants born between 1995 and 2002. They examined BFI status of the hospital at time of the baby's birth, and breastfeeding at seven days. They found babies born in a hospital with the UK BFI standard award were 28% more likely to be breastfeeding at seven days than in other maternity units (p = .001). In addition, breastfeeding rates had increased significantly faster in hospitals with Baby Friendly status between 1995- 2002: 11.39% (95% CI[4]) (10.35 to 12.43) v 7.97% (95% CI) (7.21 to 8.73). However, the authors could not solely associate increases in breastfeeding initiation or breastfeeding rates with BFI

[4] Confidence Interval

status, as the impact of independent variables such as peer support programmes, breastfeeding strategies, staff training were not considered in the study design.

A further UK study was undertaken by Bartington *et al.* (2006) to investigate initiation and prevalence of breastfeeding, according to units that were BFI accredited, certified or had no award. They found breastfeeding initiation was more likely in a BFI accredited unit compared with the others (95% CI) 1.10 (1.05–1.15), although they found no increase in breastfeeding at one month The study had limitations due to being reliant on maternal recall at nine months. In addition, the authors were unable to adjust for maternal intention to breastfeed, an important factor in breastfeeding initiation. The authors concluded that other strategies should be explored in relation to increasing duration of breastfeeding in the UK.

As part of the IFS (2010), breastfeeding rates in relation to BFI accredited hospitals were investigated (McAndrew *et al.* 2012). Contrary to findings from Broadfoot *et al*. (2005), and Bartington *et al.* (2006), the IFS found mothers from England and Wales who gave birth in a hospital with BFI accreditation were less likely to initiate breastfeeding, than those in a non-accredited hospital. In addition, those who gave birth in a BFI accredited hospital were also less likely to be breastfeeding at one week and two weeks, than those in a non-BFI hospital (one week 61% v 71%), (two weeks 58% v 68%). The authors note, however, that funds to attain BFI accreditation have been targeted at hospitals with mothers least likely to breastfeed (McAndrew *et al.* 2012), therefore there was a probable socio-demographic influence on the results.

A small number of UK qualitative studies were identified which included findings pertaining to the influence of BFI on infant feeding support and practice. Furber and Thomson (2006) conducted a grounded theory study using in-depth interviews with midwives (N = 30), to discover their views of baby feeding. It was undertaken in two hospitals, one of which was working towards BFI accreditation, and another whose breastfeeding recommendations complemented the BFI policy. They found that midwives 'broke the rules' in relation to supplementation of breastfeeding, which according to step six of the ten steps (which were operating at the time), should only

have been given to a breastfed baby if medically indicated. The midwives did this secretly and used 'covering' techniques, ensuring that the mothers (rather than themselves) made the request for a bottle, due to it being perceived to be outside of BFI policy and evidence-based guidelines. However, their actions were underpinned by wanting to help mothers they were caring for, described as an act of '*positive deviance'* by Furber and Thomson (2006, p.373). In addition, it was evident that the midwives misinterpreted BFI policy, leading them to restrict bottle feeding discussions. Although the midwives' views were not representative of all midwives and could have been affected by the 'culture' of the hospitals they worked in, this study gives a valuable insight into a less obvious impact of BFI, and the difficulties navigating BFI policy.

Dykes *et al.* (2012) conducted a qualitative descriptive study using focus groups and semi-structured interviews (N = 102) with inter-disciplinary health professionals. They explored perceptions of an infant feeding information team (IFIT) in relation to implementing the WHO code of breastmilk substitutes (WHO 1981). Although health professionals spoke positively of BFI in relation to the skills and knowledge it equipped them with, a number also perceived it as being pro-breastfeeding, biased in favour of breastfeeding and reducing information concerning formula feeding. They also found this affected their own knowledge concerning breastmilk substitutes. The authors suggested a need to protect and promote breastfeeding, whilst not marginalising mothers who formula feed (Dykes *et al.* 2012). Although the authors used multiple strategies to recruit an inter-disciplinary sample, over half of the participants in this study were midwives or health visitors, which may have had an impact upon the data collected. However, the negative findings in relation to BFI are not isolated to this study, and are comparable to those of Furber and Thomson (2006) in relation to the 'restricting' of discussions surrounding bottle feeding/formula.

Further evidence surrounding BFI impacting negatively on information pertaining to formula is evident in a study by Lagan *et al.* (2014), who interviewed 78 mothers to explore their experiences of infant feeding in Scotland. There was a strong perception that some midwives were '*not allowed'* (p.49) to discuss formula feeding, and the women reported feeling pressurised to breastfeed (Lagan *et al.* 2014). Similar to Furber

and Thomson (2006), they found interpretation of BFI guidance by midwives was potentially restricting information concerning formula feeding. There was also a reinforcement of the 'breast is best' message, with mothers who were formula feeding feeling marginalised. The authors called for a more realistic woman centred approach to infant feeding, and hoped that the new BFI standards which had just been published (UNICEF 2012), would be less stringent. Due to the self-selective nature of the sample, mothers exhibiting a more negative view of their infant feeding experience may have participated. However, the findings are comparable to those of Furber and Thomson (2006) and Dykes et al (2012), and to previous studies where mothers have reported information concerning formula feeding to be restricted (Lee and Furedi 2005; Crossley 2009; Lakshman *et al.* 2009; Leurer and Misskey 2015).

Other UK studies, (both qualitative and quantitative), have highlighted the 'marginalisation' of bottle/formula feeding in comparison to breastfeeding, with some suggesting BFI as a 'pre-cursor' to this. Lee and Furedi (2005) conducted a mixed methods study, and found an inequality between breast and bottle/formula feeding existed, with the latter being seen as second best and associated with a 'bad mother'. Mothers felt self-conscious when formula feeding, and felt judged by health professionals (Lee and Furedi 2005). Although undertaken some time ago, the findings are comparable with recent studies where mothers using formula felt stigmatised and guilty (Fallon *et al*. 2017; Komninou *et al*. 2016). They are also similar to those in a qualitative study by Thomson *et al.* (2015), where as part of an evaluation of the implementation of BFI in the community, mothers described feeling like '*deviants*' when bottle feeding (p.39). Mothers also described having to hide their use of a bottle, and described *'feeling scared', 'frightened'* and *'in fear' of* informing professionals that they had given up breastfeeding (Thomson *et al.* 2015, p.37).

Two recent studies also found that mothers who were formula feeding or combi feeding (breast and formula) experienced this negatively. Fallon *et al.* (2017), undertook a large scale survey (890 mothers), examining the practical and emotional experiences of formula feeding mothers with babies up to 26 weeks old. They found mothers experienced high levels of negative emotions including guilt (67%), stigma (68%), and

the need to defend their decision to use formula (76%). The authors suggest that the BFHI needs to be 'situationally modified' due to the findings of their study pertaining to tensions within its current form (Fallon *et al.* 2017). Although this was a large study, it used a convenience sample recruited via social media, thus extrapolating its findings to the wider population should be viewed with caution. In addition, and of note, are the authors' comparisons of their findings to the 'BFHI code', which is not used in the UK. The code is aligned to the ten steps, which have now been superseded by the revised UK BFI standards. The use of this code as a comparable reference point has the potential to weaken some of the credibility of the study's overall conclusions.

Komninou *et al.* (2016) investigated 845 mothers' emotional experiences of exclusive breastfeeding versus combi-feeding (breast and any amount of formula), using an online survey distributed via social media. They found mothers who were exclusively breastfeeding received significantly higher levels of support from health professionals, than those who were combi-feeding, $p<.018$. In addition, 15% of mothers who combi-fed reported feeling guilty, 38% felt stigmatized, and 55% felt the need to defend their feeding choice. The authors discuss the 'breast is best' mantra as sending a moralising message to mothers regarding infant feeding. As with the previous study, Fallon *et al.* (2017), the generalisability of this study's findings are limited due to using a convenience sample. In addition, owing to the initial five combi-feeding categories - ranging from a little formula to mostly formula - being collapsed into one category of 'combi-feeding', potentially important differences between the mothers' infant feeding practices and their experiences were not reported. Although the studies by Fallon *et al.* (2017) and Komninou *et al.* (2016) exhibit limitations, they do provide a contemporary picture of how mothers experience bottle/formula feeding in the UK, which is associated with a number of negative connotations, comparable to previous literature.

Whilst some of the studies reviewed appear to show a 'link' between BFI and a marginalisation of bottle/formula feeding, it is acknowledged that other factors are also likely to contribute to this. In addition, it should be recognised that apart from the studies by Fallon *et al.* (2017) and Komninou *et al.* (2016), all of the studies reviewed were undertaken before the publication of the revised BFI standards in 2012, which are

more ‘inclusive’ of bottle/formula feeding support. However, as no studies have been published in relation to the impact of the revised BFI standards, it is difficult to assess the effect they have had (if any) on infant feeding, particularly upon the marginalisation of bottle/formula feeding. In addition, a ‘legacy’ of the ten steps could potentially remain, reflected in UK ‘post ten steps’ studies, which continue to refer to them as a benchmark (Fallon *et al.* 2017; Biggs *et al.* 2018).

In summary, there is evidence to show that breastfeeding in the UK is not the norm, and that a bottle feeding culture exists. While the BFI has undoubtedly been an influential factor in UK infant feeding, evidence relating to its impact on breastfeeding rates is inconclusive. However it does appear to have contributed – albeit inadvertently – to a negativity surrounding bottle/formula feeding.

2.8 Combining breastfeeding with bottle feeding

In order to understand the practice of breast with bottle feeding, it is essential to review the literature concerning the potential detrimental impact bottle feeding can have upon breastfeeding. In addition, a review of the evidence surrounding why UK mothers introduce a bottle to their breastfed baby is needed, in order to contextualise mothers’ practices, and to understand the possible conflicts mothers participating in the current research may experience.

2.8.1 Evidence to ‘delay’ introducing a bottle to a breastfeeding baby until breastfeeding is established

From a practice perspective, mothers are advised to wait until breastfeeding is ‘established’ (usually quoted as six weeks), before they introduce a bottle/pacifier to their breastfed baby. The rationale behind this advice is two-fold. Firstly, the mechanisms of bottle feeding and breastfeeding differ. A breastfeeding baby introduced to a bottle can become confused between the two, gravitating to the easier method of bottle feeding, a scenario known as ‘nipple confusion’ (Neifert *et al.* 1995). Secondly, early introduction of a bottle (particularly containing formula), can interfere with milk production which is a supply and demand action (Jonas and Woodside 2016). A review

of the literature found no studies to support the advice that delaying the introduction of a bottle until around six weeks, or until breastfeeding is established, has a positive effect on breastfeeding. In addition, a review of the literature found no evidence to define the term 'establishment of breastfeeding', or when breastfeeding can be considered to be established.

2.8.2 The impact of bottle feeding on breast feeding - nipple confusion

A review of the literature found no formal or accepted definition of what constitutes 'nipple confusion', although a definition by Neifert *et al.* (1995) is commonly referenced (Cloherty *et al.* 2005; Hargreaves and Harris 2009; Al-Sahab 2010; Zimmerman and Thompson 2015). Neifert *et al.* (1995) defined nipple confusion (type A) as, '*a neonate's difficulty in exhibiting the correct oral configuration, latching technique, and suckling pattern necessary to extract milk from the breast after exposure to an artificial teat* (p. 125). Nipple confusion (type B), is a further definition by Neifert *et al.* (1995) which describes bottle refusal.

Neifert *et al.* (1995) hypothesised that nipple confusion occurs due to differences in the physical feeding mechanisms of breast and bottle. They described how a neonate may have limited ability to adapt to various oral configurations. They went on to say that, '…*when a newborn infant who has been breastfed is given an artificial teat to suck, this stimulus may readjust to a sucking pattern that compresses and controls the teat*' (as opposed to the vacuum needed to breastfeed) (p. 126). Physiologically, the mechanisms of breast and bottle feeding are purported to differ, mainly in relation to the size of the mouth when feeding and the action required to retrieve milk. Breastfeeding has long been associated with a wide-open mouth, whereas bottle feeding has been associated with a pursed mouth (Woolridge 1986). In addition, breastfeeding is associated with a 'vacuum' action, while bottle feeding is associated with a 'compression' action (Geddes and Sakalidis 2016).

Nipple confusion probably achieved global recognition in 1992. This was most likely due to step nine of the Ten Steps to Successful Breastfeeding stating that health professionals should '*give no artificial teats or dummies to breastfeeding infants*'

(UNICEF 2010). The rationale behind this was the same described by Neifert *et al.* (1995), in that 'nipple confusion' could occur due to the action of breastfeeding being different to that of bottle feeding, and could impact negatively on breastfeeding (Howard *et al.* 2003). However, the original ten steps have recently been revised, with step nine now stating, '*Counsel mothers on the use and risks of feeding bottles, teats and pacifiers*' (WHO 2018a). UNICEF report that the evidence to support this change is based upon a Cochrane review undertaken by Jaafar *et al.* (2016), investigating restricted pacifier use on breastfeeding duration (using a pacifier uses the same action as feeding from a bottle). The authors found no effect of pacifier use - from birth or afterwards - on the prevalence or duration of exclusively breastfed babies at three months in two studies with 1228 infants, (RR[5] 1.01 95% CI 0.96 to 1.07), and at four months in one study with 970 infants, (RR 1.01 95% CI 0.94 to 1.09). They also found no effect of pacifier use with partially breastfed infants at three months, two studies, 1228 infants, (RR 1.00 95% CI 0.98 to 1.02) and at four months, one study 970 infants (RR .99 95% CI 0.97 to 1.02). However, the authors state that there is insufficient evidence of the potential short-term effects of pacifiers on breastfeeding when mothers are having breastfeeding problems (Jaafar *et al.* 2016). The revised UK BFI standards (UNICEF 2012) do not explicitly refer to using dummies or teats. However, as intimated previously, if a 'legacy' of the original ten steps remains, particularly in relation to step nine, then nipple confusion may continue to be discussed as an objection to breast and bottle feeding.

There is little literature explicitly exploring the association between nipple confusion and its impact upon breastfeeding. Hargreaves and Harris (2009) carried out a descriptive review of the evidence surrounding nipple confusion. They concluded that due to studies not making the distinction between formula supplements in a bottle versus EBM, breastfeeding cessation being due to nipple confusion could actually be due to issues with supply and demand owing to formula use. Although this review was descriptive in nature and did not appear to follow a systematic framework, it raises valid points in relation to formula use being a potential factor in breastfeeding cessation as opposed to the use of a bottle. In essence, for research to conclude that it is nipple confusion

[5] Risk ratio

impacting upon breastfeeding, the effect of the use of a bottle/teat needs to be separated from the effect of using formula.

Zimmerman and Thompson (2015) conducted a systematic review to investigate the causal link between bottles and pacifiers and nipple confusion, and its impact upon breastfeeding. They reviewed six studies in relation to nipple confusion caused by a bottle. They found that although four of the studies reported reduced breastfeeding duration when supplementary bottles were introduced, none of the results could be linked to nipple confusion *per se*. The authors concluded that *'the evidence from the studies does not clearly address the underlying causal relationship between the use of bottles and nipple confusion'* (Zimmerman and Thompson 2015, p.3).

In an effort to isolate nipple confusion caused by a bottle, studies have been undertaken to compare a bottle with a cup and breastfeeding duration. Cups are advocated if supplementation is required for a breastfed baby due to the mechanism of cup feeding being purported to be closer to that of breastfeeding. A Cochrane review undertaken by Flint *et al.* (2016), reviewed five studies in relation to the effect cup versus bottle feeding had upon breastfeeding (and other variables). They found cup feeding may have some benefits on breastfeeding up to six months of age compared to feeding by bottle. However, this conclusion was based on studies with preterm infants due to a lack of studies with term infants, therefore the findings cannot be generalised to infants at term or older.

A further systematic review carried out by McKinney *et al.* (2016), reviewed eleven studies in relation to infant feeding by cup versus bottle, and impact upon breastfeeding rates. They found babies that were cup fed had slightly higher levels of any breastfeeding than those who had bottle fed. They also found greater levels of exclusive breastfeeding rates at discharge, if a baby had been fed by cup as opposed to bottle. However, only one of the studies (Yilmaz *et al.* 2014), found a statistically significant difference in exclusive breastfeeding duration, and this was undertaken with preterm infants. Therefore again, results cannot be generalised to babies born at term.

Only one study was identified in the UK which explored health professionals' and mothers' views in relation to nipple confusion. Cloherty *et al.* (2005), completed an ethnographic study using observations of health professionals' discussions with mothers concerning supplementary feeding of their breasted baby in a UK hospital. There was a strong belief amongst the midwives interviewed that bottle feeding caused nipple confusion. This led to 15/17 midwives stating they could not suggest bottles for supplementation due to nipple teat confusion. Although some of the health professionals doubted nipple teat confusion existed, they still refrained from suggesting bottles to supplement a breastfeeding baby. The authors stated that '*it seems likely that step 9* [of BFI] *has had a considerable influence on health care professionals' practice in the United Kingdom in relation to supplementation'* (Cloherty *et al.* 2005, p.155). In addition, 5/21 mothers interviewed, spontaneously discussed the effect nipple confusion due to bottle feeding would have on their breastfeeding. This study was undertaken prior to the revised BFI standards, which no longer refer to step nine and the restriction of bottles and teats. However, it presents a unique insight into UK mother and health professional beliefs surrounding nipple confusion, which no other studies have focused upon to date.

The physical differences between breastfeeding and bottle feeding have been investigated previously, and similar to physiological discussions (Woolridge 1986), studies have found clear differences between the mechanisms of both feeding methods (Aizawa *et al.* 2010; França *et al.* 2014). Aizawa *et al.* (2010) concluded that due to these differences, artificial teats should be made of less compressible material, and should be shaped like breasts in order make them more comparable to breastfeeding. This would reduce potential problems (i.e. nipple confusion) for babies who were bottle and breastfeeding together. França *et al.* (2014), who compared the mechanisms of breast, bottle and cup, concluded that cup feeding should be the preferred alternative as a temporary substitute to breastfeeding rather than a bottle, due to the muscle activity of cup feeding having no significant difference to that of breastfeeding, ($p = 0.05$). The generalisability of both studies' findings are limited however, due to their small sample numbers. In addition, they base their conclusions purely on the mechanical differences

and similarities between feeding methods, without taking into consideration the non-nutritional properties of breastfeeding (discussed under section 2.10.4).

Sakalidis and Geddes (2015) also found differences between feeding mechanisms during their systemic review of seventeen studies examining suck-swallow-breathe dynamics in breastfed infants. Nine studies consistently showed the use of a 'vacuum' was essential for milk removal from the breast (as opposed to compression in bottle feeding). However, there was a wide variability in the methods used in the studies and in relation to defining breastfeeding parameters, which weakened comparisons.

Other studies, although finding a difference between the feeding mechanisms, have also found babies are able to adapt between the differing sucking mechanisms. Sameroff (1968), exposed babies age 2-5 days old (N = 30), to two types of bottle which delivered nutrition either by suction (associated with breastfeeding), or compression (associated with bottle feeding), and assessed them using a polygraph. They found babies were able to adapt their feeding mechanisms to both types of nutrition retrieval. Wolff (1968) undertook a similar study, and also found adaptations were made by babies when using differing artificial teats. However, both studies used bottles and artificial teats only, thus a comparison with breastfeeding cannot be extrapolated. In addition, the use of a polygraph, although pertinent at the time, is now dated and has been superseded by technology able to produce more accurate results (Geddes and Sakalidis 2016).

More recently, Moral *et al.* (2010) undertook a cross sectional study in Spain with 234 mother infant pairs, either breast or bottle feeding, and a randomised cross over field trial with 125 mother infant pairs who were mixed feeding. Babies were observed in relation to number of sucks and pauses at 21-28 days (breast or bottle feeding), and 21-28 days and five months (mixed feeding). They found babies who mix fed undertook both types of sucking movements (breastfeeding and bottle feeding), and adopted their own pattern (Moral *et al.* 2010). This study in addition to exhibiting strong methodological design, also used a large sample, making extrapolation of the findings to a wider population viable.

In summary, the evidence surrounding the link between bottle feeding and nipple confusion is yet to be proved. In effect, conclusions and practice surrounding nipple confusion appear to have been built upon the physiological understanding of the differences between bottle feeding/pacifier sucking and breastfeeding. In addition, although the studies reviewed collectively evidence clear differences between the mechanisms of breast and bottle feeding, the differences do not necessarily mean nipple confusion will occur if a breastfed baby feeds by a bottle. Indeed, it is evident that babies can 'adapt' their sucking mechanisms between feeding methods. This indicates rather than becoming confused, babies can be receptive to changes in feeding receptacles. However, the scenario of nipple confusion continues to be prevalent in relation to combining breast and bottle feeding, and warrants further exploration.

2.8.3 The impact of supplementary feeds by bottle on breastfeeding

Although the term 'supplementary feeds' usually indicates feeds in addition to breastfeeding, this term is used interchangeably throughout the literature. In relation to the following discussion, supplementary feeds will be used to describe the practice of a feed additional to breastfeeding, and also a feed instead of breastfeeding.

In addition to bottle feeding potentially causing nipple confusion, there are also concerns regarding the detrimental effect bottle feeding using formula can have upon milk production, and in turn breastfeeding duration. As previously highlighted by Hargreaves and Harris (2009), apparent cases of nipple confusion leading to breastfeeding cessation may in fact be due to using supplements of formula, which have interrupted milk production. This observation is explained by the fact that breastfeeding is a supply and demand action, working on a negative feedback system. It requires the baby to suckle at the breast, with the resultant emptying of the breast stimulating further milk production (Jonas and Woodside 2016). Physiologically, supplementation of breastfeeds via formula can reduce lactation - particularly if it is a formula feed replacing a breastfeed - and subsequently have a detrimental effect on breastfeeding. This is reflected in step six of the ten steps which states: '*Give newborn infants no food or drink other than breast milk, unless medically indicated*' (UNICEF 2018). In relation to the UK BFI revised standards (UNICEF 2012), the following statement is included:

'Support mothers to make informed decisions regarding the introduction of food or fluids other than breastmilk (UNICEF 2012). This is a less stringent approach to supplementation than the ten steps. However, it should be noted that as part of UK BFI accreditation for hospitals, an audit is undertaken in relation to the number of breastfeeding babies receiving supplementation and the reasons behind this.

The evidence surrounding the impact of supplementation with formula on breastfeeding centres mainly on preterm infants, therefore reducing comparisons to healthy term infants. In addition, there is an emphasis on the effect of in-hospital supplementation, which inevitably focuses on the effect of supplementation in the early days of a baby's life, rather than in later weeks or months. Furthermore, the impact upon maternal confidence in relation to supplementation can have a negative effect upon breastfeeding duration, rather than it being due to the interruption of the physiology of lactation (Smith and Becker 2016), and this is rarely considered in studies.

As part of a Cochrane review carried out by Smith and Becker (2016) examining the effect of early additional food and fluids for healthy breastfed babies, the impact of formula milk supplementation upon breastfeeding rates was investigated. However, the evidence available was of low quality, therefore an assessment of the benefits or harms of supplementation using formula milk was not able to be undertaken.

Few studies have been undertaken 'post Cochrane review' in high-income countries comparable to the UK, to investigate the impact of supplementation on breastfeeding using formula. O'Connor *et al.* (2018) conducted a prospective cohort design with 335 Australian mothers investigating predictors of exclusive breastfeeding and duration. The authors found that apart from non-exposure to opiate analgesia in labour, the only other modifiable predictor of exclusive breastfeeding at three months was not being exposed to formula supplementation on the postnatal ward (95% CI 1.43–4.18, $p < 0.001$) (O'Connor *et al.* 2018). Although this study was well designed with a good sample size, the sample was a convenience sample, with mothers exhibiting a 100% intention to breastfeed, and a higher than usual exclusive breastfeeding rate at three months

compared to the Australian national average. Thus the ability to make comparisons to other populations, including the UK, is somewhat limited.

A further study was conducted by Isaia *et al.* (2017) with 128 mothers in Cyprus, investigating breastfeeding determinates using a validated questionnaire. They found in-hospital supplementation to be negatively associated with breastfeeding at three (p = <.001) and six months (p = <.001) and with exclusive breastfeeding at one month (p = .001). However, the study findings are limited due to the small sample size and reliance upon maternal recall of up to one year.

Data collected during the IFS (2010) in relation to intention to mix-feed found that 14% of mothers in the UK intended to feed using breast and formula (McAndrew *et al.* 2012). The IFS found that these mothers had lower breastfeeding rates at six months than those mothers who had intended to exclusively breastfeed – 23% v 50%. In addition, mothers who mix fed had by far the most problems with breastfeeding (52%). However, as the authors note, the cause and effect of this cannot be determined. Mothers may have mix fed due to problems with breastfeeding, or had problems due to mix feeding. Nearly a third (31%) of babies in the IFS had been given formula, glucose or water before hospital discharge. These mothers were more likely to stop breastfeeding than those mothers who had exclusively breastfed at one week (29% versus 10%) and two weeks (35% versus 14%) (McAndrew *et al.* 2012). However, McAndrew *et al.* (2012) suggest personal choice is a factor in cessation, with fewer mothers ceasing to breastfeed who had been advised to give supplements, than mothers who had made the decision to supplement themselves (21% versus 40%).

Few studies have focused upon the impact of supplementation using EBM in a bottle on breastfeeding duration. Physiologically, the expression of breastmilk would be less likely to interfere with the supply and demand feature of breastfeeding. In support of this theory, studies have shown no significant difference between the practice of breastfeeding and the practice of expressing breastmilk in relation to timing, patterns, and number of milk ejections (Prime *et al.* 2009; Gardner *et al.* 2015). However, a study by Forster *et al.* (2015) (924 mothers) disputes this theory, finding that supplementary

feeding by bottle with formula, or a mix (formula and EBM), or just EBM, had the same detrimental effect on breastfeeding duration, when compared to feeding directly at the breast. Conversely, a study by Pang *et al.* (2017) (541 mothers) found that mothers who mix fed (breast and EBM via a bottle), were at no higher risk of breastfeeding cessation than mothers who fed directly at the breast. Interestingly, the authors describe this 'success' of mixed feeding, possibly being down to mothers being able to return to work and to have some independence from the demands of their infant. These studies comprised of large samples, and accounted for confounding variables such maternal demographics, breastfeeding problems and intention to breastfeed in their analysis. However, they leave an inconclusive picture concerning the effect of supplementary EBM on breastfeeding. This was also noted in a Cochrane review conducted by Johns *et al.* (2013), who investigated the prevalence and outcomes of breast milk expressing in women with healthy term infants. Findings were inconclusive, due to variance in definitions, levels of data and contradictory outcomes. The authors described an increase in the prevalence of breast milk expressing in the UK, although exact prevalence was unknown due to no data being collected, which remains the case in 2018.

In summary, although the literature reviewed appears to support supplementary feeds using formula as having a negative impact on breastfeeding, the evidence remains inconclusive due to study limitations. However, from a physiological perspective, supplementation using formula has a recognised detrimental effect upon milk production. The evidence concerning the effect of using EBM as a supplementary feed again remains inconclusive. More high quality research is required concerning the effect of supplementary feeds (formula and EBM) on breastfeeding, in order for mothers to make evidence-based decisions in relation to the combining of breast and bottle feeding

2.9 The context surrounding why UK mothers introduce a bottle to a breastfed baby

In order to gain an understanding of the complexity surrounding bottle introduction to a breastfed baby, a review of the literature surrounding this practice was necessary. Due to a paucity of studies focusing exclusively on why UK mothers introduce a bottle to their breastfed baby, the literature concerning why mothers supplement, why mothers cease

to breastfeed, and why mothers express breastmilk was reviewed, with key findings presented below.

2.9.1 Why UK mothers express breastmilk

A small number of qualitative studies have explored why UK mothers express breast milk to feed their healthy baby (as opposed to an unwell/preterm baby). Johnson *et al.* (2009) in their study of 16 mothers, found that they expressed to manage pain, for fathers to be involved in feeding and to allow for some independence. Johnson *et al.* (2013) also explored experiences of expressing more long term with seven of the mothers from the 2009 sample. Results were comparable to the first study. In relation to managing pain expressing was seen as a '*desperate solution',* (Johnson *et al.* 2013, p.593). Using EBM was also seen as a way for mothers to '*deflect accusations of poor mothering'* (p.593), usually associated with bottle and formula feeding. In addition, expressing and feeding by bottle was described as a possible '*door to freedom'* for mothers (p.592), particularly regarding feeding in public, but also in relation to someone else feeding their baby so they could have a break (Johnson *et al.* 2013). Although these studies give a valuable insight into why mothers express breastmilk, the aim of the original study was to explore mothers' experiences of breastfeeding, rather than expressing, which would have prevented follow up or further exploration of the data collected at the time. Furthermore, the authors concede that the sample, predominantly white and middle class, limits the transferability of their findings.

Similar to Johnson *et al.* (2009), Ryan *et al.* (2013) undertook a secondary analysis of data collected from a primary study on breastfeeding, regarding mothers' experiences of expressing breastmilk. Their findings were comparable to a previous US study, where mothers expressed to build up a freezer supply 'just in case' (Loewenberg Weisband *et al.* 2017). Ryan *et al.* (2013) also found that mothers expressed so someone else could feed their baby whilst they were at work, in order to participate in a social life, catch up on sleep and have a break from breastfeeding, comparable to findings by Johnson *et al*. 2009). Interestingly, the authors described EBM feeding as a *'connection'* (p.475), in relation to mothers who were working or studying, and as *a 'disconnection'* (p.475), in relation to mothers who wanted to resume their former social life and have time free

from infant care (Ryan *et al.* 2013). Similar to the studies by Johnson et al, due to the original study aiming to explore breastfeeding rather than expressing, opportunities to follow up or further explore the mothers' discussions on expressing would not have taken place, potentially impacting on the data.

A further study was undertaken by Crossland *et al.* (2016), again as part of a larger UK study, to investigate perceptions of breast pumps as an incentive for breastfeeding. Sixty-eight interviews were undertaken using focus groups and individual interviews with mothers, pregnant women, partners and health professionals. Although some mothers perceived breast pumps as not helping breastfeeding, others perceived pumps as being able to prolong their breastfeeding and helping with feeding in public (by using a bottle). In addition, they believed pumps could aid the return to work, and were seen as 'sharing the load' by letting others feed the baby. This would allow mothers some freedom. This study explored 'perceptions' rather than actual experiences of mothers, and the focus was on breast pumps as an incentive for breastfeeding rather than expressing *per se.* However, the study findings are comparable with those of Johnson *et al.* (2009) and Ryan *et al*. (2013).

The majority of studies reviewed in relation to why mothers express breastmilk have used data from larger original studies, which removes the potential to further explore mothers' experiences of expressing. However, the study findings are comparable, indicating that mothers' reasons to express breastmilk transcend social, physical and psychological factors

2.9.2 Reasons why UK mothers cease to breastfeed and reasons why healthy breastfed babies receive supplementation

There is a strong consensus amongst both quantitative and qualitative studies regarding the key reasons why mothers of healthy babies cease to breastfeed in the UK (and consequently introduce a bottle to their breastfed baby). These reasons are often comparable to why mothers supplement, or combine breast with bottle feeding, and are discussed below.

Returning to work has been noted as a key reason for breastfeeding cessation and/or introduction of a bottle amongst UK mothers during the later weeks and months of breastfeeding. Skafida (2012) using data from a large-scale quantitative study (N = 5015), with a representative sample of mothers in Scotland, found employment to be negatively associated with a mother's ability to breastfeed for prolonged periods of time. Whilst Sherburne-Hawkins *et al.* (2007), using data from another large-scale quantitative study (N = 6917) with a representative sample, found delaying the return to work increased breastfeeding duration. Gatrell (2007), in her qualitative study of UK mothers' experiences of employment and breastfeeding, found mothers gave up breastfeeding completely due to their impending return to work, with some ceasing due to anxiety around managing breastfeeding in the workplace. It should be noted however, that the 2007 studies were undertaken prior to maternity leave being extended and employers being encouraged to provide time for mothers to express breastmilk in the workplace (ACAS 2014), which could make the findings less applicable to the present day context.

The IFS 2010 found mothers who had never worked had a lower 'fall out rate' from breastfeeding at six months than those who returned to work (44% v 34%) (McAndrew *et al.* 2012). McAndrew *et al.* (2012) suggest this disparity was due to mothers who had never worked *'had more opportunity to breastfeed and for longer compared with mothers who returned to work*', (p. 49). In addition the Scottish IFS (2017) found 21% of mothers reported their return to work as the reason for them ceasing to breastfeed/express (GOV.SCOT.UK 2018).

Reasons of a physical nature have also been reported in relation to cessation of breastfeeding and/or the introduction of a bottle. Cloherty *et al.* (2004) in their ethnographic study observing health professionals' discussions with breastfeeding mothers concerning supplementary feeds, found a major theme for supplementation was to 'protect' mothers from tiredness and distress. In addition, mothers themselves asked for bottles as an easy solution to tiredness and anxiety. This is comparable to findings from a grounded theory study by Furber and Thomson (2006), who found supplementary feeds were given due to mothers being too tired to breastfeed, although

it should be noted only midwives were interviewed in this study, thus reports of tiredness were not first hand. Furthermore, mothers finding breastfeeding too tiring led to breastfeeding cessation in 8% and 16% of mothers in the IFS (2010) (McAndrew *et al.* 2012) and Scottish IFS (2017) (GOV.SCOT.UK 2018) respectively. Physical pain (breast and nipple) has also been reported by mothers in relation to cessation of breastfeeding and the use of supplementary feeds (Lee and Furedi 2005; Andrew and Harvey 2011; McAndrew *et al.* 2012; Buck *et al.* 2014). In relation to the IFS (2010), pain was reported by 22% of mothers as the reason for breastfeeding cessation in the first week (McAndrew *et al* 2012).

The evidence points to other reasons for ceasing to breastfeed or introducing a bottle as being more socially constructed. Lee and Furedi (2005) in their mixed methods study investigating UK mothers' experiences of using formula, found mothers introduced formula (using a bottle) to restore some normality to their lives. Andrew and Harvey (2011) in their qualitative study with 12 UK mothers investigating factors affecting their initial and continued feeding choices, found mothers not wanting to breastfeed in public, a finding noted by previous authors (McAndrew *et al.* 2012; Brown 2015; Scott *et al.* 2015; Morris *et al.* 2016; GOV.SCOT.UK 2018). They also found that not wanting to feed in public affected the mothers' other children, a finding noted in a study by Stewart-Knox *et al.* (2003).

Less tangible reasons as to why UK mothers cease breastfeeding or feed by bottle and breast are also evident. Hoddinott *et al.* (2012), when exploring mothers' infant feeding experiences, found a 'clash' exists between the idealism of breastfeeding compared to the reality, a disparity which is echoed in previous studies with UK mothers (Lavender *et al.* 2005; Gatrell 2007). This is to an extent comparable with findings of the Scottish IFS (GOV.SCOT.UK 2018) which found maternal confidence in the early days was one of the most reported reasons to give up breastfeeding (23%). However, this reduced to 13% at >4 days – 2 months and was only 3% at six+ months. Williamson *et al.* (2012) in their study of 22 UK mothers using an Interpretative Phenomenological Approach (IPA) approach found two overarching themes as to why mothers ceased to breastfed; pain and the difficulty with breastfeeding as a threat to maternal identity. In line with this,

low maternal self-efficacy has been associated with cessation of breastfeeding (Brown and Lee 2013) and supplementation (Smith and Becker 2016). This is consistent with the IFS (2010) and Scottish IFS (2017) which found 31% and 45% of mothers respectively, ceased to breastfeed due to perceptions surrounding 'insufficient milk', the leading cause of breastfeeding cessation (McAndrew *et al.* 2012; GOV.SCOT.UK 2018). As discussed earlier in this chapter, a further implicit influence on mothers' reasons to cease breastfeeding and/or introduce a bottle can also be attributed to the 'bottle feeding culture' in the UK, where breastfeeding is not the norm.

In conclusion, it is evident from the literature reviewed that the reasons why UK mothers cease to breastfeed and/or introduce a bottle to their breastfed baby (with formula or EBM) are complex and at times dependant on their individual circumstances. Although the studies reviewed display certain limitations, there is an amount of overlap between their findings, which point to physical, psychological and socio-cultural factors.

2.10 Bottle refusal and weaning from breastfeeding

In order to understand the nature of bottle refusal and the potential complexities surrounding it, the literature in relation to bottle refusal and how babies wean from breastfeeding was appraised. In line with this, the evidence in relation to the use of bottles/teats to overcome bottle refusal was also reviewed. Furthermore, the literature concerning the non-nutritional properties of breastfeeding was explored.

2.10.1 Bottle refusal

A search of the literature identified one PhD thesis (with no published papers) in relation to bottle refusal by breastfed babies (Egan 1988). Egan undertook a phenomenological study with six US mothers exploring their experiences of nipple confusion with their breastfed baby. Egan defines the term 'nipple confusion' as being when a mother combines breastfeeding with bottle feeding and her baby rejects the bottle. Egan found mother's experiencing 'nipple confusion' had no assistance from healthcare providers when they contacted them about the problem, with them offering '*little support or understanding*' in relation to the mother's situation (Egan 1988, p.145). Furthermore,

healthcare providers appeared to be unaware of the scenario. Egan (1988), found the impact of nipple confusion affected family life, with increased arguing between mother and spouse. In addition, it led mothers to experience frustration, anger and resentment towards their baby. She called for recognition of the scenario of nipple confusion (bottle refusal) and for strategies to be developed to 'prevent it'.

The study is weakened to an extent by its use of the term 'nipple confusion' to describe bottle refusal, which in the present day would be questioned in relation to the lack of evidence to support it. Furthermore, the term 'nipple confusion' typically denotes babies that refuse the breast in favour of a bottle, and is not generally associated with bottle refusal, which makes the study's focus unclear. In addition, due to the mothers residing in the US in 1988, this makes it difficult to apply the 'context' of their lives to those of mothers living in a contemporary UK. An example of this is the support for mothers in the study focusing around nurses and to some extent doctors, which differs starkly from the support mothers would access in the UK. Of note, there was also no online support in existence for mothers at the time of the study.

Inevitably, the practices surrounding infant feeding in Egan's thesis have dated. In addition, and of particular relevance to the current research, it was undertaken prior to BFI and the ten steps to successful breastfeeding, which may have impacted upon the mothers' experiences and consequently the findings. Furthermore, Egan's recommendation to 'prevent' bottle refusal by offering one bottle every other day from the third week of breastfeeding is not underpinned with evidence, either from her own study or others, making it an anecdotal suggestion that is not realistic.

Egan's study does however, currently stand alone as the only study to explore mothers' experiences of bottle refusal by their breastfed baby. It makes a valuable and unique contribution to the literature surrounding the scenario of bottle refusal, which at present is almost non-existent. In addition, some of the mothers' experiences and the findings derived from them, although based within the US context, are certainly plausible from an anecdotal viewpoint.

2.10.2 Weaning from breastfeeding

Theories concerning weaning have focused on it being a crucial phase in a child's life, and one which can have long-term effects on their adult life. Previous psycho-analytical theorists have associated breastfeeding with a sexual, as well as nutritional experience, with oral satisfaction being gained from breastfeeding (Freud and Strachey 1969). This had led to weaning being viewed as a negative and traumatic experience from an infant perspective (Fouts *et al.* 2000). Babies have been described as objectifying/possessing the breast (Klein 1952; Winnicott 1988), leading them to experience grief, loss and anger when they have faced weaning from it. For some babies this has led them to resist weaning, described by Abraham (1916 cited in Eccleson 2005, p.140) as '*obstinate adherence'.*

Few studies have explored the practice of weaning from breastfeeding, although in relation to the UK this is perhaps unsurprising considering so few mothers breastfeed long enough for weaning to warrant taking place. The majority of studies have been undertaken in developing countries, whose cultural context limits transferability and generalisability of findings. However, a small number of studies were identified which were undertaken in countries comparable to the UK, and one study was undertaken in the UK.

Williams and Morse (1989) conducted a study of 100 Canadian mothers exploring their weaning experiences using a questionnaire. They found most mothers employed a process of gradual weaning from the breast. However, some mothers described facing 'resistance' to weaning by their baby. To counter this, the mothers reported employing methods such as 'cold turkey', and putting bitter substances on their breasts. One mother reported being advised by her paediatrician to splash cold water on her infant when it tried to breastfeed. This study gives an interesting insight into the methods some mothers used when facing resistance to weaning from their baby. It also indicates that weaning from the breast is not always a straightforward process.

Hauck and Irurita (2003) undertook a grounded theory study in Australia with 33 mothers to explore their management of the later stages of breastfeeding and weaning

their baby from the breast. Age at weaning ranged from six weeks to six years, with a mean age of 11.5 months at weaning age. No methods of weaning were discussed nor length of time taken. Mothers described how if '*mutual readiness*' (p.71) was experienced in relation to weaning, it progressed relatively easily (Hauck and Irurita 2003). However, some mothers were forced to wean early due to unforeseen life events such as maternal illness, medications contraindicated with breastfeeding, work commitments and needing to travel. Hauck and Irurita (2003) described how some babies 'resisted' weaning onto a bottle, however the mothers persevered, and acceptance occurred. The study sample does not reflect the 'norm' of breastfeeding in westernised societies, one child weaned just before its seventh birthday, and this would have impacted upon the data collected and transferability of findings. The study does however highlight the potential difficulties of weaning from the breast, comparable to findings from Williams and Morse (1983).

A further study concerning weaning was conducted by Neighbors *et al.* (2003) with 222 US breastfeeding mothers using a telephone interviews. They found that length of time of weaning ranged from 0-90 days, with the majority falling between 2-14 days. The majority of mothers (70%) reported weaning gradually, however 25% weaned 'all at once'. Mothers returning to work experienced the longest weaning duration (p = .003). In addition, they found longer breastfeeding duration to be associated with longer weaning duration (p = < .0001). All 222 mothers had introduced a bottle to their baby by six months, with the median age for introduction being four weeks (range 4-29 weeks). Furthermore, they reported a significant positive correlation with introduction of a bottle and weaning (p = .0001). Mothers who weaned in =< 3 days were more likely to use supplementary aids to weaning, including binding their breasts and avoiding night time feeds (Neighbors *et al.* 2003). Although this study used pre-defined questions during telephone interviews, which would have restricted discussions concerning mothers' experiences of weaning, it provides a unique insight into associations between timings, breastfeeding and weaning.

Only one UK study was identified in relation to weaning from the breast. Eccleson (2005) undertook an observational case study of one UK mother and her weaning journey. The

study was analysed from a psychodynamic viewpoint. It depicted the weaning process as protracted and challenging for the mother, and gave possible psychological insight into the baby's behaviour in relation to be weaned from the breast. This study provided a detailed picture of the complexities of weaning from the breast, however, findings are limited due to it being a single case. In addition, the mothers' individual circumstances, particularly as she was a young single parent, visibly impacted upon her experience.

Egan (1988) reported 10 different methods that mothers in her study had used to try to overcome their breastfed baby's refusal to bottle feeding (see table 4). Although the findings are not generalisable due to the small sample (N = 6) and the reported percentages are of limited worth, this information itself is not without value. It presents a 'westernised' picture of how mothers attempt to transition or wean from the breast to a bottle, which few other identified studies have done to date.

Table 4 Methods used by US mothers to transition from breast to bottle feeding

Method	%, N = 6
Trying different formulas	100
Expressing milk and administering in bottles	66.66
Trying various rubber nipples	100
Asking advice from La Leche League	50
Contacting pediatrician(s)	83
Discussing problem with nurse(s)	50
Having someone else offer the bottles	100
Putting sugar on the nipples (teats)	22
Stop breast-feeding entirely	50
Stop offering bottles entirely	16.66

Egan (1988)

In conclusion, few studies in high-income countries comparable to the UK have focused on how mothers wean their baby from the breast. Those that have, depict it as a potentially difficult and at times lengthy process. In addition, it is apparent that some babies are resistant to weaning from the breast, and as seen in studies by Egan (1988)

and Williams and Morse (1989), mothers employ various methods to overcome this resistance.

2.10.3 The use of bottles/teats as a method to overcome bottle refusal

It is evident from trade literature that bottle and teat manufacturers are aware of potential bottle refusal by breastfed babies. They have responded by developing and marketing a number of bottles/teats for breastfed babies. A review of the evidence supporting the main bottle/teats marketed for breastfed babies in the UK is detailed in table 5. Only Medela have undertaken academic peer reviewed studies in relation to their bottle/teat. Geddes *et al.* (2012) undertook an experimental study in Australia with 16 breastfeeding babies. They used ultrasound to determine if breastfed infants could remove breast milk from an experimental teat (Calma by Medela), designed to release milk only when a vacuum is applied. They concluded that breastfed infants were able to remove milk from a teat using only vacuum, with a similar tongue movement to that of breastfeeding (Geddes *et al.* 2012). However, the study exhibits a number of limitations. The sample was small, and images for only 15 bottle feeds using the experimental teat were attained. In addition, the babies had fed by bottle previously, and the significance of two babies refusing to feed from the teat is not discussed. Furthermore, the babies were fed EBM only, not formula milk, which may have impacted upon the findings.

The second study was conducted by Segami *et al.* (2012) with 20 breastfeeding babies in Japan. They used recordings and markers to determine if the perioral movements and sucking pattern of babies feeding with the Medela Calma teat were similar to breastfeeding. They found that there were no significant differences in jaw or mouth movements, and conclude that the teat could decrease breastfeeding problems related to bottle use (Segami *et al*. 2012). However, similar to Geddes *et al*, there are a number of limitations to this study. The sample of 20 is small, and all of the babies had bottle fed previously. Furthermore, only EBM was used, the use of formula milk could have impacted upon findings. In relation to the marketing of the Medela Calma teat the findings from both studies do not prove or disprove that the Medela teat will a) prevent nipple confusion b) lead to bottle acceptance.

An earlier study undertaken by Nowak *et al.* (1994) investigated the differences in artificial teat shape and breast nipple during feeding. They compared four different artificial teats with the breast-nipple during feeding with 35 babies. The found none of the artificial teats lengthened like the breast-nipple. This is an interesting finding, which in essence shows that an artificial teat cannot assume the flexible shape and nature of a nipple. Although this study was undertaken some time ago, and the technology surrounding artificial teats has inevitably become more advanced, no other studies were identified that have focused on a comparison between nipple/teat shape change.

Table 5 Evidence supporting bottle/teats marketed for breastfeeding babies

Brand	Description	Evidence	Review
Mimijumi	The worlds 'breast' bottle, 'back to work bottle', minimises confusion between breast and bottle	Testimonials only – (from mothers, registered nurse and lactation consultant)	Not research
Tommee Tippee	Closer to nature, the most 'breast like' feed, mimics flex stretch and shape of breast	In an online survey of >500 mothers who used the Tommee Tippee closer to nature teat, 97% agreed/recommended the easy latch on nipple 92% of >1200 mothers who used the Tommee Tippee teat with their child recalled they had accepted it within the first three attempts. 417 mothers using the 'Closer to nature' bottle found it 'easier to combine breast and bottle feeding' - based on an online survey between 7th-11th August 2012 (undertaken by Silverstork – no longer trading)	No information available re: survey/study designs, samples, potential bias, study was reliant on maternal recall
Phillips Avent	Natural bottles and teats, wide neck of bottle and teat helps with natural latch, easy to combine breast and bottle feeding	3.9/5 based on 30 reviews	Not research
Minibe	'Baby refusing the bottle? join tens of	4, 813 5 star reviews	Not research

	thousands of UK parents having success with Minibe's revolutionary teat functionality avoids nipple confusion when used as the first and only bottle teat'.		
Medela	Calma – transmits knowledge of breastfeeding sucking behaviour into a bottle and teat, helps baby switch from breast to bottle and back again, Allows babies to use their natural feeding behaviour as learnt on the breast	Geddes et al (2012) Segami et al (2012)) (see main text above)	(See main text above)
MAM	Silk teat – feels like mum - bottle teat initiates same sucking reflex as breastfeeding , the move from bottle to breast is easy	94% teat acceptance - Market research USA 2010 n=35 / field study Austria 2011, n=73	Market research, no information available re: survey/study designs, samples, sample sizes too small to make any generalisations

In conclusion, there is no robust evidence at present to support the use of certain branded bottles and teats to prevent nipple confusion, to make the transition from breast to bottle easier, or to overcome bottle refusal by breastfed babies.

2.10.4 Non-nutritional properties of breastfeeding

There are numerous potential reasons as to why a breastfed baby refuses to feed from a bottle. This literature review has alluded to the physical differences between breast and bottle possibly impeding a baby being able to feed interchangeably from both. In addition, it has shown that there is an inability for a bottle and teat to totally replicate a breast or breastfeeding. However, the non-nutritional properties of breastfeeding may also be a key contributor to the scenario of bottle refusal. Breastfeeding has long been defined as an experience rather than solely a medium for nutritional intake (Entwistle 2014; Papp 2014). It presents the mother and baby with an emotional experience which

stimulates hormones, closeness, and bonding, which bottle feeding may not give to the same degree. It is therefore conceivable that non-nutritional properties of breastfeeding such as comfort, security and closeness could underpin why breastfed babies refuse to bottle feed. This is to an extent borne out in a study by Gribble (2009), entitled 'As good as chocolate' and 'better than ice-cream'. Gribble explored the breastfeeding experiences of 114 Australian children age 24-96 months using observations and interviews. When mothers were asked why they thought their child breastfed, they said it was firstly for comfort, then hunger, then for intimacy and closeness, and lastly due to liking the taste of breastmilk. Children breastfed when they were hurt, upset or tired, and described how it enabled them to be '*close to mummy'*, and how it made them feel '*warm', 'happy', 'cuddly', 'good'* and '*loved'* (p.1072). They also described breastmilk in relation to a range of sweet products including chocolate and ice cream (Gribble 2009). This study sample was outside of the norm for a westernised society, with mothers breastfeeding at two years and beyond. However, it gives an invaluable insight into some of the non-nutritional properties of breastfeeding that the children experienced and valued, although it is not clear how comparable these are to young babies.

In line with Gribble's study, breastfeeding has been postulated as providing a secure base for infants through attachment. Attachment theory is based on the premise of an infant being in close proximity to a caregiver, which leads to a secure attachment for the infant (Bowlby 1997). In the case of breastfeeding, where a baby interacts closely with its mother, the idea that breastfeeding provides a form of attachment is a logical one. This is to an extent supported by studies which have found mothers who breastfeed spend an increased amount of time with their baby when compared to other forms of infant feeding (Smith and Ellwood 2011; Smith and Forrester 2017). In addition, it has been suggested that mothers who breastfeed are more likely to display greater maternal sensitivity (Kim *et al.* 2011; Papp 2014; Edwards *et al.* 2015), which again has been linked to attachment (Tharner *et al.* 2012). However, theorists have previously disputed breastfeeding as leading to secure attachment, believing it to be due to the quality of infant-carer interaction, rather than infant feeding method *per se* (Bowlby 1997, Howe 2011).

The evidence to support the link between breastfeeding and attachment is varied. Gribble (2006), conducted a study of four cases of adopted children who were breastfed by their adoptive mothers. She found that all four children showed signs of attachment to their new mothers via breastfeeding. This study gives an insight into breastfeeding as a physical and emotional link between the adoptive mother and baby/child, which progressed to a form of attachment between the two. The study sample is unusual however, and findings are difficult to transfer to other contexts. In addition, results from a study of 675 mothers in the Netherlands showed an association between breastfeeding and infant attachment, with the longer the duration of breastfeeding resulting in greater attachment security, ($p < .05$) (Tharner *et al*. 2012). Although it should be noted that the observational assessment for attachment took place at 14 months, which for some mothers was up to 12 months after they had ceased breastfeeding. More recently a study by Weaver *et al.* (2018) using data from 1,272 US families, found secure attachment at 24 months was predicted by breastfeeding duration. In addition, a study by Gibbs *et al.* (2018) using a nationally representative sample of 8,400 infants in the US, found a link between babies who were predominantly breastfeeding for at least six months and infant attachment security. Breastfeeding was an important link to the baby's use of their mother as a secure base, when compared to babies who did not predominately breastfeed for six months. Unfortunately, the term 'predominantly breastfeeding' did not account for variations in the amount of breastfeeding that took place, which makes it difficult to ascertain how much breastfeeding leads to attachment. In addition, the infants in this study were aged nine months to two years, making it is difficult to make comparisons to younger infants.

Conversely, previous studies have not found a link between breastfeeding and attachment. Jansen *et al.* (2008) undertook a review of the literature and concluded there was no empirical evidence to support it. In addition, a study by Britton *et al.* (2006), examined the link between attachment and breastfeeding and the effect of maternal sensitivity with 152 US mothers. They found the quality of the infant-maternal relationship, rather than feeding type, to be predictive of attachment security. Although, they also found mothers who breastfed exhibited enhanced maternal sensitivity to their infant, which could impact positively on security attachment (Britton *et al.* 2006). These

study findings are comparable to assertions from previous authors, who have also rejected infant feeding as having an impact upon infant attachment (Bowlby 1997; Jansen *et al.* 2008; Howe 2011).

In conclusion, whilst breastfeeding does appear to exhibit non-nutritional properties for infants and children, it is not clear if these are applicable to young babies. In addition, the evidence to support breastfeeding as having an impact upon attachment is inconclusive, with study findings and theories on attachment both supporting and refuting this suggestion. Thus the non-nutritional properties of breastfeeding being a cause for bottle refusal, although plausible, have no evidence to currently support them.

2.11 Theories, concepts and models underpinning infant feeding

The following section will discuss the theories, concepts and models which have particular relevance to mothers who wish to introduce a bottle to their breastfed baby, and who experience bottle refusal. (theories surrounding weaning and infant attachment have been discussed previously under section 2.10).

Agency theory and the concept of woman centred-care

The psychological theory of 'agency' as a concept in health care emerged in the 1970's as part of the resurgence of neoliberalism (Ryan *et al.* 2017). The paternalistic approach to health was replaced by patient autonomy and shared care (Edwards and Elwyn 2009), with a sense of 'agency' referring to patients being able to initiate and instigate their own actions. From an infant feeding perspective, agency theory has been applied to understand mothers' decisions to breastfeed or not (Bartlett 2003), to explore mothers' sense of self when breastfeeding (Schmied and Lupton 2001) and in relation to the role of agency in mothers' breastfeeding experiences (Ryan *et al*. 2017). In addition, the role of health professionals as agents was explored by Ryan *et al*. (2017), who found that they assumed the role of agent for breastfeeding and the baby, rather than the mother. Agency theory when applied to infant feeding can aid both the understanding of mothers' sense of autonomy, and how health professionals facilitate or prevent this.

Similar to agency theory is the concept of woman-centred care, which underpins midwifery care. Derived from feminist principles and the need for a model of care that placed women at its core, woman centred care has been described as where the '*locus of control is shifted away from the institution and professionals towards the woman herself*' (Leap 2009, p.12). Of specific relevance to infant feeding are the components of woman centred care which recognise '*the woman's expertise in decision making*' and '*the needs of the baby…as defined by the woman herself*' (Leap 2000, p.12). The application of the concept of woman-centred care to infant feeding research is of particular value in relation to understanding the support mothers receive. This was evident in a study by McInnes *et al*. (2013), who found support for mothers to be breastfeeding-centred rather than woman-centred.

Pierre Bourdieu's theories of dispositions and habitus

The work of Pierre Bourdieu has been suggested as a framework to help understand mothers' decisions surrounding infant feeding practices (Amir 2011). Bourdieu (1984), described how food was not solely driven by the physical need to nourish, but had numerous other influences upon it such as class, individual history, and socio-cultural and environmental factors. These influences were part of Bourdieu's concepts of 'dispositions' and 'habitus', which surround individuals, affecting their decisions both consciously and unconsciously (Amir 2011). The concept of 'disposition', relates to decisions and practices surrounding food being based upon collective unconscious norms passed on through generations. The concept of 'habitus' relates to social background and history being an influencing factor in how food and feeding is contextualised (Amir 2011). When used as a theoretical framework both concepts can help to explain why mothers living in certain UK communities exhibit low breastfeeding rates, why they do not breastfeed themselves, or why certain social classes in the UK are less likely to breastfeed (Amir 2011). On a wider level, they can also be used to understand the UK bottle feeding culture, where breastfeeding is not the norm.

Feminist theory and infant feeding

Feminist perspectives on infant feeding, particularly breastfeeding, exhibit what McCarter-Spaulding (2008) terms as 'tensions' between feminists. Van Esterik (1994)

describes how breastfeeding is 'empowering' for mothers, due to it being gender specific, a concept supported by cultural feminists, who seek to accommodate gender differences rather than diminishing them (McCarter-Spaulding 2008). However, from a liberal feminist perspective, where gender differences are minimised, breastfeeding can been viewed as '*standing in the way of liberating women*' (McCarter-Spaulding 2008, p. 207), with formula feeding providing liberation. Law (2000) argues that in order to achieve gender equality, infant feeding should be framed as '*social labor whose division is open for negotiation'* (p.442), as opposed to a biological activity, undertaken only by a mother. McCarter-Spaulding (2009) adds to this theory, stating that due to breastfeeding being '*sex-specific*' it *'challenges the feminist principle of gender-neutral childrearing'* (p. 207). Dykes (2005) applied a 'supply and demand' concept to breastfeeding, due to the westernised view of breastfeeding as a nutritional activity rather than one which is '*relationally orientated*' (p.2287). She viewed breastfeeding through an industrial model, aligning it to a Marxist perspective (Dykes 2005). This is similar to Regan and Ball (2013), who framed a mothers' breasts as 'disembodied', and 'machine like', associating this concept to that of Descartes, who viewed the body as a machine. These perspectives align with the masculinised, medicalised and technological framing of infant feeding (Carter 1995; Maher 1995; Bartlett 2003; Faircloth 2010; Stearns 2013). Benoit *et al.* (2016), who explored breastfeeding and guilt using a phenomenological framework, described how the breast is best message is a medicalised one, and one which does not does not take into consideration the constraints breastfeeding can have on a woman's personal and professional life.

The concept of good and bad mothering and maternal deviance

The concept that 'good mothering' is associated with breastfeeding and 'bad mothering' is associated with bottle/formula feeding, frames not only how a mother's feeding practices can be perceived by others, but also how mothers themselves internalise their feeding decisions and practices (Dykes 2005; Crossley 2009; Stearns 2013; Shloim *et al.* 2015). The concept of good and bad mothering appears to have emerged from the 'breast is best' slogan, conceived towards the end of the 1970's/early 1980's, when breastfeeding rates were at their lowest (Stanway and Stanway 1983). It is closely aligned with the 'ideal mother' analogy, where mothers put the needs of their baby first

(Shloim *et al*. 2015), due to breastfeeding being viewed as the superior method of feeding. It is indicative of infant feeding practice being viewed through a biomedical and moralistic lens (Ryan *et al.* 2010). The application of the concept of good and bad mothering to infant feeding, enables an understanding of how the moralisation of infant feeding impacts upon mothers decisions and practices. Closely linked to the concept of good and bad mothering is the application of the sociological model of 'deviance' (Murphy 1999). Murphy describes maternal deviance as the breaking of rules 'knowingly' (p.188) i.e. detracting from the known ideal of breastfeeding and to formula feed (Murphy 1999). However, Murphy describes how the deviant behaviour of formula feeding, and the subsequent label of 'bad mothering' being ascribed to it, can be counteracted by mothers using techniques of 'neutralisation' in the form of 'excuses' and 'justifications'. This model of deviance has been applied as theoretical framework to understand how mothers account for their infant practices, particularly in relation to formula feeding (Murphy 1999).

In summary, a review of the literature has revealed a number of concepts and theories that can be used to enable a wider understanding of mothers' experiences of bottle refusal by their breastfed baby. These theories and concepts will be used to contribute to the interpretation of findings in this thesis.

2.12 Conclusion

A review of the evidence concerning infant feeding practices within the UK has 'set the scene' for this programme of research. It has pointed to breastfeeding being the exception rather than the norm, with a UK 'bottle feeding culture' prevailing. However, paradoxically, there also appears to be a marginalisation of bottle feeding as an infant feeding practice, which could in part be due to the impact of the UK BFI. The effect of bottle feeding on breastfeeding is complex and inconclusive, both in relation to the use of formula and EBM. The context surrounding why UK mothers wish to introduce a bottle to their breasted baby are equally complex, and are influenced physically, psychologically and socially. The evidence surrounding bottle refusal by breastfed babies is limited to one identified thesis, which was undertaken some time ago in the US, which limits the transferability of findings to the current UK context. The scenario of bottle

refusal has been afforded recognition by bottle/teat manufacturers who have focused on 'solving' it, although there is little evidence to support their teats and bottles in doing so. There is no current evidence in relation to why bottle refusal occurs, however the differences in the mechanics of breast and bottle feeding, the inability for a bottle to assume a breast, and the non-nutritional properties of breastfeeding could be a contributing factor. Various theories, concepts and models, when applied to infant feeding, enable a better understanding of mothers' experiences, practices and decisions. These include theories of agency, habitus and disposition, and the concepts of good mothering, deviance and woman centred care. In addition, feminist theory can aid understanding of infant feeding from a gender perspective.

2.13 Conceptual Framework

In relation to the programme of research, a conceptual framework was developed (see figure 4). The use of a conceptual framework is advocated by Maxwell (2013) and Bloomberg and Volpe (2016), in order to focus and guide a study. Although simplistic in its design, the conceptual framework represents the key concepts of infant feeding that relate to mothers' experiences of bottle refusal. In line with Maxwell (2013), it was developed using the findings from the literature review, infant feeding theory, and previous 'experiential knowledge'. The four key areas are discussed in more detail below.

Socio-cultural factors

It is clear that infant feeding is a complex process, which is strongly influenced by socio-cultural norms. From a UK perspective, although the majority of mothers initiate breastfeeding, very few continue to breastfeed to six months (McAndrew *et al*. 2012). The socio-cultural norm of bottle feeding is a possible contributor to this.

Health factors

Breastfeeding is a unique opportunity for mothers to transfer lifelong health benefits to their baby (and themselves) (Victora *et al.* 2016). From a health perspective, breastfeeding is deemed to be the superior method of feeding when compared to formula feeding. However, by viewing infant feeding through a bio-medical and public

health perspective only, the complexities of infant feeding decisions and practices are not acknowledged.

Physiological factors

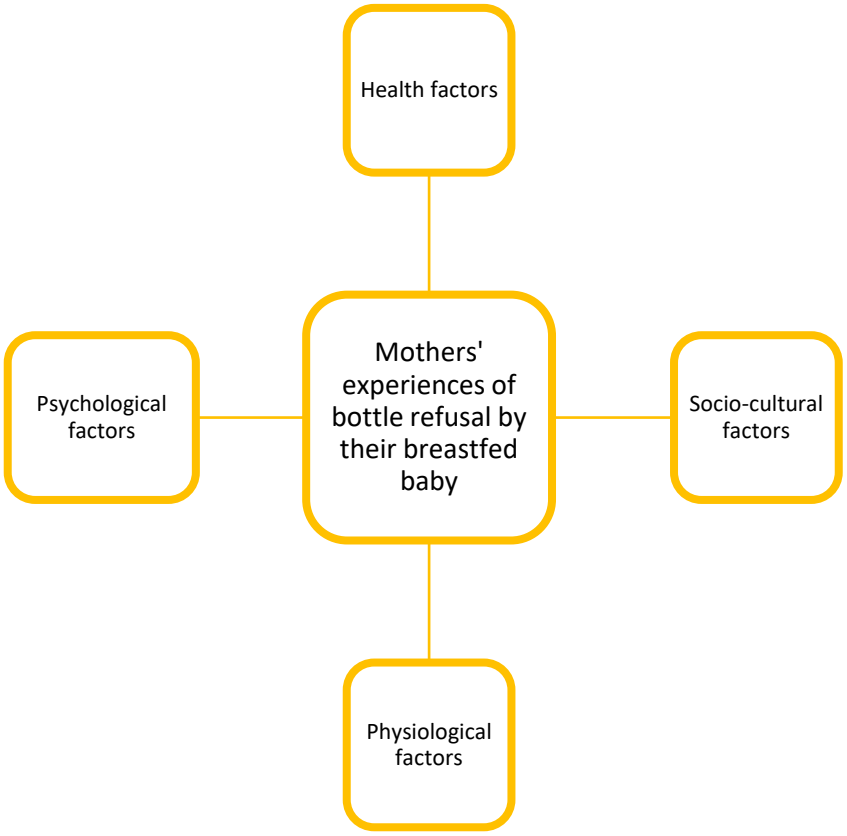
The combining of breast with bottle feeding from a physiological perspective, can have a detrimental effect on breastfeeding. In addition, due to the differing mechanisms of breast and bottle feeding, there is a supposition that nipple confusion can occur, again having a negative effect on breastfeeding. The physiology of breastfeeding is important in relation to mothers' decisions to introduce a bottle and the potential advice and support they receive. The physiological differences between breast and bottle feeding may also influence why a baby refuses a bottle.

Psychological factors

Infant feeding is not just a physical practice, with a psychological element being present. This is important in relation to how some mothers make decisions surrounding introduction of a bottle and how they experience bottle refusal, including its impact. In addition, why a baby refuses a bottle could have psychological considerations.

In conclusion, a conceptual framework has been developed to reflect the main concepts surrounding infant feeding with reference to mothers' experiences of bottle refusal by their breastfed baby. It will be used to guide and focus the programme of research.
In addition to the conceptual framework, this programme of research was guided by a theoretical framework, discussed below.

Figure 4 Conceptual framework



2.14 Theoretical framework – Socio-ecological model

Infant feeding is a complex process. Breastfeeding in particular has been described as a '*biopsychosocial process that is dynamic, relational and changes over time*' (Dykes 2006, p.204). In addition, it takes place in an increasingly 'complex world' (MacKean and Spragins ND), which from a UK perspective exhibits its own socio-cultural norms.

To enable the complexities of infant feeding to be represented within this programme of research, a SEM for health adapted from McLeroy *et al.* (1988) was used. Ecological models evolved from the work of Urie Bronfenbrenner, who depicted human development as being influenced by a series of internal and external systems, (Bronfenbrenner 1989). Bronfenbrenner defined the systems at a series of levels (micro, meso, macro and exo), from the individual person to the environment surrounding them, all of which are inextricably linked. Using the same concept of levels as Bronfenbrenner, McLeroy *et al*. (1988) developed a SEM to reflect determinates of

human behaviour in relation to health promotion. Although McLeroy's model was based upon understanding how humans act from a health promotion perspective, it is valuable in understanding how mothers' experience bottle refusal by their breastfed baby. Its systems reflect the complexities of infant feeding, which being dynamic in nature, exhibit numerous changing internal and external influences. In addition, it aligns with the growing understanding that infant feeding decisions and practices are not solely down to the individual mother (Rollins *et al.* 2016; Brown 2017), and that breastfeeding in particular, should be viewed as a public health issue, with a societal approach needed to support mothers to undertake it (Flaherman and Fuentes-Afflick 2014; Brown 2017). This is also highlighted by Stolzer (2005), who states that '*breastfeeding in the 21st century cannot be conceptualized as occurring in a vacuum'* (p.40).

Socio-ecological models have been used previously as a framework within infant feeding research. McInnes *et al*. (2013) used a simple ecological framework to examine the influences of significant others on mothers' feeding behaviour. McInnes *et al.* (2013) were able to interpret influences upon mothers feeding choices from a holistic perspective, accounting for the changeable nature of such influences. Additionally, the SEM provided a lens with which to explore opportunities that could positively impact upon the breastfeeding environment, from individual to the policy level.

Dunn *et al.* (2015) used a SEM model to explore health professionals' perceptions of determinates in relation to mothers' decisions to breastfeed. Dunn *et al.* (2015) described how focus groups questions were based on a SEM, due to its ability to portray the relationship between people and their environment. The use of a SEM enabled barriers and contributors to breastfeeding to be explored from an individual through to policy perspective. The authors concluded that by applying a SEM lens, the implementation of targeted initiatives could be used to promote breastfeeding (Dunn *et al*. 2015).

The effectiveness of using a SEM to understand mothers' breastfeeding experiences was investigated by Tiedje *et al.* (2002), enabling them to explore external effects of the environment and to provide a more 'contextual' model in relation to breastfeeding.

They concluded that by utilising a SEM, the support required for mothers to achieve breastfeeding to one year would be more realistic (Tiedje *et al*. 2002).

There have however, been criticisms concerning the use of a SEM in relation to health. Its 'broadness' led Rowley *et al.* (2015) to describe it requiring 'cultural adaptations' to enable it to be effective. In addition, Golden and Earp (2012), discuss many studies using interventions based on only one or two levels of the model, although they add that the model is perhaps most useful to understand health behaviour rather than as an advocate for intervention. However, in relation to the current programme of research, these criticisms can be viewed as positives. This is due to a recognition that a 'broader' approach to understanding infant feeding is needed (Rollins *et al*. 2016), and that understanding is required prior to interventions, to enable changes in infant feeding practices to be effective. In addition, as described by Stolzer (2005), the use of a SEM as a theoretical framework enables a better understanding of breastfeeding as a '*complex and circuitous variable'* (p.39).

How McLeroy's SEM will be used in relation to the programme of research is shown in figure 5. Further detail concerning how the levels were interpreted is detailed below.

Intrapersonal: these include the mother's individual circumstances, past experiences, and personal characteristics. In addition, they include the individual character and behaviour of her baby. Central to infant feeding is the 'infant mother dyad', but within this dyad the infant and mother exist in their own right. Both mother (Bottorff 1995; Hegney *et al.* 2008; Ricotti *et al.* 2015; Jardine *et al.* 2017) and infant (Lothina 1995; Marquis *et al.* 1998; Lauzon-Guillain *et al.* 2012; Kielbratowska *et al.* 2015) influence feeding independently of each other.

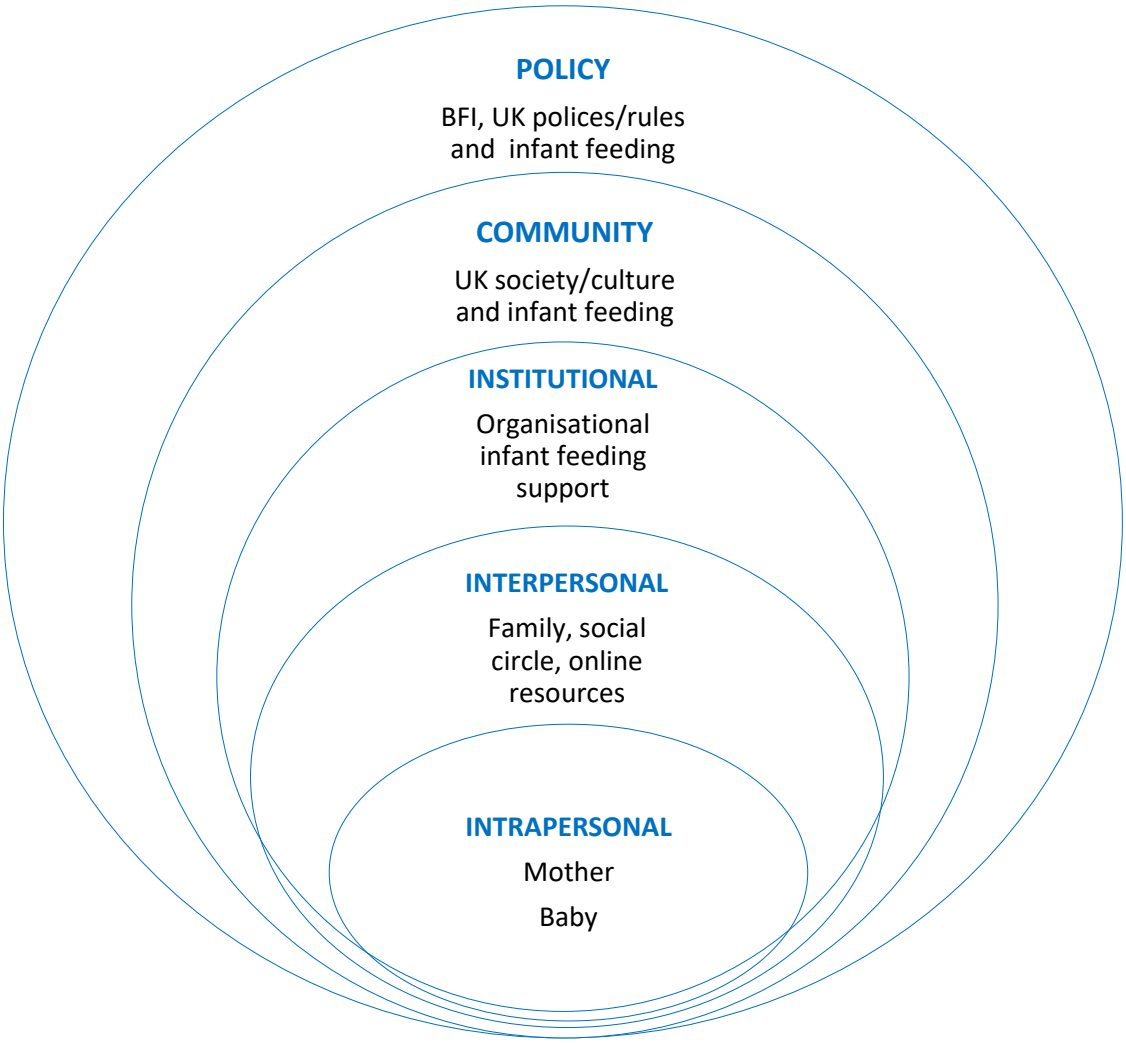
Interpersonal: these refer to mothers' informal support networks, including her family, friends, and increasingly the online infant feeding community she may engage with for support (Callaghan and Lazard 2011; Komninou *et al*. 2016). In addition, increase of 'shared parenting' means that the father's role in infant feeding is potentially a more prominent one, which can impact upon infant feeding practices.

Institutional: these refer to the organisational forms of support for breastfeeding mothers, including health professionals and breastfeeding support groups. As seen in the literature review, the healthcare system surrounding a mother and baby has strong implications for infant feeding in the UK, with breastfeeding being high on the infant feeding agenda from a health professional's perspective (Hoddinott *et al*. 2012).

Community: this refers to the environmental and socio-cultural norms that surround a mother, both locally and nationally. The environment a mother resides in, her social circle, and her workplace, can all influence infant feeding practices, particularly in relation to breastfeeding (Wall 2001 ; Dykes 2005; Gatrell 2007; Andrew and Harvey 2011; Boyer 2011; Scott *et al.* 2015; Grant 2016; Morris *et al.* 2016; Boyer 2018). In addition, socio-cultural influences upon infant feeding are pervasive within the UK. The is evident within the paradox of the health promotion message of 'breast is best', versus the 'UK bottle feeding society,' where breastfeeding is not the norm (Dykes 2005; Dykes 2006; Brown 2014). In addition, the changing role of mothers in a contemporary western society see the majority as working mothers, which has an important impact on infant feeding practices (Gatrell 2007; Skafida 2012).

Policy: this refers to UK policies and rules governing infant feeding in the UK. As is evident within the literature review, the BFI is instrumental in guiding the principles of infant feeding practice and policy in the UK (UNICEF 2012), and as such, has various influences on infant feeding practices. UK law protects breastfeeding in public, and requires employers to enable breastfeeding mothers to have breaks at work. However, breastfeeding in public and alongside work continue to be problematic (Skafida 2012; Brown 2015). In addition, laws concerning the marketing of formula milk are not always adhered to (BMA 2012), and the marketing of bottles and teats is pervasive.

Figure 5 Socio-ecological model



(Adapted from McLeroy et al 1988)

Both the theoretical and conceptual frameworks were used to implicitly guide and inform this programme of research. From a design perspective, they were referred to during the development of the overall research questions, the construction of the data collection tools, and during the interpretation of the research findings. In addition, they helped shape the conclusions and recommendations from this programme of research.

The following chapter will discuss the methodological foundations of this programme of research.

Chapter 3 – Methodology

3.1 Introduction

This chapter examines the methodological foundations of the programme of research. The research design and its philosophical underpinnings will be discussed. Methods of data collection and data analysis will be examined and ethical considerations presented. The chapter concludes with a discussion surrounding trustworthiness and how this was ensured throughout the research. Throughout the chapter, the reasoning behind methodological decisions made will be outlined and consideration will be given to alternatives where relevant. This chapter includes reflective and reflexive stop offs taken from a reflective diary, which helped to frame the decision making process.

3.2 Philosophical underpinning

The philosophical framework used to underpin this programme of research is pragmatism. Pragmatism has been described as focusing on a 'what works' approach to answering questions and solving problems, with an emphasis on undertaking research in the 'real world' (Creswell and Plano Clark 2011; Bishop 2015; Robson and McCartan 2016). There is, however, criticism of solely employing the 'what works' analogy to research design, which can lead to absence of philosophical guidance (Denzin 2012; Hall 2013; Morgan 2014; Hesse-Biber 2015). This can have the potential to negatively affect study credibility (Lipscomb 2008), leading to it becoming *'method-centric*' (Hesse-Biber 2015, p.776). In the case of this programme of research, the characteristics of pragmatism have been used as a philosophical and practical framework to guide it, and how this has been undertaken is discussed below.

Pragmatism 'prioritises' the research question or problem over methods (Tashakkori and Teddlie 2009; Feilzer 2010; Creswell and Plano Clark 2011; Creswell 2015). In response to this, a mixed methods research (MMR) design was chosen. This was selected in order to provide a background to the mothers' experiences of bottle refusal, which required a quantitative approach, and to build upon these findings to give a more extensive understanding of mothers' experiences, which required a qualitative approach (the rationale for selecting MMR is discussed in more detail under section 3.3).

By including both forms of data in a study however, there have been criticisms in relation to an 'incompatibility thesis' occurring, due to the contrasting philosophical backgrounds of quantitative and qualitative research (Tashakkori and Teddlie 2009; Denzin 2012). Pragmatism, however, responds to the perceived 'philosophical challenges' of using MMR by focusing positively on research as a way to produce change, rather than the epistemological differences of quantitative and qualitative methods (Bishop 2015). In essence, it '*embraces the complementarity*' between research methods (Dattilio *et al.* 2010, p.431), in order to answer questions and solve problems, rather than focusing on the paradigm debate.

Both subjective and objective knowledge is valued by pragmatists, due to the belief that both singular and multiple realities exist (Creswell and Plano Clark 2011). Feilzer (2010, p.8) describes how pragmatism calls for a *'convergence'* of quantitative and qualitative methods, which is apparent during the 'mixing' of both quantitative and qualitative methods of data collection in the current programme of research. Pragmatism also centres upon empiricism in order to solve problems or questions, with an emphasis on theory that informs effective practice (Johnson and Onwuegbuzie 2004). The current programme of research is driven by the belief that the findings produced can inform infant feeding knowledge and, in turn, practice. The latter point, however, is not viewed as a given, since the findings of the research would need to be 'transferable' in order to ensure they can be utilised (Morgan 2014).

The practice of reflecting upon the undertaking of research, and evaluating it as it evolves, is recognised by pragmatism as a way of certifying research credibility beyond that of solely employing methodological rigour (Hall 2013). In relation to MMR, this ensures it does not take '*a purely technical focus',* fostering *'uncritical and un-reflexive practices which result in poor quality research*' (Bishop 2015, p.6). A process of reflection and reflexivity has been undertaken throughout this programme of research and is exemplified by frequent reflexive/reflective stop offs. This process has been instrumental in the questioning of the researcher's prior assumptions and beliefs. In addition, it has also been influential in tangible changes being made to ensure the research remains focused on answering the research questions. Examples of this were

the 'refocusing' of the quantitative data analysis, which had effectively become too wide, and the 'letting go' of data during the final integration in order to focus on the aim of the research.

Reflective stop off

It was whilst undertaking my MSc in Practitioner research that I was first introduced to 'paradigms' and how they can shape research. At the time I saw myself as a 'Constructivist' as opposed to a 'Post – positivist' - which appeared to be the only other paradigm discussed. Being termed a 'constructivist' never sat totally well with my research experiences and background. I had worked on International RCT's (randomised controlled trials) and other large national clinical trials and valued the objective results they produced which were in turn used to inform and change practice. However, I also recognised that the 'lived experience' of many of the pregnant women the trials were aiming to help was equally important. It was only whilst reading to undertake this PhD that I became aware of another paradigm or Worldview, that of pragmatism. This philosophical approach resonated with my experiences of research and knowledge acquisition. The flexible and practical nature of pragmatism, its acceptance of both quantitative and qualitative data as sources of knowledge, and its inherent focus upon what needs to be answered, were features which better represented my 'Worldview' concerning the undertaking of research .

3.3 Research design - mixed methods research

In their definition of MMR, Creswell and Plano Clark (2007) note, '*Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone'* (p.5). MMR is useful when one data source is insufficient, when there is a need to explain initial results, to generalise exploratory findings, or in order to enhance a study with a second method (Creswell and Plano Clark 2011). Greene (2007) describes MMR as inviting us to participate in '*multiple ways of seeing and hearing' (*p.20). Whilst Tashakkori and Teddlie (2009) view it as being able to provide stronger inferences and providing an opportunity for divergent views. It is also seen as being particularly useful and popular in areas of

health research (Fetters *et al.* 2013), which often warrants both quantitative and qualitative data in order to explore complex phenomena.

MMR is not always viewed in such a positive light, however. It has been described as a '*growth industry'*, a '*methodological trend currently in vogue'* (Sandelowski 2014, p.3) and a *'booming field'* (Flick 2017, p.46). This suggests a level of scepticism in relation to the possible 'over use' of mixed methods by researchers. To add to this, there appears to an amount of '*disenchantment*' surrounding MMR (Flick 2017, p.48), due to it being used for convenience (Hall 2013), being too focused on design and methods (Flick 2017), displaying a lack of 'mixing' (Bryman 2007; Greene 2007; O'Caithain 2010; Creswell 2015), and '*the tendency to subordinate QUAL to QUAN*' (Denzin and Lincoln 2018, p.314). Onwuegbuzie and Corrigan (2014) argue that there is often little evidence to support these criticisms, but it was recognised that in order to execute a MMR design effectively, the various weaknesses of MMR needed to be reviewed and answered within the rationale for, and design of, the research.

Reflexive stop off

It was almost with some trepidation that I chose MMR as the research design, given the amount of criticism that appears to be levelled at it currently. I had concerns I would be seen as jumping on the MMR 'bandwagon' in my selection and, in addition, did wonder if my research would appear dated in relation to using MMR - especially if it went out of vogue. In answer to these concerns and others, I decided to unpick the many criticisms of MMR and try to answer them during my design. Weak rationales, lack of mixing, too much focus on method and integration issues were all at the forefront of my mind when designing the research. It could be construed that I was designing 'defensively' in order to escape the general criticisms of MMR, but in reality, I was trying to ensure my research was doing justice to my research topic and questions.

Returning to Creswell and Plano Clarke's definition of MMR, it was their 'central premise' *of* combining quantitative and qualitative approaches to give a better

understanding that formed the rationale behind using MMR to undertake the current programme of research. There was little known about bottle refusal by breastfed babies and no real understanding of its general characteristics, who was experiencing it, or if there was any relationship between variables and bottle refusal. A quantitative approach to investigate these features and to provide a 'background' to bottle refusal was strongly indicated. In addition, due to the complex nature of infant feeding which transcends physiological, psychological, socio-cultural and health influences, there was also a need to explore and build upon this background data in an attempt to provide a more holistic comprehension of mothers' experiences. In essence, the topic of bottle refusal was an almost unknown entity within a potentially complex background, of which MMR could provide greater understanding.

From a philosophical stance, MMR design is well aligned, although not exclusively (Biesta 2010; Christ 2013; Maxwell 2013) to pragmatism (Feilzer 2010; Tashakkori and Teddlie 2010; Creswell and Plano Clark 2011; Hall 2013; Morgan 2014; Bishop 2015; Robson and McCartan 2016). Pragmatism in turn represents the researcher's 'worldview' of how knowledge is gained and research undertaken. In addition, from a personal and educational perspective, the undertaking of mixed methods research has the advantage of providing the researcher with an opportunity to work towards becoming '*methodologically bilingual*' (Tashakkori and Teddlie 2009, p.32), a personal goal which was actualised within this programme of research.

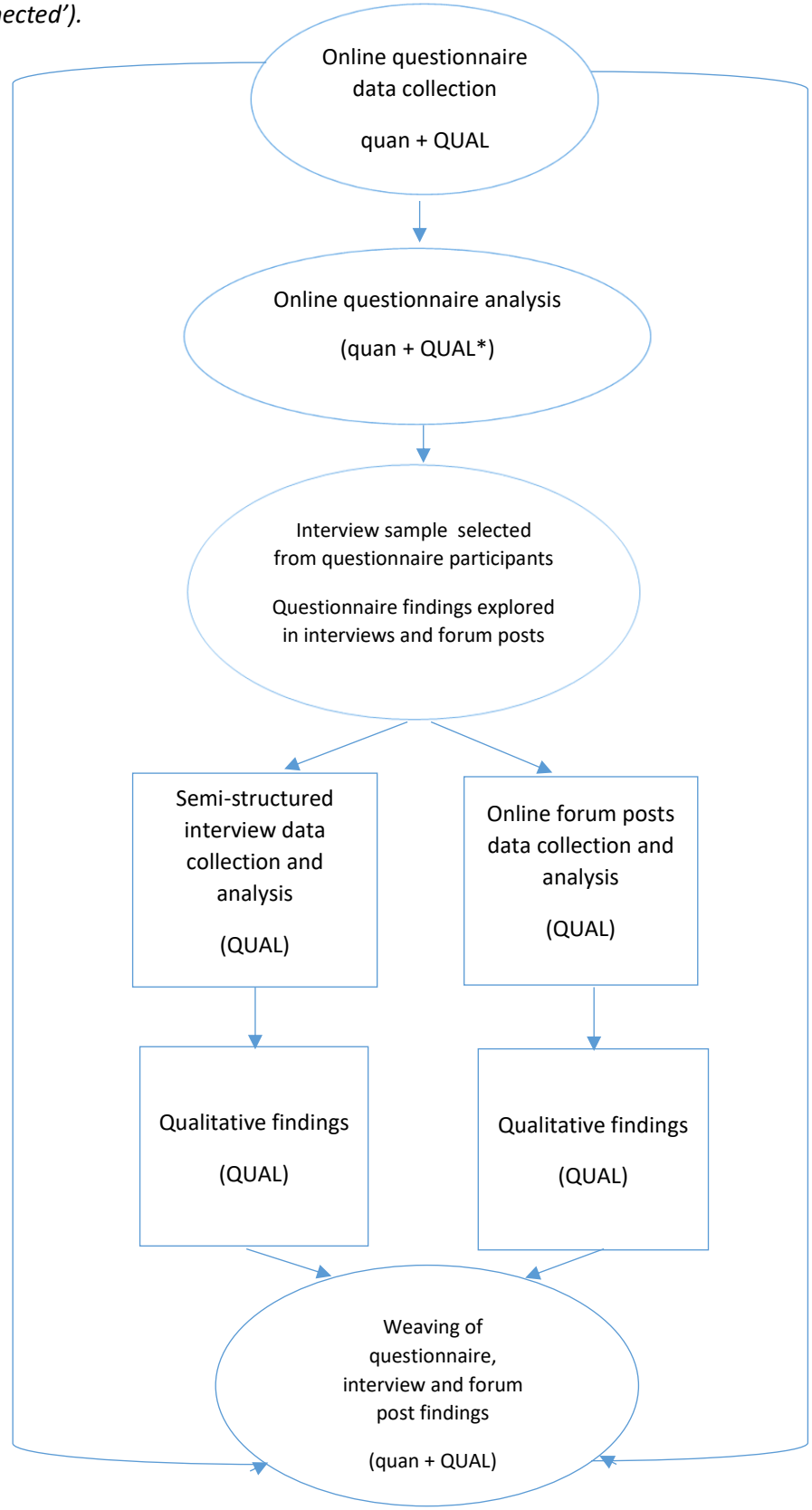
Bishop (2015) describes mixed methods designs as offering a *'smorgasbord of design options'* (p. 17) and this is certainly the case when consulting the literature (Tashakkori and Teddlie 2009; Creswell 2015). In addition, Tashakkori and Teddlie (2009, p.139) describe how the MMR design typologies have the capacity to mutate into other forms whereby researchers '*creatively manipulate'* them to meet their researcher setting. Bishop advocates using a tailor-made design in order to answer research questions posed, in preference to an off the shelf design with its one size fits all approach (Bishop 2015). Thus, a certain amount of creative licence appears to be anticipated in relation to developing a MMR design. However, as with all research studies, careful thought is needed in order to develop a design that is applicable to the topic and questions being

asked. In relation to MMR, the priority, implementation and integration of the qualitative and quantitative approaches warranted particular scrutiny in order to meet the current research aims and questions.

A mixed methods sequential design was adopted for this programme of research (see figure 6). Some elements of the design were taken from the sequential explanatory design as described by Creswell and Plano Clark (2011). These included a (mainly) quantitative phase followed by a qualitative phase; with the results from the quantitative phase being explored further during the qualitative phase. In addition, the quantitative phase provided a sampling framework for the qualitative phase. The sequential design was selected as it had the potential to provide a generalised picture of bottle refusal from the mainly quantitative phase; then by exploring and building upon the initial findings, a greater understanding of the mothers' experiences of bottle refusal could be elicited during the qualitative phase. Similar to Feilzer's study, the stages of the current research were intended to '*inform and supplement each other*' (Feilzer 2010, p.9). Tashakkori and Teddlie (2009) describe the extra advantage of using a sequential approach as allowing for modifications to be made between stages. A further feature of this MMR design was the triangulation of methods during the qualitative stage. Flick (2017) describes triangulation as going '*beyond the knowledge made possible by one approach*' (p.41). In this programme of research, triangulation at the qualitative stage had the potential to widen and deepen the understanding of the mothers' experiences. Flick (2017) describes three possible outcomes of triangulation: mutual confirmation, complementation of results, or contradiction of results. In the case of this programme of research, each and all of these could increase understanding.

Although a sequential design has been described as 'popular' and being 'straightforward' it is not without its challenges (Ivankova 2006). Decisions on general issues such as priority, sequencing, connecting of stages and integration need to be made (Ivankova 2006). Creswell (2015) cites the further challenge of time, due to the sequencing of two distinct phases. Additional considerations came in the guise of choosing data collection methods and analysis techniques. How decisions were made in relation to these potential challenges is discussed below.

Figure 6 Mixed methods sequential design. (oval denotes points where quan and qual are 'mixed/connected').



*As per Creswell (2015), MMR priority is indicated by capitalisation

Priority was given to the qualitative phase of the research due to the exploratory nature of the research, the complexity of infant feeding *per se*, and the fact that little was known about the subject of bottle refusal. Tashakorri and Teddlie *et al*. (2009) discuss how by prioritising the qualitative stage, a study is able to contextualise the phenomenon it is exploring, which is very much indicative of the focus of this research.

Integration during an MMR study is described by Creswell (2015) as the place *'where the quantitative and qualitative phases intersect'* (p. 82). It can occur at the design, methods or integration stages. How quantitative and qualitative data is integrated or mixed or connected in MMR has been heavily criticised, with authors citing studies exhibiting no mixing or integration at all (Bryman 2007; Feilzer 2010; Sparkes 2015). However, mixing or integrating during an MMR can pose challenges to the researcher, particularly in relation to the need for data and analyses to *'talk to each other'* to produce an overall account (Sparkes 2015, p.53). In relation to this, and taking into consideration the basis of using a MMR approach was to provide as complete an understanding as possible of mothers' experiences, integration of data took take place at four points (see figure 6).

1. At the quantitative data collection stage (study one): the online questionnaire included mainly closed but also some open questions, and free text.

2. At the quantitative data analysis stage (study one): some qualitative responses were coded into quantitative data and qualitative data were used to support quantitative findings.

3. At the quantitative findings stage (study one): the online questionnaire findings provided data for a select sample of participants for the interviews (study two) and was used to guide the interview schedule and online forum guide (studies two and three).

4. During the final phase of the research: the findings from the questionnaire (study one), interviews (study two) and forum posts (study three) were 'weaved' together using a narrative approach (Fetters *et al.* 2013), to provide a greater understanding of mothers' experiences of bottle refusal by their breastfed baby.

3.4 Generic Qualitative Research

Generic Qualitative Research was chosen as the qualitative research approach. GQR has also been referred to as 'Qualitative description' (Sandelowski 2000; Neergaard *et al.* 2009), however, for the purpose of this research, the term Generic Qualitative Research (GQR) will be used. Merriam (1998) defines GQR studies as those that *'simply seek to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved'* (p. 11), whilst Sandelowski (2000) suggests it as being *' less interpretive, less abstract'* (p.335) and as having *'the goal of a straight descriptive summary of the data* (p.338). It is perhaps Caelli *et al.* (2003), however, who provide the simplest definition of GQR describing it by what it is not, '*that which is not guided by an explicit or established set of philosophic assumptions in the form of one of the known qualitative methodologies'* (p.4).

GQR has been advocated when existing qualitative methodologies are not appropriate in relation to the study being undertaken (Merriam 1998; Sandelowski 2000; Caelli *et al.* 2003; Kahlke 2014; Percy *et al.* 2015). Kahlke (2014) describes that although there is a certain amount of acceptable 'deviance' ' allowed from the methodological rules of these main approaches to qualitative research, *'often, researchers find themselves with research questions that do not fit neatly within the confines of a single established methodology* (p.13). In this case, GQR can offer a flexible alternative (Kahlke 2014).

In common with other studies (Cooper and Endacott 2007; Bellamy *et al.* 2016; Auta *et al.* 2017; Hassain 2017), GQR was chosen due to this programme of research not 'fitting' with current qualitative research approaches. Various other approaches were considered including grounded theory, case study and phenomenology. Indeed phenomenology is considered to possess similarities to GQR, with both aiming to explore a phenomenon and seeking to understand it through the participants' experiences. However, as described by Percy *et al.* (2015), the focus of the two approaches is quite different. Phenomenology seeks to explore the 'lived experience' of a phenomenon with the emphasis on the 'experiencing' and making sense of this. It has an 'inward' focus, highlighting the '*subjective psychological experiencing'* of the participants (Percy *et al.* 2015, p.77). GQR however focuses on 'experiences' e.g. 'and

what happened?' 'what was experienced?' In essence, the core focus of GQR is *'external and real-world, as opposed to internal and psychological'* (Percy *et al.* 2015, p.78). In relation this programme of research, the focus was on the nature of mothers' experiences of bottle refusal. It aimed to describe these experiences in order to claim a wider understanding of them. Thus by employing GQR, the integrity of the research was maintained, and congruence between the research aims and approach was secured.

Although GQR does not have a rigid approach, upon appraisal of the literature it does have defined characteristics which were used as a framework for this research. Philosophically it claims no allegiance, although it has been linked to pragmatism (Neergaard *et al.* 2009). The aim of a study is the central focus of GQR (Bellamy *et al.* 2016), which is a key aspect of pragmatism. In addition, the 'what works analogy' is evident, with GQR being used due to other methodologies not being deemed to be appropriate.

GQR has been associated with an MMR design (Sandelowski 2000; Neergaard *et al.* 2009; Percy *et al.* 2015), with Neergaard *et al.* (2009) stating it is particularly applicable due to its '*descriptive breadth'* (p.3), which links well to quantitative methods. In line with this, GQR uses methods of data collection that aim to give a broad range of experiences and reflections (Percy *et al.* 2015, p.79). This does not mean, however, that the data is deemed to be superficial, but rather as Neergaard *et al.* (2009) note, it is collected with the aim to provide *'a rich, straight description of an experience or an event'* (p.2). Typically, methods include questionnaires containing both closed and open ended questions (Percy *et al.* 2015) and semi-structured interviews (Sandelowski 2000; Neergaard *et al.* 2009; Percy *et al.* 2015; Bellamy *et al.* 2016). Both were employed as data collection methods in this programme of research.

Maximal variation sampling is suggested as a sampling method within GQR due to its ability to give a 'broad insight' (Sandelowski 2000; Neergaard *et al.* 2009). This sampling technique was employed in the current programme of research in order to interview mothers with different experiences of bottle refusal. Data analysis within GQR is usually undertaken using thematic analysis, as it offers both flexibility and compatibility with

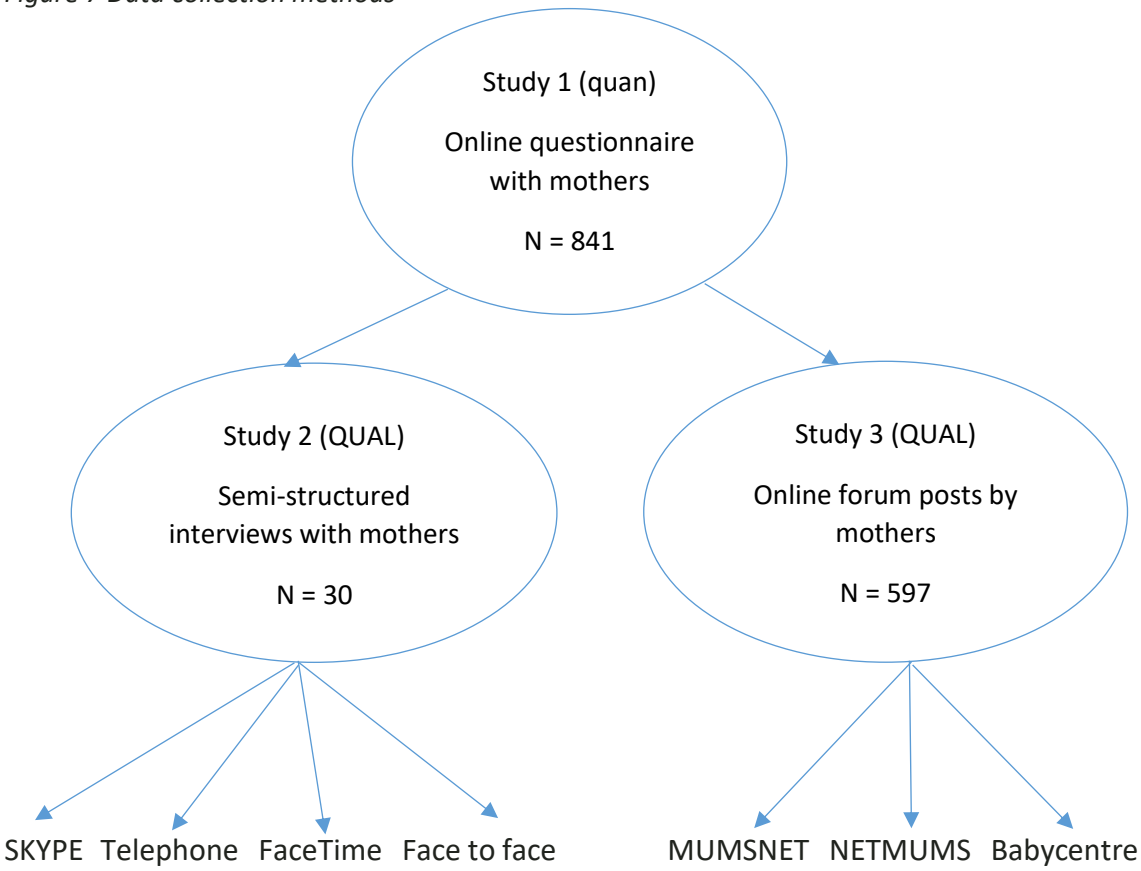
many qualitative approaches (Percy *et al.* 2015). In relation to the current research, thematic analysis as described by Braun and Clarke (2013) was undertaken to analyse qualitative data within the questionnaire, and the data from both the interviews and forum posts (see section 3.7.2 for further details).

Due to GQR falling outside of more traditional and defined qualitative methodologies and not being guided by a specific methodological approach, it is perhaps inevitable that it comes under a certain amount of scrutiny. It has been described as the *'poor cousin of health research'* Neergaard *et al.* (2009, p.1), and by Caelli *et al.* (2003), as *'clear as mud'* (p.1). In relation to this, Sandelowski (2000) is critical of the amount of 'defending' those using GQR undertake, sometimes to the detriment of the discussion of their research. In their 'defence' of using GQR, Caelli *et al.* (2003) describe three key considerations: demonstration of rigour, reflexivity and congruence – all of which are woven throughout this programme of research (discussed in section 3.9). In addition, the many benefits of GQR make it a particularly suitable approach for this current research. These include its flexibility, which associates with the MMR design, its central focus on the research questions, which aligns with pragmatism, and importantly, its emphasis on gaining understanding, which was at the core of exploring mothers' experiences of bottle refusal.

3.5 Data Collection Methods

In line with the MMR design, both quantitative and qualitative methods of data collection were employed. These comprised of an online questionnaire, semi-structured interviews and online forum posts (see figure 7). The rationale for their selection is subsequently discussed.

Figure 7 Data collection methods



3.5.1 Online Questionnaire

A self-administered online questionnaire was chosen to collect mainly quantitative and some qualitative data for study one. The questionnaire would be able to:

- Elicit background characteristics of bottle refusal.
- Capture demographic data of the mothers who experienced it, and investigate potential relationships between variables and bottle refusal.
- Aid recruitment of respondents due to it being online, particularly as the mothers experiencing bottle refusal already appeared to be accessing online communities.
- Provide results for further exploration during the qualitative phase.
- Provide a sample for the interviews (study two).

Online questionnaires are not new in relation to infant feeding and have been used successfully in previous studies both in the UK and globally (McAndrew *et al.* 2012;

Brown and Davies 2014; de Jager *et al.* 2014; Brown *et al.* 2016; Fahlquist 2016; Foster *et al.* 2017; McKeever and Mckeever 2017). Whilst online questionnaires exhibit many of the benefits that are applicable to traditional pen and paper questionnaires (Holmes 2009), some benefits felt to be particularly pertinent to this study are detailed below:

- Speed of recruitment and response (Sue and Ritter 2012); this was a MMR research design, which was dependent on the first stage being completed in order to undertake the next stage.
- Increased geographical dispersal (Hesse-Biber and Griffin 2013; Bryman 2016); the research was UK wide.
- Ability to reach 'hard to reach' respondents (Sue and Ritter 2012); although mothers are not characterised as a hard to reach group, they have immense demands upon their time and can be particularly difficult to recruit to research studies (Daniels *et al.* 2012).
- Distribution across various devices (Fielding *et al.* 2017); this would enable mothers to use a mobile phone, tablet, laptop or PC to undertake the questionnaire.
- Convenience of being able to access and complete any time (Sue and Ritter 2012); this would enable mothers 24 hour access to the questionnaire.
- Increased anonymity (Sue and Ritter 2012); bottle introduction can be seen to be a sensitive topic, an online questionnaire could produce more candid answers.
- Increased dispersal due to its '*unrestricted compass'* (Bryman 2016, p.235) and consequently increased respondent numbers. This was reflected in the current study, were 841 mothers completed the online questionnaire in just two weeks from the UK.

Further to the above, online surveys in general have shown fewer unanswered questions (Bryman 2016), which would reduce missing data. In addition, they have shown better responses to open-ended questions (Bryman 2016; Vehovar and Manfreda 2017), which the questionnaire included.

From a practical perspective, no transcribing would be required for open-ended questions, as they could be uploaded directly into NVivo 11. The quantitative results would be able to be directly exported to SPSS data analysis, which could be cost and time effective and reduce input errors (Holmes 2009; Sue and Ritter 2012; Gray 2014; Bryman 2016; Robson and McCartan 2016).

Online questionnaires, however, come with certain potential limitations, with the online nature possibly limiting the sample by excluding those who do not have internet access (Holmes 2009; Bryman 2016; Robson and McCartan 2016). In response to this, at the time of the questionnaire 78% of adults used the internet every day, with women more likely to use it than men (ONS 2015). However, it is acknowledged that mothers from ethnic minorities, who may experience language barriers, would be a hard to reach group and an additional recruitment strategy was undertaken in relation to this (see chapter 5). Further concerns in relation to using online questionnaires are the 'authenticity' of respondents which cannot be certified (Germain *et al*. 2017), and online questionnaires being solely dependent on technology which can fail.

3.5.2 Semi-structured interviews

Semi-structured interviews were used in study two to explore data from study one and to gain a greater understanding of mothers' experiences of bottle refusal. Braun and Clark (2013) describe interviews as being '*ideally suited to experience type questions'* (p.81). In addition, they are suitable for the exploration of 'context' (Mason 2013), an important feature surrounding the mothers' experiences of bottle refusal. Moreover, interviews have the potential to build and expand upon previous findings (Creswell 2015). From the perspective of the current research, semi-structured interviews were used to further explore the results of the online questionnaire. Their inbuilt flexibility allows for follow up whilst giving the interview a focus (Brinkmann 2018). Due to the conversational and dialogical nature of interviews, they can been viewed as a 'natural extension' of the research participants' world, thus occupying both the roles of research instrument and social practice (Kvale and Brinkmann 2014).

Focus groups were considered as a viable alternative to the individual interviews as they too could explore the mothers' experiences. Furthermore, due to the '*synergistic building up of data'* that occurs within focus groups (Gray 2014, p.469), they have the potential for data expansion when compared to a one-to-one interview. However, the subject of bottle refusal could be potentially sensitive for some mothers, and they may not have wished to discuss what was sometimes a personal and negative experience in a group format. In addition, logistics such as location (mothers would have to travel), timing (working mothers in particular have little spare time), and childcare (if the mother did not want to bring her baby), had the potential to impact upon recruitment and attendance. By using interviews, not only was the focus placed on the individual experience of the mother, but also recruitment was more likely to be successful.

Interviews are however, a complex interaction between interviewer and interviewee, moving beyond spontaneous conversation (Kvale and Brinkmann 2014). They are built upon rapport which leads to trust (Weller 2017), and for this to be cultivated the skills of the interviewer are required (Maxwell 2013; Kvale and Brinkmann 2014). Further skills such as showing interest, being able to empathise, and remaining non-judgemental would also be required by the interviewer (Braun and Clark 2013), with the latter two posing challenges if the interviewer does not agree with what the interviewee is saying (Braun and Clark 2013). Reflection upon what the interviewer brings to the interview is also important; described by (Warren 2012) as their '*biography*' (p.133). Interviewer skills require rapport to be created between interviewer and interviewee, in order for disclosure to occur. Lichtman (2014) describes how, by practising *'self-disclosure'* (p.252), rapport can be established, barriers reduced, and a connection with interviewees made. Oakley (2016), in her feminist research with mothers, described how she used self-disclosure to not only increase rapport, but also as a way to reduce the power gap between herself and the mothers. Her understanding of and reflection upon her position of power was key in being able to ensure it did not affect the interviews negatively. Thus, the interviewer must be aware of the hierarchical nature of interviews and of how they can ensure their position of power is not divisive. In relation to this study, a process of reflection and reflexivity was undertaken before and after the interviews in order to 'critique' such issues. (see reflective stop off below for example).

Reflexive stop off

I had undertaken a number of interviews in my career including research interviews. In addition, within my midwifery experience, I believed I had developed good communication skills with women and mothers. I was quietly confident that the undertaking of interviews with the mothers would be the least challenging of my methods of data collection. However, as I began to read more deeply about interviews, I began to engage with the complexity of what I had previously seen as an easy and natural option for me to collect data. Of particular interest were the issues of power and the numerous identities I could assume. I was a registered midwife and the mothers would be aware of this prior to the interviews. I questioned how this could affect the interview. Would the mothers see me in terms of a health professional? In which case would this limit discussion of their experiences, especially due to the possible 'deviant' nature of wanting to give a bottle? Would they curtail disclosure of their feelings and practices they may have undertaken for fear of being judged by me as the health professional? However, I was not only a midwife. I was also a student, researcher, mother, and mother who had experienced bottle refusal. The notion of 'self-disclosure' became important to the interviews. I made a decision to disclose that I had experienced bottle refusal too. I too had engaged in the deviant practice of trying to introduce a bottle! I aimed to use this 'self-disclosure' as the basis for cultivating rapport and trust with the mothers. In addition, I used it to reduce my assumed position of power and any hierarchy due to my professional role. However, I was not so naive as to ignore the fact that there would always be some hierarchy and that the interviews would never totally be 'mother to mother'.

3.5.3 Interview modes

The intricacies of the interview were further complicated by the decision to offer the mothers four different options to undertake the interviews: face to face if they lived locally, SKYPE, FaceTime and telephone. This decision was taken to reduce *'participant burden'* (Daniels *et al.* 2012, p.2), and increase recruitment. Previous studies have indicated mothers with young babies/children can be difficult to recruit to research (Daniels *et al.* 2012; Dinsdale *et al.* 2016; Wagg *et al.* 2017). Limitations on their time

(Daniels *et al.* 2012; Dinsdale *et al.* 2016) and their returning to work (Daniels *et al.* 2012) being identified as possible reasons for poor participation. In response to this, four modes of interviews were offered to the mothers. Offering multiple interview modes is, however, tempered with the potential superiority of one over another in terms of quality of the interview and the data collected, described as the 'mode effect' (Fielding *et al.* 2017; Zhang *et al.* 2017). The mode effect is of course not the only influence on data collection. However, in relation to this study, consideration was given to each of the interview modes and to the limitations and challenges they posed.

Traditionally seen as the '*gold stand*ard' (Novick 2008, p.394) for qualitative research, the face to face interview has been described as promoting rapport, non-verbal cues and body language (Novick 2008; Holt 2010; Lechuga 2012; Mealer and Jones 2014; Ward *et al.* 2015). When compared to telephone interviews and to SKYPE/FaceTime, the physical proximity of the face to face interview and its ability to provide a *'personal connection'* (Seitz 2015, p.229), mean that it is often viewed as being superior. Brinkmann (2018) alludes to this superiority, describing interviews with an *'embodied presence'* as enabling '*interpersonal contact, context sensitivity and conversational flexibility to the fullest extent*' (p.578).

There are, however, certain drawbacks to the face-to-face interview when compared with 'remote' modes. Sensitive topics may be better discussed remotely (Braun and Clark 2013; Ward *et al.* 2015), providing an element of distance between interviewer and interviewee. The 'intruder element' of interviewing in one's home or other 'safe' environment can be disconcerting for some participants. The practicalities of establishing a time and location can prohibit some participants from being able to take part. In addition, they can be costly both financially and in terms of time.

Telephone interviews have previously been associated with quantitative research (Novick 2008; Holt 2010; Lechuga 2012; Ward *et al.* 2015). Due to their lack of visual representation, telephone interviews, in particular, are assumed to be a poor substitute for the face to face interview. Limitations come in the guise of limited rapport, lack of visual cues and reduced disclosure (Novick 2008; Lechuga 2012; Ward *et al.* 2015).

Further disadvantages are issues with phone coverage, shortened duration of interview due to 'participant fatigue' and poor response rate (Novick 2008).

Telephone interviews have, however, been compared favourably to the face to face interview in qualitative studies (Stephens 2007; Holt 2010; Lechuga 2012; Mealer and Jones 2014; Ward *et al.* 2015). Mealer and Jones (2014) in their study of critical care nurses and post-traumatic stress disorder, found the 'distance' provided by telephone interviews allowed for easier discussion of sensitive issues. Although the lack of visual cues was not disputed, it allowed for some emotional distance. Stephens (2007), found that the lack of visual cues led to a need for 'directness' on his part, which he viewed as an advantage in data collection. Similarly, Holt's study of participants' views of telephone interviews found the participants' concentrated more on the voice in the absence of a face, which led them to think more carefully about their answers (Holt 2010).

In response to the lack or reduction of rapport, Mealer and Jones (2014) established rapport prior to the interviews using email. Ward *et al.* (2015) found non-visual paralinguistic cues to be as useful as facial expressions and body language. Lechuga (2012) refers to these as 'aural cues', (sighs, pauses, etc.) and that they can be used as an indication for probing. Furthermore, Ward et al (2015) found no discernible difference in the quality of data collected during telephone interviews when compared with face to face interviews, indicating that rapport – a necessary requirement for disclosure (Lichtman 2014), took place at a comparable level.

From a practical perspective, telephone interviews allow flexibility both for the location and timing of the interview, and reduce interviewer 'intrusion' in a participants home, potentially putting the participant at ease and prompting disclosure. In addition, 90% of adults in the UK have a mobile phone (ONS 2015), and a phone more than ever is an integral and socialised part of daily life. This was highlighted in Ward et al's study, who described the participants as *'phone savvy'* (p.2780) due to their habitual use of the phone (Ward *et al.* 2015).

SKYPE and FaceTime come under the umbrella term 'Voice Over Internet Protocol' (VOIP) methods of data collection (Hesse-Biber and Griffin 2013; Lo Iacono *et al.* 2016; Weller 2017). They offer many advantages similar to those of telephone interviews: low cost, synchronicity and the potential to increase the sample geographically (Hanna 2012; Deakin and Wakefield 2014; Seitz 2015; Lo Iacono *et al.* 2016; Weller 2017). Interviewer 'intrusion' on the participants' personal space is also reduced (Hanna 2012; Deakin and Wakefield 2014; Seitz 2015; Weller 2017). Disadvantages have been noted in the form of possible technical hitches (Hanna 2012; Weller 2017). In addition, using SKYPE/FaceTime can be biased towards the *'technologically savvy'* (Hesse-Biber and Griffin 2013, p.51). Lo Iacono *et al.* (2016), however, found most participants (including the elderly) were willing to embrace new technologies during their study. In addition using SKYPE/FaceTime can actually open up participation to those for whom a face to face interview may not be feasible. However, as with telephone interviews, perhaps the most concerning disadvantage is that of potential loss of rapport (Deakin and Wakefield 2014; Seitz 2015; Lo Iacono *et al.* 2016; Weller 2017).

Compared with telephone interviews SKYPE/FaceTime have the added advantage of video technology usually providing a *'talking heads'* orientation, which can provide intimacy and a feeling of co-presence (Weller 2017, p.616). Weller (2017), who used SKYPE to interview young people, found this could facilitate a *'feeling of close proximity, conducive to rapport'* (p.617*).* In addition, she found SKYPE was able to '*mirror the face to face interview'*, providing '*two way real communication'* (p. 616). Hanna (2012), who undertook interviews using telephone, face to face and SKYPE, found the video element of SKYPE provided flexibility whilst facilitating a face to face experience. Deakin and Wakefield (2014), who used SKYPE interviews within their PhD studies, found that although there were sometimes differences in rapport this did not affect the quality of the conversations.

Seitz (2015), whose research was based on student reflections on using SKYPE within their research, describes various practices to engender a successful SKYPE interview. These include listening to tone and emphasising facial expressions as the interviewee

can only see the interviewers face. In addition, and similar to telephone interviews, Seitz (2015) encourages rapport being established prior to the interview via email.

Thus, it was evident on appraisal of the literature, that by employing multiple interview modes the research would be able to open up participation to the mothers, whilst not appearing to compromise quality of data collected.

3.5.4 Online forum posts

Data were collected using mothers' posts from online forums. They were chosen due to the posts presenting a unique insight into mothers' experiences of bottle refusal via unsolicited 'mother to mother' discussions. In addition, due to their qualitative nature, the posts could widen the results of the online questionnaire in relation to areas such as the context surrounding introduction of a bottle and the management and potential impact of bottle refusal. Moreover, their findings could be used as a method of 'triangulation' in relation to the interview findings, providing further insight into the mothers' experiences of bottle refusal.

Online parenting forums were developed in the early 1990's with the 'big three' Mumsnet, Netmums and Babycentre.co.uk remaining active today. As a data collection source, online forums display many advantages. They provide '*the ideal arena for everyday talk'* (Callaghan and Lazard 2012, p.942). In addition, the influence of the researcher is removed, which gives a real opportunity to collect frank data. Due to anonymity, online forums can offer a 'safe place' for parents to discuss issues that may be of a sensitive nature, or ones that are considered 'deviant practice'. The action of trying to introduce a bottle to a breastfed baby could be aligned to the latter category.

Online parenting forums are a well-used and 'go to' source of information for mothers when seeking advice. Komninou *et al.* (2016), in their study of experiences of mixed feeding, found they were a more popular source of information than that gained from health professionals. Lagan *et al.* (2011), found online forums gave mothers information that health professionals did not provide enough of. They also allowed mothers to share their stories and experiences, and to connect with others in a similar situation. Online

forum posts as a method of data collection have been used successfully in studies of infant feeding both in the UK and globally (Boyer 2011; Lagan *et al.* 2011; Callaghan and Lazard 2012; Gray 2013; Morris *et al.* 2016).

From an MMR design perspective, Hesse-Biber and Griffin (2013) describe the advantages of harnessing internet-mediated data (online) with offline data. These include validating and complementing offline data (Hesse-Biber and Griffin 2013). From a practical perspective, posts can be captured and saved for analysis, foregoing the time consuming process of transcribing. Furthermore, data can be collected in great quantities without the need for recruitment of participants, an enticing feature for any researcher. Thus online parenting forums appear to present the ideal opportunity to collect unbiased, naturally occurring, authentic data in a timely, cost effective manner. However, to view them as such, negates the context of their being online, which exhibits various complexities.

Due to the anonymity online forums and posters afford, it is difficult to ascertain their demographics, valuable to place their experiences in context. In addition, the authenticity of the posters cannot be guaranteed, of concern when data is used to represent the group or individuals posting. Suler (2004, p.321) refers to the *'online disinhibition effect',* whereby people self-disclose or act out more intensely than they would otherwise. Thus the poster could be using their 'virtual self' when posting (Hesse-Biber and Griffin 2013), which can influence the content of posts and therefore the data collected. A further feature of collecting data via online posts can be their asynchronous nature. This removes the opportunity for the researcher to further explore and follow up posts (Boyer 2011). Moreover, participation in forums is reliant on having online access and automatically excludes those who do not.

The use of online posts to collect data exhibiting unsolicited 'mother to mother' discussions was viewed as an important and unique contribution to the understanding of the mothers' experiences. In addition, it was one of the main data sources available, given the lack of published work in the area. Although issues concerning authenticity of posts, the online disinhibition effect and lack of follow up were difficult to control, they

were acknowledged as endemic features of online research and were reflected upon in relation to findings.

Reflective stop off

At the beginning of my PhD, I met three other LJMU PhD students at a conference all of whom were undertaking online research. The conference, aptly named 'Organic Collaborations', was where we founded our Online Methods Group (OMG). The OMG has been invaluable in helping me through my journey of using online methods – something completely new to me before this PhD. We met at least every month to discuss anything related to the online part of our studies and suggested papers and books to read. Two of the PhD students were a year ahead of me, thus providing me with numerous tips and pieces of advice in conducting this phase of the research. As we were all employing different types of online methods, I became fairly knowledgeable regarding online research in different contexts. One of the most important debates the OMG had was whether any of us were truly undertaking 'netnography'. According to Kozinets, who first described netnography, it requires the researcher to have a 'presence' within the online community they are studying, and to engage with them. I recognised this was not something I was doing, or had set out to do. I was in effect 'lurking' – the term given to those who observe posts and threads without contributing to them! After six months we co-wrote a paper as PhD students undertaking online research which was published. (Germain et al. 2017). We wrote a further paper exploring the barriers to recruiting online' which is awaiting publication. Without being a member of the OMG I do not think I would have approached this stage of my PhD with as much knowledge, confidence and 'virtual experience'. Ironically, our OMG is now being seen as a source of knowledge for other PhD students, who refer to us for our 'expertise' in using online methods.

3.6 Sampling strategies

Various sampling strategies were used within the programme of research. Selection was not only influenced by data collection methods, but also by the mixed methods sequential design and the GQR approach. The sampling strategies will be discussed below.

3.6.1 Online questionnaire

Due to the exploratory nature of the research, and the population of mothers experiencing bottle refusal being unknown, a non-probability sample was used in the form of a convenience sample, with an additional snowball sampling approach. Convenience sampling is commonly used in online surveys and has been used in previous infant feeding surveys (Komninou *et al.* 2016; Fallon *et al.* 2017). However, the main limitation of using a convenience sample is its self-selective nature, which leads to non-response bias, and in turn, an inability to generalise findings to the wider population (Bryman 2016; Fricker 2017). In relation to study one, mothers who had a negative experience of bottle refusal may have been more likely to answer the questionnaire. However, this does not mean that the results of the online questionnaire are unusable. Sue and Ritter (2012) discuss how a non-probability sample is often the most practical form of sampling and can be sufficient in relation to exploratory research. Bryman (2016) describes how a convenience sample can be '*too good an opportunity to miss*' (p.187) in relation to capturing data about an unknown entity. In addition, he describes how the results can provide a '*springboard to future research*' (Bryman 2016, p.187) and allows links with previous research. Furthermore, a convenience sample can be used to select a further sample for interview, as in the case of the current research.

Study one also used snowball sampling, a sampling strategy which is particularly pertinent to unknown populations where 'insiders' can locate respondents (Gray 2014; Bryman 2016; Fielding *et al.* 2017). This was applicable to mothers experiencing bottle refusal, of which very little was known. In addition, Bryman (2016) describes a snowball sample being applicable to mixed methods research as it is well aligned to qualitative research. From a practical perspective, the online component of the questionnaire could

aid snowballing, with mothers being able to text or email the link to other mothers easily. As discussed earlier however, the same limitation applies to this form of sampling as with convenience sampling, in that non-response bias, and an inability to generalise findings to the wider population, are apparent.

Although the online nature of the questionnaire was viewed as a positive in relation to recruitment, it also had the potential to lead to 'virality', whereby a questionnaire travels indiscriminately online. This was noted by Ellis-Barton (2016) who, when using a snowballing approach to recruitment, found her call for participants had been posted on a closed Facebook group without her knowledge. Thus, taking Ellis-Barton's experience into consideration, a certain amount of 'loss of control' was anticipated in relation to using a snowballing approach online, and this did occur during the recruitment process (see chapter 4 for discussion of recruitment).

3.6.2 Semi-structured Interviews

Selection of cases for a follow-up qualitative study is a feature of the mixed methods sequential design and acts as a 'connector' between studies (Ivankova and Stick 2007; Creswell 2015). During study one, respondents to the questionnaire had been asked to leave their details if they wished to be interviewed, thus producing a 'connector' between the sequential stages. In line with a generic qualitative approach, a simple maximal variation sampling was used to select the interview sample from the questionnaire respondents. Gray (2014) defines the aim of the maximal variation sample as *'describing central themes across diverse cases'* (p. 219). By employing this approach, it was intended to facilitate a sample of mothers who had differing experiences and outcomes of bottle refusal, to provide a wider understanding of the scenario. In addition, by varying the experiences of the mothers in the interview sample, it would enable exploration of the results from the online questionnaire. Two variables were used: impact of bottle refusal on breastfeeding experience, and bottle refusal/eventual acceptance. From the questionnaire data, mothers reported the impact of bottle refusal on their breastfeeding experience as either negative, positive, or no impact. By recruiting a sample from each of the categories, mothers who had reported differing impacts of bottle refusal would be interviewed. This would provide an opportunity to

explore mothers' experiences from a wider perspective. This latter point was felt to be particularly important as the findings from Egan's study (the only current study on bottle refusal), focused exclusively on bottle refusal having a negative impact upon breastfeeding experience (Egan 1988). By recruiting a sample that contained mothers whose baby had eventually accepted a bottle, and mothers whose baby was still refusing, mothers who had experienced different outcomes of bottle refusal would be interviewed. Mothers' experiences of infant feeding are often linked to outcome, an example being if a mother intends to breastfeed and 'fails' to do so (Burns *et al*. 2010; Crossley 2009; Hinsliff-Smith *et al*. 2014). (See chapter 5 for details of sample and recruitment).

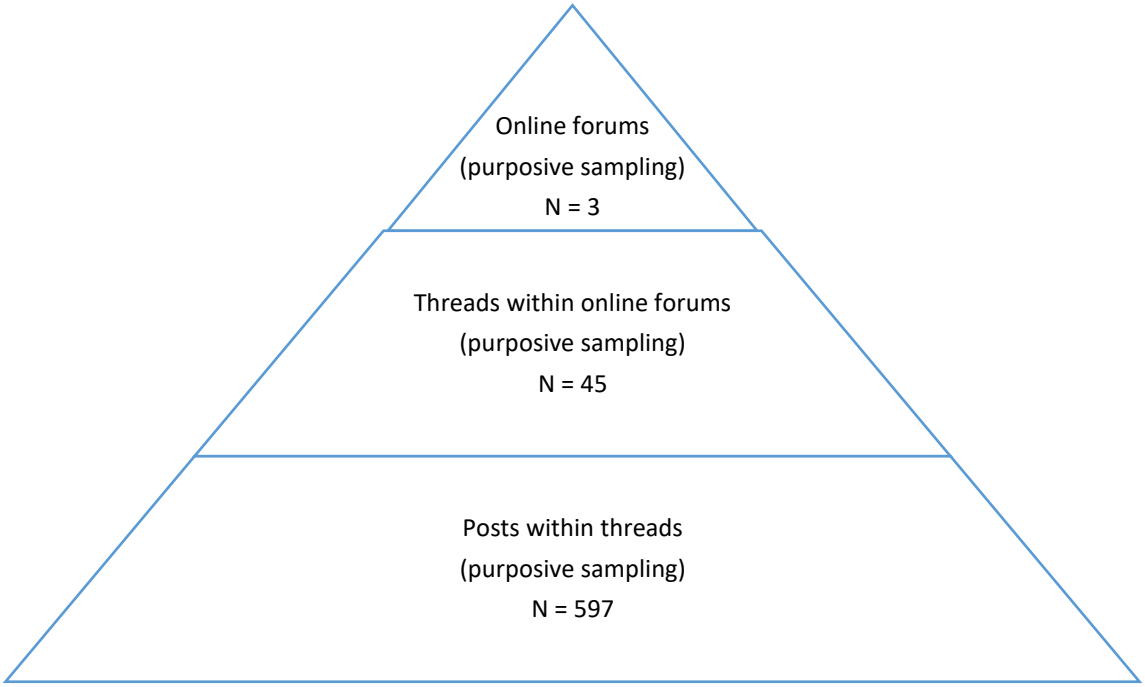
Determining a definitive number of interviews to undertake in qualitative research can be problematic. Beitin (2012) notes that when numbers are suggested they often differ between authors. In addition, taking this approach can be seen to be applying quantitative criteria to qualitative research (Beitin 2012). The achievement of saturation appears to be more applicable to qualitative research. However, as Beitin (2012) discusses, this can be arbitrary as there is no one definition of what saturation is. Bryman (2016, p.412) defines saturation as *'when no new or relevant data are emerging'*. Lichtman (2014, p.259) describes it as being *'when there appears to be sufficient data to understand a concept'*. Silverman (2013) and Maxwell (2013) however, focus on number of interviews being attuned to answering the research problem, whilst Adler and Adler (2012) discuss the number of interviews needing to be aligned with the methodology chosen. In relation to the latter, and the GQR approach taken, a 'larger than normal' sample is often used in order to bring breadth to a study (Bellamy *et al*. 2017). Although Bellamy *et al.* (2017) do not refer to a specific number they give some guidance that the number is beyond that used in small qualitative studies. In addition, as a maximal variation sample was used, very small numbers of interviews could be problematic in achieving the diversity that was being sought. Hagaman and Wutich (2017) describe 20-40 interviews being needed to each data saturation for meta-themes to emerge. In addition, Adler and Adler (2012) advise on a *'broad range of between a dozen or 60, with thirty being the mean* (p.10). Furthermore, Braun and Clark (N.D), recommend

undertaking 30+ interviews for a UK PhD. Taking on board these considerations, 30 interviews were undertaken, with data saturation being achieved with this number.

3.6.3 Online forum posts

In order to capture posts for study three, sampling of forums, and then threads on forums, was undertaken (see figure 8 for the sampling strategy). However, there appears to be little discussion or consensus in the literature regarding sampling strategies when using online forums as a method of data collection. This is perhaps due to the 'online' nature of the data collection method, which is still relatively new, and sampling strategies being framed for more traditional methods of data collection. However, due to the qualitative nature of many of the studies using forum posts, a purposive sample appears to be the strategy of choice (Boyer 2011; Callaghan and Lazard 2012; Gray 2013; Morris *et al.* 2016). Examples include selection of forums based upon forum 'popularity' (Goh and Chi 2017; Knowles and Wilkinson 2017). Widemalm and Hjärthag (2015) describe an approach where individual forums were scrutinised for relevance to their subject, and eligibility criteria were developed within a purposive sample in studies by Morris *et al.* (2016), Herron (2013) and McInnes *et al.* (2015).

Figure 8 Sampling strategy for forums, threads and posts



Purposive sampling was chosen as the forum sampling strategy for study three. Purposive sampling allows the researcher to search for cases (in this case forums) of specific interest to the study being undertaken (Maxwell 2013; Silverman 2013). It also requires the researcher to think critically in relation to the parameters of the population being studied (Silverman 2013). In relation to study three, a purposive sample enabled selection of forums that would further build upon and explore the results of the online questionnaire, giving greater understanding of the mothers' experiences. The ubiquitous nature of the internet adds a further dimension to forum selection, with Kozinets (2015, p.17) advising researchers to '*be aware of this landscape as we seek to match our research interests to available sites…'*. Furthermore, sampling must remain within ethical boundaries and these can be complex in online research (discussed in more detail under section 3.8).

In relation to the selection of online threads and posts within the forums, a further sampling strategy was required. Similar to forum sampling, there is little discussion or guidance concerning the selection of posts from forums. However, various sampling strategies have been used previously in relation to parenting forums and infant feeding. Gray (2013) employed a random sample using a skip pattern, whilst Callaghan and Lazard (2011) undertook 'ethical sampling' to ensure their posts were not deemed to be 'help seeking' behaviour. In relation to the current study, purposive sampling was chosen as in previous studies (Boyer 2011; McInnes *et al.* 2015; Morris *et al.* 2016), to ensure threads and posts 'remained on topic', and could be related to the overall research aim and research questions. Sampling was guided by inclusion criteria in order to obtain posts and threads that were relevant to the subject of bottle refusal and, in turn, used to explore the mothers experiences (The process of selection of forums and online threads and posts is detailed in chapter 6).

3.7 Data Analysis

3.7.1 Online Questionnaire

Attention to how the questionnaire was going to be analysed had begun during its developmental stage (Bryman 2016; Pallant 2016). It was acknowledged that features

such as using a non-probability sample, and including closed and open-ended questions, would impact upon the analysis undertaken. Where applicable, categories were merged and re-coded and a 'code book' was kept as advocated by Pallant (2016), to enable an 'audit trail' of actions taken and decisions behind them. SPSS v.23.0 was chosen to analyse data. Statistical advice was sought and utilised from a university statistician in relation to data analysis, and a university epidemiologist in relation to interpretation of analysis.

Non-parametric tests were used as advocated by Field (2013) due to non-normal distribution of data. Although non-parametric tests are generally viewed as being less powerful and 'inferior' to parametric tests, when data does not meet the assumptions of parametric tests they are deemed to be the valid alternative (Field 2013; Bryman 2016; Pallant 2016). Due to the large size of the data set (841 responses), significant results can be more common and can be 'easily misinterpreted' (Field 2013; Pallant 2016; Robson and McCartan 2016). In response to this, significant results were presented with calculated effect sizes and reported using Cohen's criteria for effect (Pallant 2016) (see chapter 4 for further discussion of data analysis).

Qualitative data from open-ended questions was imported directly into NVivo11, and coded and themed using thematic analysis (Braun and Clark 2013) (see chapter 4 for further details of the analysis).

3.7.2 Semi-structured interviews/forum posts – studies two and three

Due to the large quantity of qualitative data collected, NVivo 11 was used to assist with data management and analysis. The introduction of computer systems to analyse qualitative data has received various negative comments mainly in the form of it reducing the researcher's engagement with their data and thus impacting upon findings. However, in the case of this programme of research, NVivo was used as a tool to aid data analysis, rather than to take the place of the researcher.

Thematic analysis as described by Braun and Clark (2013) was the analytical method chosen to analyse the interview data and the online forum posts. Thematic analysis is

often used with a GQR approach due to its flexible nature, it stands independently as a 'method' of analysis rather than one that is aligned to a particular philosophy or type of data collection method (Gregg *et al.* 2012; Braun and Clark 2013).

TA can employ a *'bottom up data driven'* approach in order to establish themes, (Braun and Clark 2013, p.179), which enables the researcher to focus on patterns of data. In addition, TA allows for an inductive approach to analysis (Thomas and Harden 2008; Gregg *et al.* 2012; Braun and Clark 2013; Hawkins 2017) allowing a closer understanding of unknown phenomena. These approaches were particularly applicable to this programme of research, in that they would produce true representations of the mothers' experiences. However, for this to have an impact it required results that would be accessible to clinicians and, importantly, mothers, which TA could produce due to its straightforward and forthright application. In relation to this, Braun and Clarke (2014) describe how TA can be especially pertinent to health researchers as:

> *'A toolkit for researchers who want to do robust and even sophisticated analyses of qualitative data, but yet focus and present them in a way which is readily accessible to those who aren't part of academic communities'* (p.2).

In addition, Gregg *et al.* (2012, p.16) describe how '*its (TA) primary concern is with presenting the stories and experiences voiced by study participants as accurately and comprehensively as possible'*.

It is, however, the straightforwardness and simplicity of undertaking TA that appears to afford it various criticisms. Braun and Clark (2013) themselves describe potential weaknesses as being due to its '*limited interpretative power'* (p.180), especially if an existing theoretical framework is not utilised. They also note, that due to the focus being on patterns individual voices or accounts can be lost, although this would very much depend on the researcher's application of TA, which could include individual cases. In addition, it is perhaps the 'generic nature' of TA, a feature that is attractive to researchers, that renders it as *'lacking in substance'* (Braun and Clark 2013, p.180), or presents *'themes that lack depth'* (Hawkins 2017, p.1759). In the case of this programme

of research, the use of the conceptual and theoretical frameworks increased interpretation of the study findings. The many advantages of using TA outweighed its potential limitations, and it was deemed to be the most appropriate form of qualitative analysis. How TA was undertaken in relation to studies two and three is detailed below. Owing to the flexibility and adaptability of TA, the same approach was used for both studies two and three.

Pre- stage analysis - 'Big ideas'

During the interviews and online post capture, corresponding word documents were kept containing potential areas of interest and patterns that were emerging at the time. The word documents were imported into NVivo 11, added to, and updated throughout the data collection period of studies two and three. These initial thoughts are referred to as 'big ideas' by Bloomberg and Volpe (2016). This led to preliminary analysis occurring almost simultaneously with data collection, because as noted by Braun and Clark (2013), *'there is not always a clean separation between data collection and data analysis'* (p.204). These initial thoughts regarding data are often instinctive and can be invaluable as an adjunct to the more systematic approach of thematic analysis. However, Braun and Clark (2013) additionally ask researchers to exercise caution when employing them. They state they are not based on a *'systematic engagement with the data'* (p.204), they can highlight the most obvious, and may also be influenced personally. This was taken into consideration when the 'big ideas' were later used to refer to when coding and theming the data.

Stage One - Reading and familiarisation of the data

Braun and Clark (2013) describe this phase of data analysis as *'essential beginnings'*, a time when the researcher becomes *'intimately familiar'* with their data (p.204). During this stage the interview recordings were listened to repeatedly and the transcriptions read and re-read. Similarly, the online posts were read and re-read. *'Noticings'* as described by Braun and Clark (2013, p.204) were made by questioning the data and attempting to make sense of the mothers' experiences. They were added to the 'big ideas' word documents and referred to when coding and theming of data took place.

Use of mind maps

In addition, a glass notice board was used to draw simple mind maps of patterns of data that were emerging from the interviews and forum posts. These were updated and refined regularly during the analysis process. They were photographed, saved to One note, and imported into NVivo11. They provided a visual journey of how the data analysis was developing and were referred to during the coding and the development of themes. Mind maps are habitually used as a form of visual data collection, however they have been used effectively as a primary method of data analysis as well. Burgess-Allen and Owen-Smith (2010) compared them favourably with traditional thematic analysis when analysing focus groups. One of the advantages of mind mapping over standard note-taking is that it appears to reflect our natural thinking patterns, which are said to be non-linear (Burgess-Allen and Owen-Smith 2010). In the case of studies two and three, mind maps were used to enhance the analysis process rather than as a stand-alone strategy (see appendix A).

Stage Two - Coding

Braun and Clark (2013) describe coding as providing *'the building blocks of analysis'* (p. 207). A systematic process of 'complete coding' was undertaken, whereby all areas of relevance to the research questions or of interest were identified and coded across the entire data set (Gregg *et al.* 2012; Braun and Clark 2013). Braun and Clarke's motto of 'inclusivity' was followed, in that data that may or may not be relevant was still coded. In some cases these codes were eventually disregarded, however others were merged and formed the basis of themes. The codes were continuously reviewed, a process which led to merging of overlapping codes and renaming codes to ensure they reflected the data for both studies (see appendix B for screen shots of coding).

Use of memos

The memo facility in NVivo11 was employed to write short reflective memos during the coding process which discussed how codes had emerged and developed. The memos included examples of quotes from the transcriptions and the posts to further underpin the codes, and these were attached to the finalised corresponding codes. Although using memos is often associated with grounded theory, it has also been used successfully with

other qualitative designs (Snyder 2012 ; Chretien *et al.* 2015; Greene *et al.* 2017; Tierney *et al.* 2017) and is advocated by Maxwell (2013). The memos provided a reference point in relation to the coding, were an aid to merging repetitive codes, and contributed to the development of themes. During coding, reflections from the 'big ideas' document and mind maps were continuously referred to. This facilitated an iterative process, and in addition, allowed for some 'cross referencing' between the codes and the initial 'instinctive' pre-analysis.

The node facility of NVivo11 was used to manage the coding process. This resulted in 105 codes in relation to the interview data and 112 codes in relation to the forum posts. After restarting the coding (see below for reflective stop off), 95 codes were developed. Data saturation occurred for both studies when no new codes emerged.

Reflective stop off

I had been coding the interview data for 3 weeks. I had a break and on returning with 'fresh eyes' made the decision to restart the coding process from the beginning. There was too much repetition and a number of the codes did not appear to reflect the data that supported them. I was in danger of manipulating the data to create a story rather than systematically analysing it. I re-read Braun and Clarke's literature surrounding thematic analysis and looked at examples of how it had been undertaken. I began the process of coding again. I felt more confident that the codes emerging were representing what the mothers were saying during the interviews and were relevant to my research aim and questions.

Stage three – Initial themes generated

Initial themes were developed by identifying broader patterns of data between the codes which were organised around a central concept (Gregg *et al.* 2012; Braun and Clark 2013). This process required a deeper level of immersion in the data and was undertaken in order to address the aims and research questions of studies two and three. This process was aided by the 'Big ideas' document, mind maps, and the generated memos. Further memos were developed and attached to the initial themes,

reflecting their central organising concept. Six initial themes and six sub-themes emerged in relation to the interview data, and four themes and twelve sub-themes in relation to the online posts. At this point, the themes and sub-themes were given initial names.

Stage four – Themes reviewed

During stage four, the initial themes were reviewed and revised. Braun and Clark (2013) describe this stage as a form of quality control to ensure the themes emerge from the codes and data set. This was undertaken by referring back to the initial codes and then to the entire data sets, again to ensure the themes were reflecting the meaning of the mothers' discussions and posts in relation to their experiences of bottle refusal. At this point a colleague familiar with TA was asked to review a sub-set of the codes and corresponding themes in relation to the interview data (study two), to ensure that they were credibly linked. Only minor suggestions were made due to a high level of similarity being found. The themes for the interview data reduced to five with the sub-themes increasing to ten. The themes for the online post remained the same.

Stage five - Themes refined, defined and named

During stage five, the themes were reviewed in relation to the overall studies. Although the themes were discrete, they were also reviewed for coherence in relation to each other and for how they addressed the programme of research aims and questions. At this stage further refinement was undertaken in relation to the themes. The sub-themes of the interview data increased to twelve and the themes of the forum posts reduced to three, and sub-themes to ten. Naming of the themes and sub-themes was also completed; this process having commenced during stage three.

Stage six – Final report written up

During stage six, the findings were presented and illustrated by *verbatim* excerpts from the interviews and forum posts. This was followed by a discussion where the findings were interpreted in relation to the literature and the evidence surrounding infant feeding.

3.7.3 Final integration of studies

As discussed previously, the rationale for using MMR was in order to provide a complete picture of mothers' experiences of bottle refusal. Integration of data had already occurred at the research design and methods level, however in order for an understanding of the mothers' experiences of bottle refusal to be fully realised, the integrating of results at the interpretation and reporting level (Fetters *et al.* 2013), needed to be undertaken. Fetters *et al.* (2013) describe the importance of selecting an integration approach that 'fits' with the mixed methods approach undertaken. They describe the outcomes of integration of the data as being three fold: confirmation of findings between data, expansion of findings between data, and discordance between findings of data. If the latter occurs, Fetters *et al.* (2013) suggest various approaches including re-examination of the research methodology and exploring theory to explain the differences. Integration by a 'narrative approach' was chosen using a 'weaving' strategy as described by Fetters *et al.* (2013). A weaving strategy involves writing both quantitative and qualitative findings by themes or concepts. This allows an iterative process to occur across the data sets, with the quantitative and qualitative findings weaving around central themes or concepts (see chapter 7 for detailed discussion of integration of data).

3.8 Ethics

The consideration of ethics in research is an *'integral part of the research process'* (von Unger 2016, p.87). The British Psychological Society (BPS) discuss how undertaking any research with humans should be guided by ethical principles, including maximising benefit and minimising harm (BPS 2014). Robson and McCartan (2016) describe how it is '*self-evident*' that there are ethical considerations when research involves people (p.149). This programme of research received full ethical approval from the University ethics committee[6] , and in order to receive this various ethical issues were considered.

Due to the online nature of the questionnaire, consent was 'implied' upon mothers submitting it. The BPS (2014) discuss ways of gaining consent should be related to study

[6] ref no: 15/EHC/088

design and that implied or verbal consent (used in some of the interviews) may be utilised due to the context of the research. For consent to be 'informed', appropriate information is required for the participant. A participant information sheet (see appendix C) was embedded at the beginning of the questionnaire with an eligibility screen. This enabled mothers to have the opportunity to be conversant with the study prior to their decision to complete and submit it.

Preserving anonymity and respecting the privacy of participants (BPS 2014) are important features of research. The online questionnaire was anonymous with the Bristol Online Survey (Onlinesurveys.ac.uk) - the tool used to create the survey - generating a unique id for each mother. However, anonymity was not possible for the mothers who expressed an interest in being interviewed, due to the necessity of leaving contact details at the end of the questionnaire. In relation to this, all contact details were downloaded onto a password protected computer to which only the researcher had access. In addition, the mothers were reassured their details would only be used for the purpose of contacting them and would be deleted if they did not wish to be interviewed.

Mothers who expressed an interest in being interviewed were contacted via email or text (using a research phone purchased specifically for the research) and sent a participant information sheet (see appendix D). They were then contacted one week later to see if they would like to participate in an interview. This ensured they had a 'cooling off' period in order to read the participant information sheet and to ask any questions they may have had regarding the interview. A set of inclusion/exclusion criteria were developed and embedded within the participant information sheet in order to minimise the participation of vulnerable mothers or mothers unable to consent. Eligibility was re-confirmed verbally at the beginning of each interview.

All mothers who were interviewed were assigned a unique id number known only to the researcher. This was stored with their personal details on a password-protected computer to which only the researcher had access. The way in which the mothers consented to the interviews depended on the mode. Those mothers who undertook a face to face interview completed written consent (see appendix E). Hard copies were

stored in a locked filing cabinet in a locked office. Mothers who were interviewed via SKYPE/FaceTime or telephone were asked for verbal consent. This was digitally recorded using a dictaphone (used to record the interview) and noted in the transcriptions. In addition, a record of the mothers giving verbal consent was added to their contact details. The mothers were assured they could withdraw from the research at any time and that their data would be destroyed if withdrawal took place, in line with BPS (2014) guidance.

All remote interviews took place in a location in which only the researcher was present, to ensure confidentiality for the mother. Interviews were digitally recorded using a dictaphone and once they had been transcribed, the recordings were deleted from the dictaphone. Similarly, a university iPad was used for SKYPE/FaceTime interviews and once the interviews were complete, the contact details (SKYPE addresses/mobile numbers) were deleted from the records of the device, again to ensure confidentiality. The mothers were assured that any transcripts of their interviews would not contain identifying names. The mothers who took part in the interviews were made aware that their comments might be used verbatim in publications/the thesis, but that confidentiality would be ensured by using a unique id number. Although the majority of interviews were transcribed by the researcher, six were transcribed by a university approved professional transcriber. A confidentiality agreement was completed by the transcriber and the interviews were sent and returned via a drop box facility to maximise security.

Whilst the risks of participating in the research were perceived to be negligible, it was acknowledged that some participants might have found the subject of bottle refusal and its negative consequences, anxiety provoking and stressful. In addition, mothers may have disclosed methods they used to introduce a bottle that were harmful to their baby. The mothers might also have asked for health advice due to the researcher being a midwife. Although none of the mothers needed it, a contingency plan of signposting to relevant health professionals was in place if required. The supervisory team would also have been informed. A risk assessment form was completed in conjunction with the research (see appendix F).

Although the same ethical principles apply to research using the internet (BPS 2017), it can present the researcher with certain complexities not seen with more traditional forms of data collection (Germain *et al*. 2017). What constitutes the public or private domain, and how consent is gained, were particularly applicable to study three. The BPS describe the public domain as one '*that is readily accessible by anyone'* (BPS 2017, p.7). In line with this they state that valid consent is required if one cannot reasonably argue that online data is in the public domain (BPS 2017). Taking this into consideration inclusion/exclusion criteria were developed (discussed further in chapter 6); any forums/Facebook groups that were password protected or required a membership were excluded. This ensured that posts would only be extracted and used for the research if they were considered to be in the public domain.

When conducting online research, further challenges in relation to the use of verbatim posts can arise (Germain *et al.* 2017). The BPS (2017) ask for careful consideration in relation to this, owing to traceability via search engines. However, due to the risk of harm being exceptionally low, a decision to use verbatim posts as opposed to paraphrased ones was made. In addition paraphrasing could add a further layer of interpretation which could alter the poster's original intention and meaning (Germain *et al*. 2017). All forum posts were allocated an Id, which was known only to the researcher.

Although research ethics and internet mediated research remains a constantly evolving landscape, it should be acknowledged that many research studies have used online forums and verbatim posts (Callaghan and Lazard 2012; Gray 2013; Herron 2013; Morris et al 2016; Knowles and Wilkinson 2017). In relation to the current programme of research, the posts were deemed an important part of the mothers' experiences, giving them a voice in relation to the scenario of bottle refusal.

Reflective stop off

In addition to the online forums, breastfeeding Facebook groups were considered as a source of online data collection. Three closed Facebook groups had been named in the free text of the online questionnaire. However, ethical approval had been granted to collect data from non-password protected or non-membership online platforms only, so I returned to the ethics board to gain approval to collect data from these groups. Approval was deferred and it was suggested by the chair of the ethics committee that I make contact with the Facebook group moderators to discuss the potential collection of data. One group moderator immediately refused access to any data – stating it would be unethical due to the closed nature of the group. The second Facebook group moderator did not respond to any requests. The third Facebook moderator invited me to a meeting to discuss the research. She was enthusiastic regarding the research topic, although due to the closed nature of her group preferred posts to be paraphrased rather than verbatim. She contacted her managers (the group was overseen by the city council) for final approval. There appeared to be a certain level of suspicion concerning the use of posts for my research and eventually my request was escalated to the city council lawyers. Despite further correspondence with the moderator no decision was forthcoming concerning my request. This was frustrating. Due to time constraints I decided not to pursue this and to use the online forums only. This situation gave me food for thought in relation to the nature of 'gatekeeping' by forum moderators. In the case of the first forum moderator, who was understandably protective of the group, there was also perhaps a level of 'paternalism' taking place. The forum moderator had in effect prevented the mothers' voices from being heard in relation to bottle refusal – although some of these mothers had taken part in the questionnaire and interviews. In addition, reflecting upon the first and third Facebook group responses, I became aware of the procedural difficulties in using online data outside of the public domain. There was also perhaps an element of refusal/non-engagement due to this form of data collection being new and outside of the traditional norm. A further option would have been to contact members directly to use their quotes (as suggested by the ethics board), however, due to the transient nature of those using the Facebook groups, this was not considered a viable option.

3.9 Trustworthiness

Robson and McCartan (2016) describe 'trustworthiness' as being to an extent '*common sense'* (p. 85), defining it as when the researcher undertakes their research in an open and honest way and does a good and thorough job. The emphasis is on the active participation of the researcher to ensure trustworthiness during the undertaking of their study. This is endorsed by Morse (2018), who describes how quality *'should be achieved during the process of the enquiry rather than being awarded after completion'* (p.803).

The 'criteria' to ensure trustworthiness in the case of qualitative and of quantitative research differs. Quantitative research is concerned with reliability, validity and generalisability (Bryman 2016). There has been much discussion concerning the applicability of these criteria to qualitative research, the general consensus being that Guba and Lincoln's criteria of credibility, transferability, dependability and confirmability, are more appropriate (Guba and Lincoln 1989). This does not however prevent authors from using terms such as 'validity' in relation to qualitative research (Maxwell 2013), with the meaning being used within a qualitative context. It is important for this study however, that while terminology is different concerning quantitative and qualitative research, and sometimes used interchangeably, the requirement for trustworthiness remains applicable to both. In order to ensure trustworthiness was apparent throughout the programme of research, and to overcome the complexities of using quantitative and qualitative methods, an adapted quality framework for mixed methods was used, developed by Tashakkori and Teddlie (2010). Alignment of the stages of the programme of research to this quality framework are detailed in table 6. The integration of findings for all three studies used a similar approach and this is detailed in chapter 7.

Table 6 Application of stages of programme of research to adapted quality framework for MMR

Stage of research	Assessment of quality	Application
Planning	Planning Quality	>Literature reviewed surrounding key areas of infant feeding pertaining to bottle refusal. CASP tool used to critically review research. Focus on literature concerning infant feeding in UK to ensure contextualisation of current programme of research. Conceptual framework and SEM used to develop and guide the study.
	Rationale transparency	>Due to limited knowledge of the scenario of bottle refusal, MMR selected to give wider understanding to scenario and provide greater level of knowledge.
	Planning transparency	>Programme of research underpinned by pragmatism and approach of GQR used - both aligned conceptually and theoretically to MMR. Data collection methods in keeping with MMR and selected to enable understanding of mothers experiences. Data analysis methods aligned to pragmatism and GQR.
Undertaking	Design transparency	>Mixed methods sequential design used, adapted from Creswell and Plano Clark (2011). Emphasis given to qualitative data in order to focus the research on mothers' experiences and the exploratory nature of the research.
	Design suitability	>Design deemed appropriate for meeting the overall research aim and questions. Used a combination of an online questionnaire to produce initial understanding of mothers' experiences of bottle refusal, followed by interviews and online analysis of posts in order to expand initial analysis, producing greater understanding.
	Design strength	>Rationale for and strengths of MMR, the GQR approach, the data collection methods, sampling methods and methods of analysis explored and discussed in detail. Limitations of these design elements also considered and discussed.

	Design rigour	>Programme of research followed the principles of MMR and GQR and the underpinning philosophy of pragmatism. Sampling, mixing and integration of data was undertaken in line with the planned sequential design in order to produce a greater understanding of mothers experiences.
	Data quality	>Each method of data collection described in detail including its 'role' in the overall research. Data collection methods aligned to overall research aim and research questions.
	Data rigour	>Data collection methods developed in their own right and in relation to MMR design. Priority given to qualitative data however not at expense of quantitative data. Pilot studies undertaken with studies one and two with mothers. Experts in infant feeding used for face and construct validity of questionnaire.
	Sampling adequacy	>Convenience and snowball sampling used for questionnaire to enable exploration of scenario of bottle refusal. Eligibility criteria embedded in questionnaire to ensure mothers participated from UK only and met criteria. Maximal variation sampling used for interviews taken from mothers who completed questionnaire to provide continuity. Extensive sampling strategy devised for selection of online forums and capture of online forum posts using an inclusion/exclusive criteria.
	Analytic adequacy	>Rationale for selected data analysis techniques described in detail. Codebook kept of all coding and merging of data for questionnaire to provide audit trail. Statistical support sought from statistician and epidemiologist in relation to testing and interpretation of results. TA used for qualitative data analysis. Detailed process of Braun and Clarke's six stage analysis discussed. Codes and theming checked by colleague to ascertain similarity (study two).
Interpretation	Interpretive rigour	>Findings from each study were analysed in relation to infant feeding literature and written up separately

	Interpretive consistency	>Inferences from questionnaire data emerged directly from quantitative findings. Inferences from interviews and forum posts were aligned to and clearly emerged from themes developed.
	Theoretical consistency	>Findings from each individual study were interpreted in relation to current infant feeding/relevant theory.
	Interpretative agreement	>Findings from each individual study were peer reviewed by infant feeding expert, and viewed by supervisory team – agreed with interpretations.
	Interpretive distinctiveness	>Findings from each individual study were reviewed for credibility by infant feeding expert. In addition, own knowledge and practice applied.
	Interpretative efficacy	>Findings from three studies interpreted using quality criteria for interpretative rigour as a framework.
	Interpretative correspondence	>Findings from each individual study correspond to the aims and research questions of each study.

3.10 Conclusion

This chapter has presented the methodology underpinning the programme of research. It has discussed the rationale behind decisions to undertaken an MMR using GQR and debated the potential ethical issues in relation to the programme of research. In addition, the rational for data collection methods – including their modes and sampling strategies - have been described. Transparency concerning the trustworthiness of the programme of research is presented by alignment to a quality framework.

The following chapter will discuss the undertaking and findings of study one.

Chapter 4 - An online questionnaire exploring mothers' experiences of bottle refusal by their breastfed baby (study one)

4.1 Introduction

This chapter presents study one of the overall programme of research. Study one explores mothers' experiences of bottle refusal by their breastfed baby using an online questionnaire. The chapter discusses the participant sample, development of the online questionnaire and recruitment strategy employed. In addition, it presents the pilot studies undertaken, data analysis and study results. The chapter concludes with a discussion of the results focusing on the literature surrounding infant feeding, and consideration of the limitations of the study. Reflective/reflexive stop offs taken from a reflective diary are interspersed within the chapter and have been used to put thoughts and actions during this stage of the research into 'real time' context.

4.2 Study aim and research questions

This study aimed to provide an initial understanding of mothers' experiences of bottle refusal. It aimed to explore the background and characteristics of bottle refusal, and to capture demographic data of the mothers who experienced it. In addition, it aimed to investigate potential relationships between bottle refusal and independent variables. Findings from the study were explored in studies two and three. It focused on answering the research questions as detailed in chapter 1, under section 1.3.

4.3 Study Participants

The questionnaire aimed to recruit UK mothers who were experiencing or who had experienced bottle refusal by their breastfed baby. The following inclusion criteria were developed:

- UK mothers who have experienced bottle refusal by their breastfed baby in the past 5 years or who are experiencing it now.
- Mothers whose baby was born after 37 weeks gestation.
- Mothers whose baby has no serious health problems.

- Mothers >18 years.

The inclusion criteria were developed in order to minimise participation of vulnerable babies and mothers. They were placed at the beginning of the questionnaire, embedded within the participant information form.

As there are no data regarding numbers of mothers who experience bottle refusal, a five year time period within which mothers could have experienced it was selected. This would be reliant on maternal recall. The use of maternal recall in infant feeding research is common, due to the majority of studies collecting data retrospectively (Agampodi *et al.* 2011). However, there is potential for 'recall bias', affecting the accuracy of data collected. Studies undertaken to investigate the extent of recall bias/accuracy and infant feeding have produced varying results. Gillespie *et al.* (2006) found mothers tended to overestimate recall of cessation of breastfeeding by one month at three years, and by two weeks at six months. They also found length of time to recall led to greater errors. Launer *et al.* (1992) found recall based on mothers' paired responses to be accurate up to 18 months. Although recall was less likely to be accurate in relation to the introduction of formula. Natland *et al.* (2012), followed mothers up 20 years after birth and found two thirds were accurate to within one month regarding breastfeeding practices, with a median overestimation of two weeks. However as with Launer *et al.* (1992), they found errors in recall were most likely in relation to the introduction of different types of milk. Agampodi *et al.* (2011), found maternal recall to overestimate duration of exclusive breastfeeding. However, as with the previous studies, a certain amount of social desirability could not be excluded pertaining to the overestimations. In relation to the current study, the use of a five year time limit could have a negative impact on the accuracy of the mothers' memory recall. In addition, based on the aforementioned studies, an element of social desirability concerning when mothers first attempted to introduce formula could lead to errors. However, this was balanced against a desire to strengthen sample numbers and the potential to include mothers who may have experienced bottle refusal with more than one baby.

The study was limited to UK mothers as breastfeeding practice outside of the UK may differ and data collected would not be comparable. Babies born prior to 37 weeks gestation were excluded due to their classification of prematurity, which can affect the sucking reflex (Simpson 2013). Babies with health problems were also excluded, as this could affect breastfeeding and could also impact on bottle refusal.

No age range for the baby was defined at time of bottle refusal, in order to capture the potential diversity of mothers' experiences. Although babies over six months of age would likely have been introduced to complementary foods, their mothers could still be experiencing bottle refusal.

4.4 Questionnaire design and development

A 22-point self-administered online questionnaire was designed using the Bristol Online Survey (BOS) (Onlinesurveys.ac.uk). The questionnaire was primarily designed to be used with a mobile phone utilising the 'fluid width' component of the BOS, which changes to fit the screen the participant is using. A progress indicator was included as it has been found to reduce levels of questionnaire abandonment (Couper 2008). A vertical format was used as it was compatible with scrolling. This format can also reduce respondent confusion (Bryman 2016). Skip patterns were included to limit unnecessary reading of questions, and to provide links from contingency (main) questions. Due to the respondents being mothers who often have little spare time to engage in research (Daniels *et al.* 2012), completion time was a consideration during development. This was estimated at less than ten minutes during the pilot study.

The majority of questions were made compulsory (21/22), in order to reduce incomplete submissions. In addition, the 'other' option was made compulsory and could be completed via free text. However, follow up responses to contingency questions were not made compulsory. Although they could give 'extra' information if completed, these questions could also increase respondent abandonment due to furthering completion time. Questions related to the subject (bottle refusal) were placed first, with

demographics at the end. This has been found to reduce questionnaire abandonment (Peterson 2000).

Due the exploratory nature of the questionnaire, some free text and open ended questions were included (see appendix G for questionnaire). Couper (2008) found data from open-ended questions in online questionnaires to be at least as good as with paper, and that the quantity was usually superior. In addition, Smyth *et al.* (2009) found open-ended questions lent themselves to web based surveys, especially in relation to being able to leave extra space for responses. In line with this, no restrictions were placed upon free text. It was decided to include an 'any other comments' section at the end of the questionnaire, in order to gather qualitative data that could be used to strengthen the questionnaire findings.

Question responses aimed to be mutually exclusive to reduce ambiguity (Sue and Ritter 2012). However, for some areas e.g. methods used, advice sought, mothers were able to select more than one option in order to provide as complete a picture as possible. Couper (2008) discusses the weaknesses of the 'check all that apply' question, with respondents tending to check only the first option. However, after reviewing the literature, it was deemed necessary to include this type of question in order to collect data that reflected the complexity of infant feeding. In addition, question responses were designed to be 'collectively exhaustive' to avoid too much free text (Sue and Ritter 2012). However, due to the lack of knowledge concerning bottle refusal, an 'other' option was included to collect data that was outside of the options presented.

4.4.1 Defining bottle refusal

A review of the literature revealed there was no prior definition of the term 'bottle refusal'. After an informal scoping exercise was undertaken at a Royal College of Midwives' conference in November 2015, the initial term 'bottle resistance' was changed to 'bottle refusal'. Midwifery clinicians felt that the term 'bottle resistance' was not commonly used amongst mothers and thus could be problematic in relation to understanding. In order to provide as complete a picture of bottle refusal as possible, the definition included both babies that had initially refused a bottle (and then possibly

accepted) and those that were still refusing one. In addition, it included both expressed breastmilk (EBM) and formula, in order to capture all scenarios surrounding bottle refusal. The following definition was created and embedded at the beginning of the questionnaire:

Bottle refusal is when a breastfed baby initially or continuously refuses to accept a bottle containing either expressed breastmilk or infant formula.

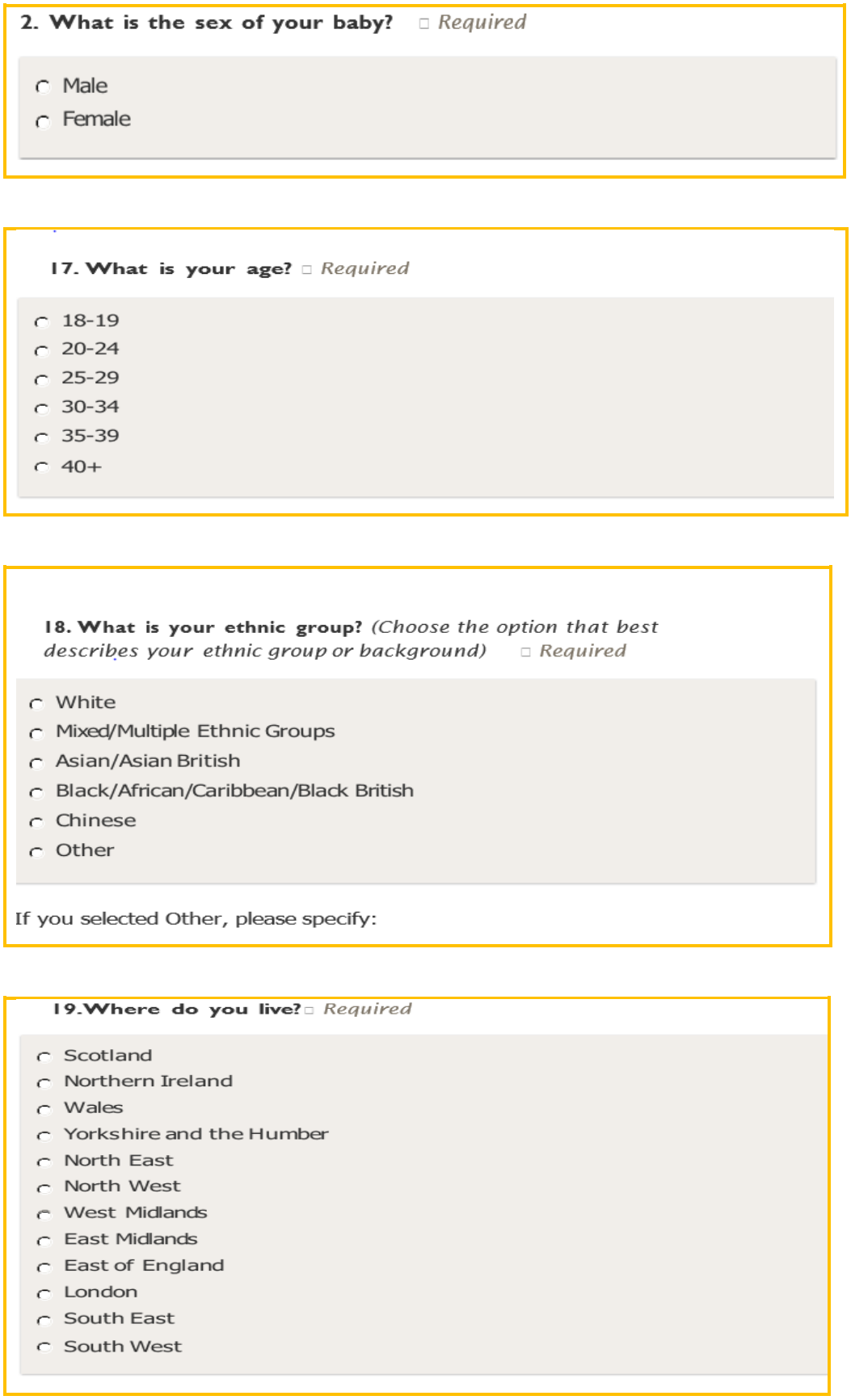
The following section will discuss the development of the questions and will contain screen shots pertaining to each question.

4.4.2 Question development

Questions were developed using the literature review, ONS categories and the 2010 IFS, McAndrew *et al*. (2012). In addition, online sources referring to bottle refusal and the researcher's knowledge and experience were referred to during development. Fellow colleagues familiar with the field of infant feeding were also consulted. Questions were aligned to the overall study's five research questions and guided by the conceptual and theoretical frameworks.

Questions regarding demographics and the background to bottle refusal were developed in order to provide baseline data, and to begin to provide an understanding of the context of bottle refusal (see figures 9 and 10). Although the questionnaire sample did not aim to be representative, it was deemed useful to be able to make some comparisons to the UK breastfeeding population using the last IFS (McAndrew *et al.* 2012). Demographic questions regarding age, where the mother lived, employment status (shortened version) and level of education were developed with categories based upon the IFS (McAndrew *et al.* 2012). Ethnic background was reported using ONS categories (ONS 2011). However they were shortened (not including the descriptors), as it was not felt this would compromise data analysis. A question regarding job title was developed to be coded using the online ONS occupation coding tool (ONS 2016). Sex of the baby was also included.

Figure 9 Screenshots of demographic questions taken from online questionnaire



2. What is the sex of your baby? □ *Required*

- Male
- Female

17. What is your age? □ *Required*

- 18-19
- 20-24
- 25-29
- 30-34
- 35-39
- 40+

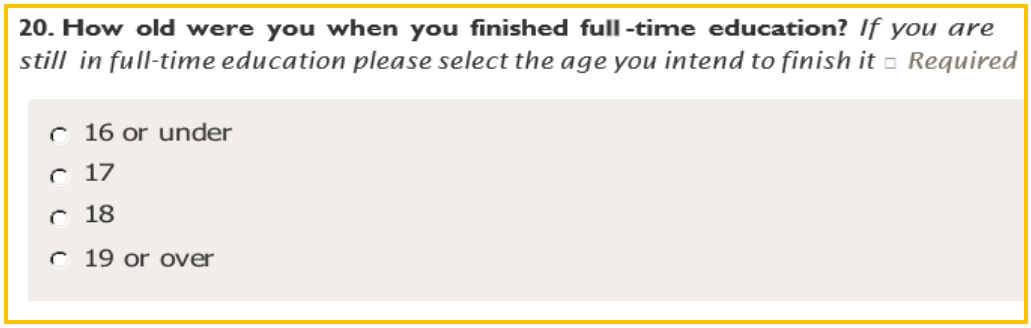
18. What is your ethnic group? *(Choose the option that best describes your ethnic group or background)* □ *Required*

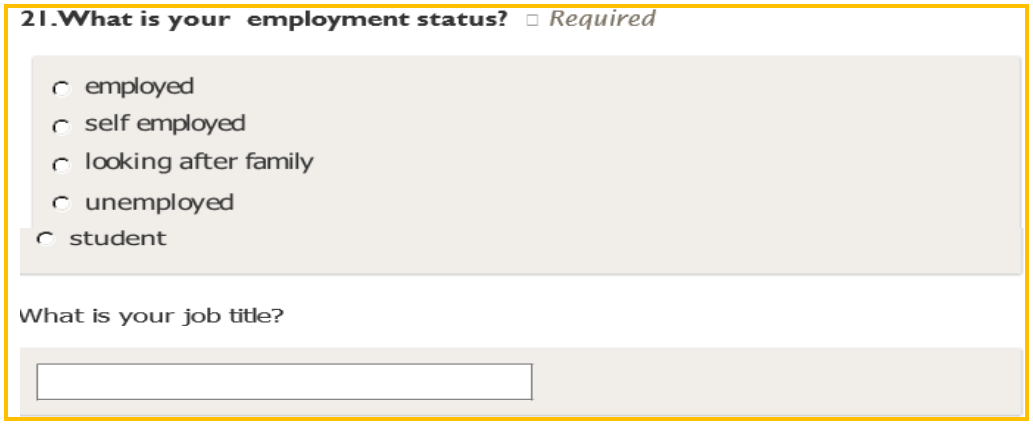
- White
- Mixed/Multiple Ethnic Groups
- Asian/Asian British
- Black/African/Caribbean/Black British
- Chinese
- Other

If you selected Other, please specify:

19.Where do you live? □ *Required*

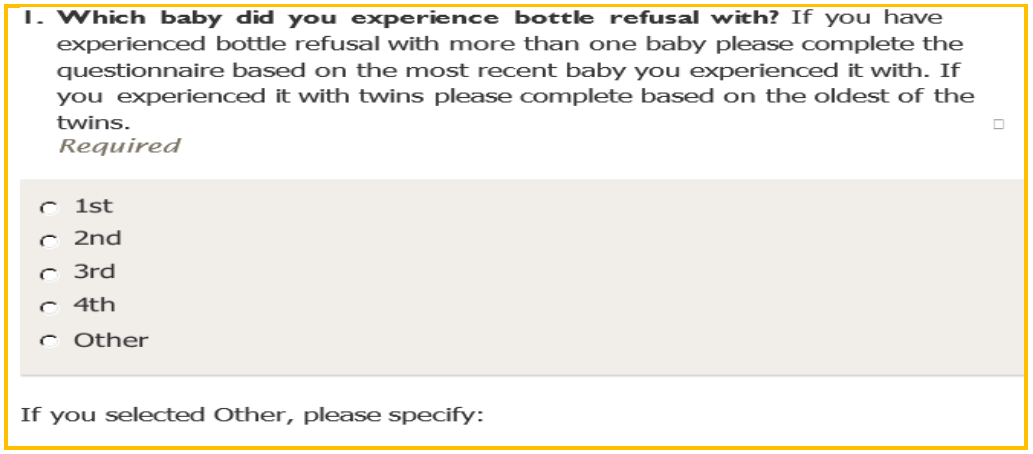
- Scotland
- Northern Ireland
- Wales
- Yorkshire and the Humber
- North East
- North West
- West Midlands
- East Midlands
- East of England
- London
- South East
- South West

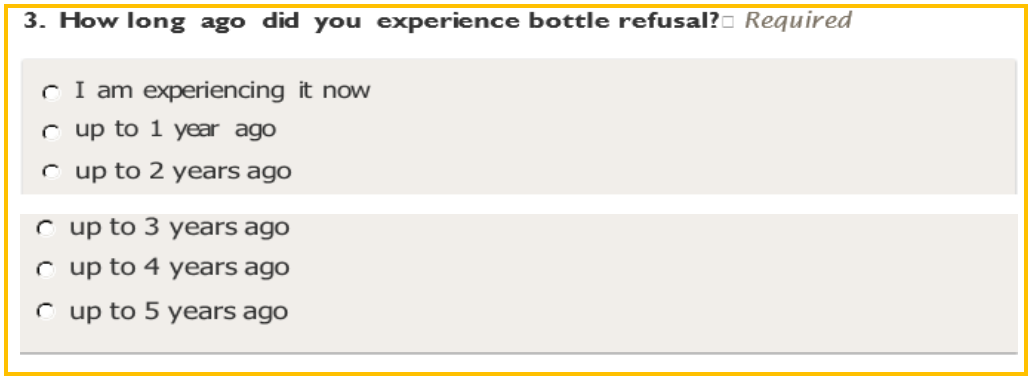


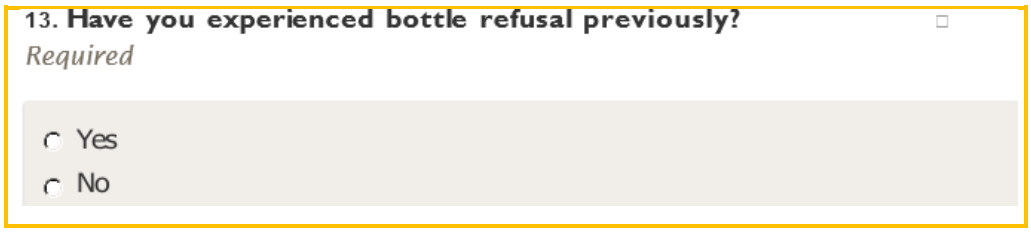


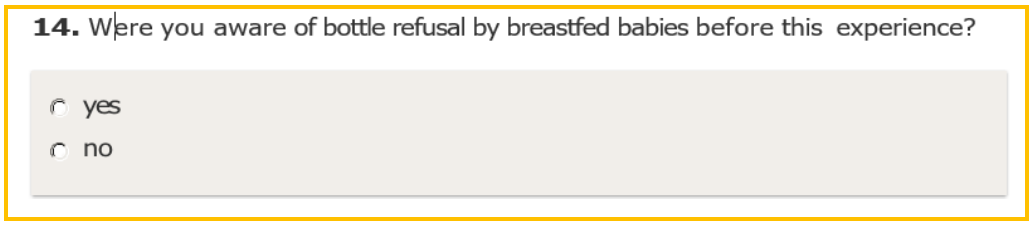
Further 'background' questions were developed to provide context to the mother's data, including providing a history – if any – of previous experiences, and previous knowledge of the scenario. (see figure 10).

Figure 10 Screenshots of background questions taken from online questionnaire



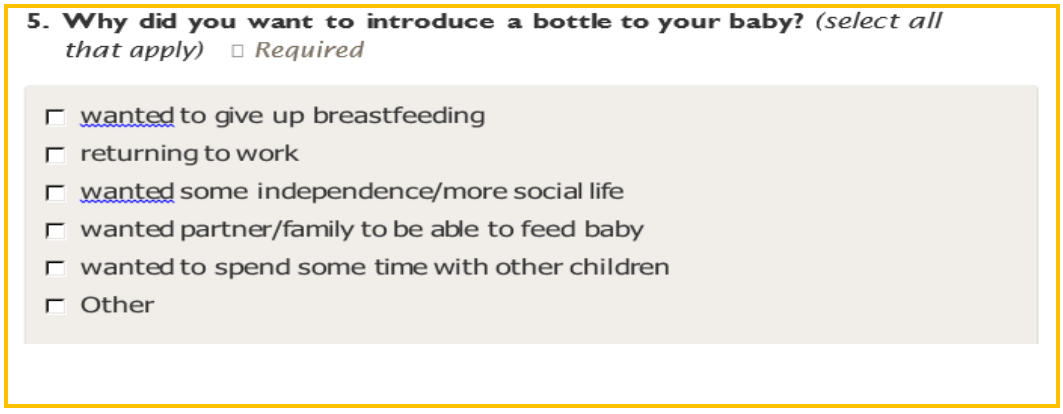






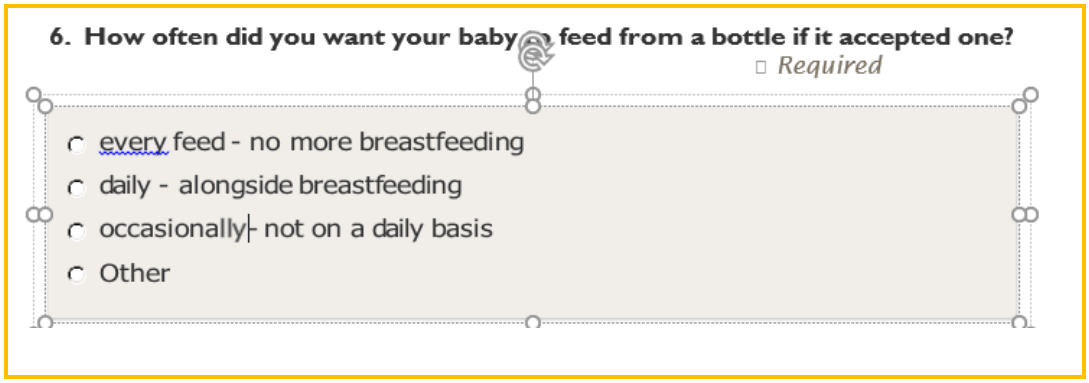
A question was developed to explore why mothers wanted to introduce a bottle to their breastfed baby, in order to encompass the complex influences on breastfeeding: (see figure 11).

Figure 11 Screenshot of reasons for introduction of bottle taken from online questionnaire



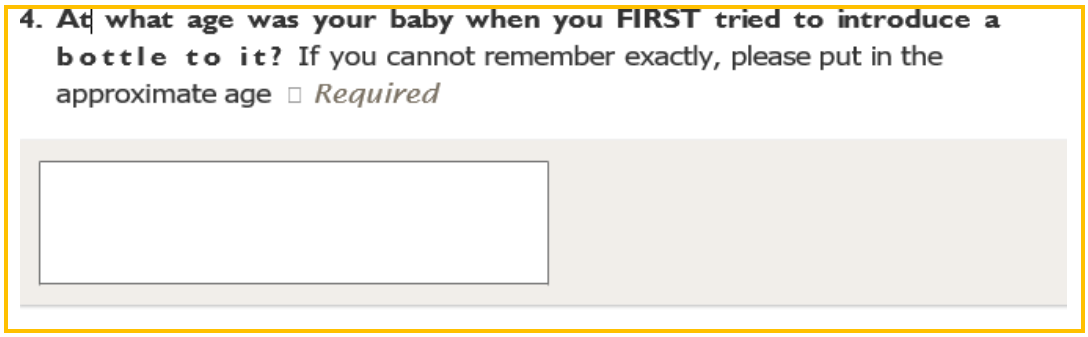
A question was developed to explore how often mothers wanted their baby to feed by a bottle if it accepted (see figure 12). This aimed to give further understanding to mothers' motivations behind bottle introduction.

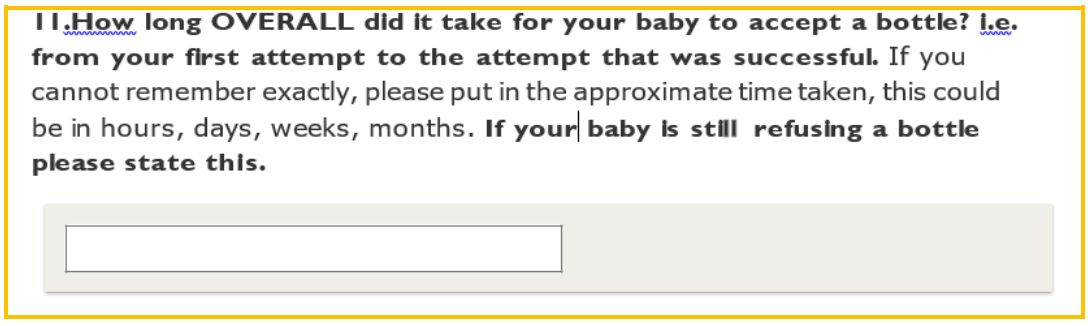
Figure 12 Screenshot of how often mothers to feed from bottle if accepted taken from online questionnaire



Questions were developed to explore mothers' management of bottle refusal, this included time and age-related questions. (see figure 13).

Figure 13 Screenshots of age and time-related questions taken from online questionnaire





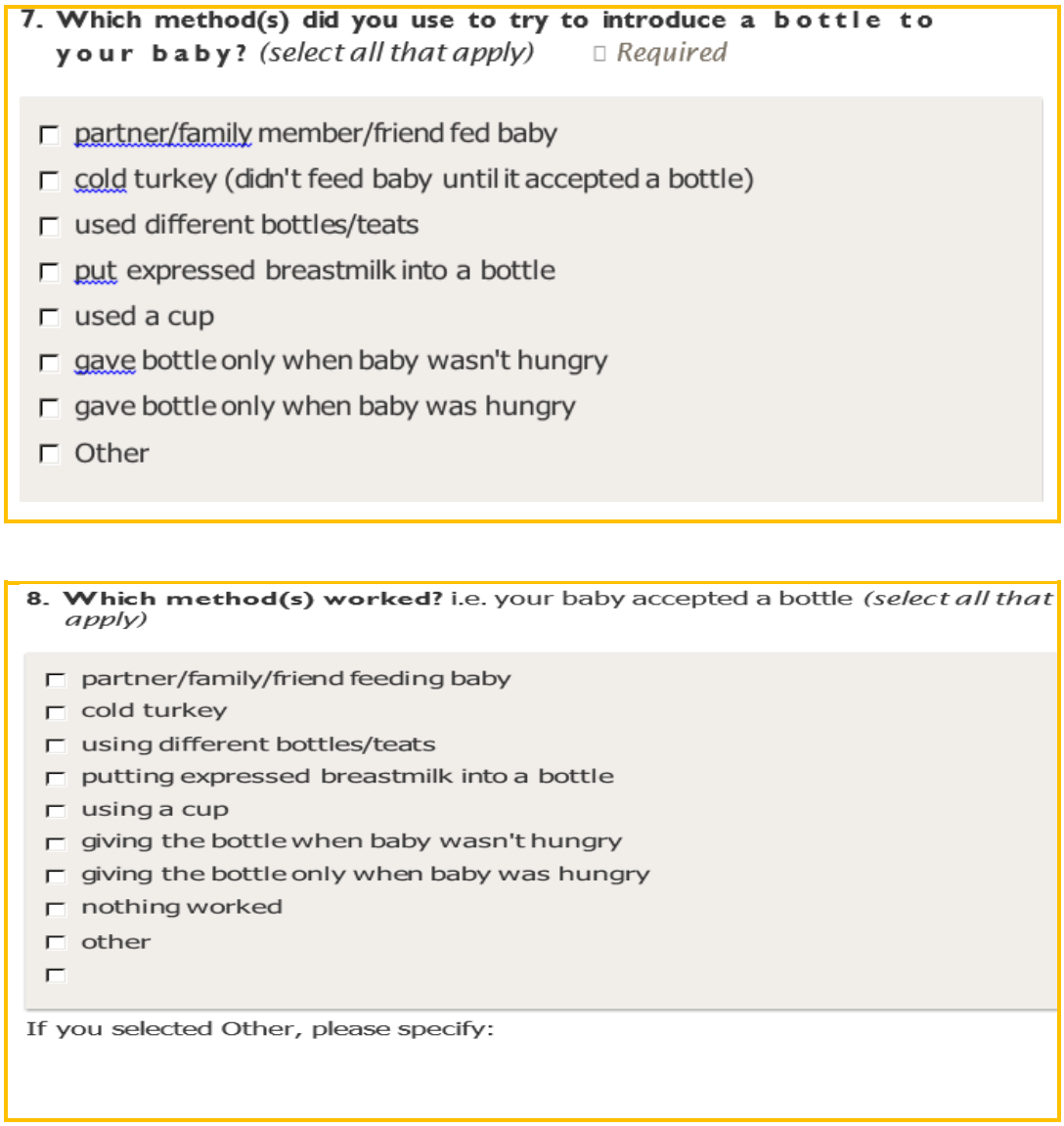
12. **What age was your baby when it accepted a bottle?** If you cannot remember exactly, please put in the approximate age. **If your baby is still refusing a bottle please state this.**

At three separate points during the questionnaire, mothers were asked to report time and age-related data, to explore timings around bottle introduction and bottle acceptance (if it had occurred). Mothers whose baby had not accepted a bottle were asked to state this in order for the responses to be coded into the variable of 'refusal'. (coding further discussed under 4.7). It was decided not to 'pre-specify' baby age categories as it was envisaged these would not produce data that was refined enough. In addition, due to the lack of knowledge concerning bottle refusal, there were no obvious age categories to use. It is acknowledged however that recall errors and telescoping errors - in this case the 'rounding' of times and ages – would have been inevitable with this type of question (Peterson 2000).

In order to minimise 'rounding', mothers had the option to complete some of the time related questions in either hours, days, weeks or months. Due to there being no consensus regarding reporting of age or timing in relation to infant feeding questionnaires (Hector 2011), an 'age conversion strategy' was developed to convert the ages to weeks (see appendix H). In order to maintain data accuracy and in response to possible maternal recall errors/bias, an equation was also developed, (age at introduction + length of time to acceptance = age at acceptance). Cases with a discrepancy of two weeks either way of the equation result were excluded from the analysis for questions 4, 11 and 12.

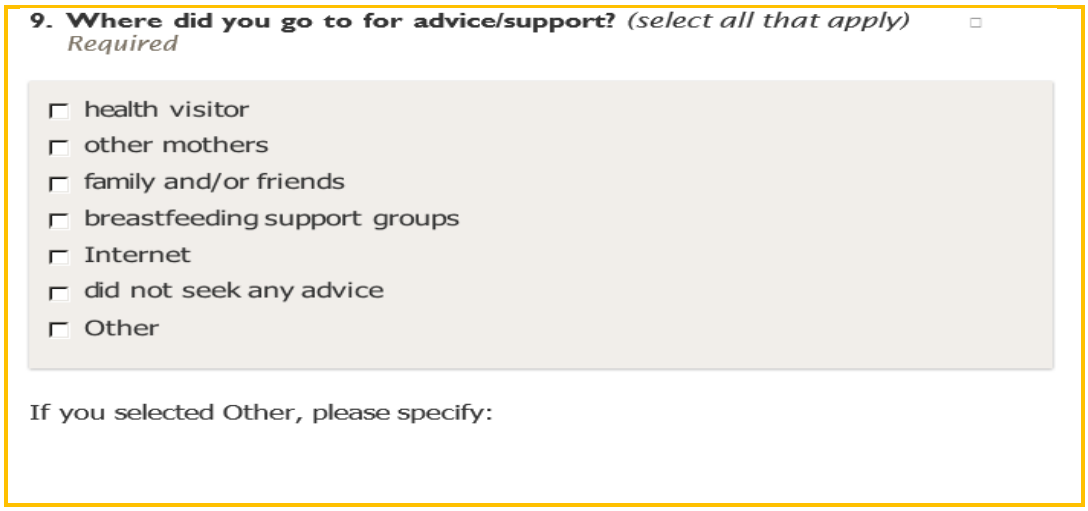
Questions were developed concerning the methods mothers employed to facilitate bottle acceptance (see figure 14). The methods were anecdotal and predominantly based on methods suggested during online discussions, although the methods used in Egan's study were also referred to (Egan 1988). Mothers were also asked which method(s) had worked in an effort to explore how bottle refusal could be managed.

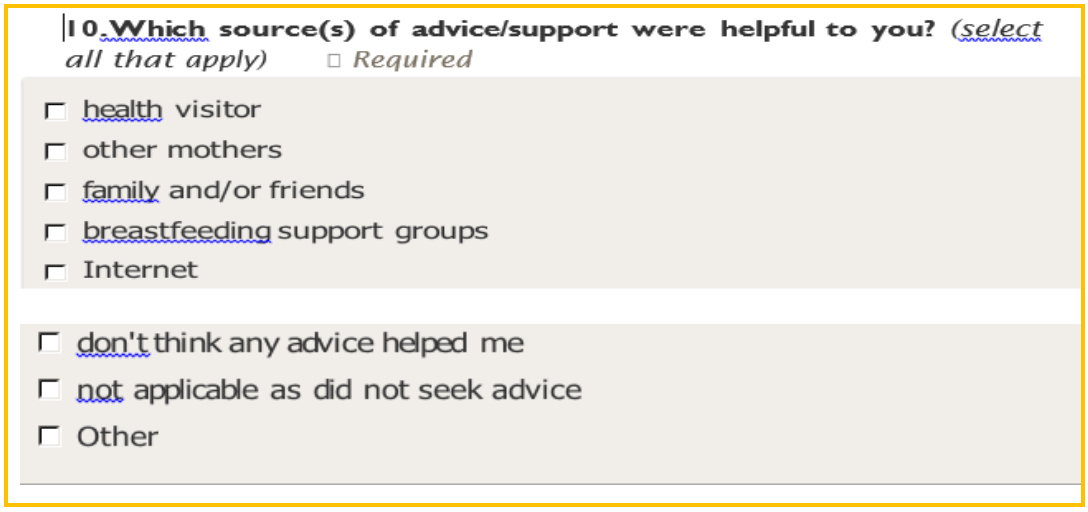
Figure 14 Screenshots of method-related questions taken from online questionnaire



Questions were developed to explore the sources of advice/support mothers sought in relation to bottle refusal, and how 'helpful' the advice/support had been (see figure 15). Sources were based upon common avenues of advice/support mothers use in relation to breastfeeding which were identified in the literature review and known to the researcher.

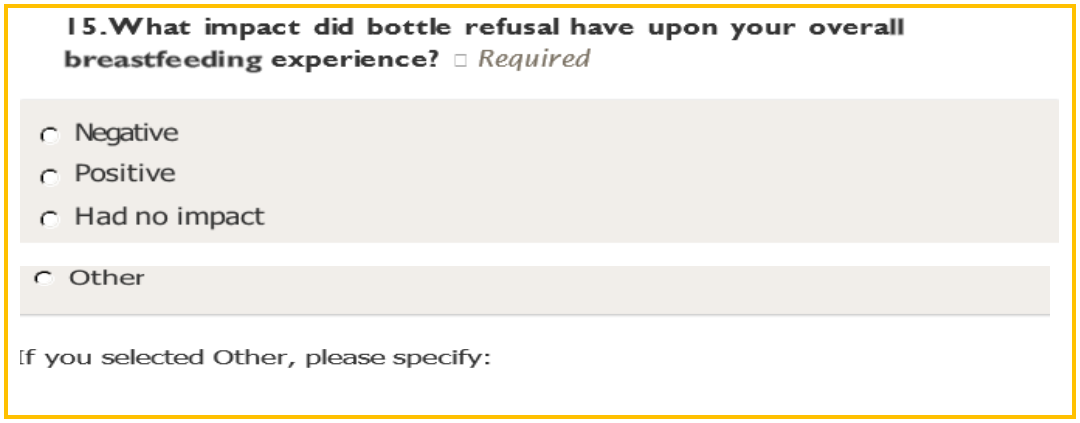
Figure 15 Screenshots of support/advice related questions taken from online questionnaire





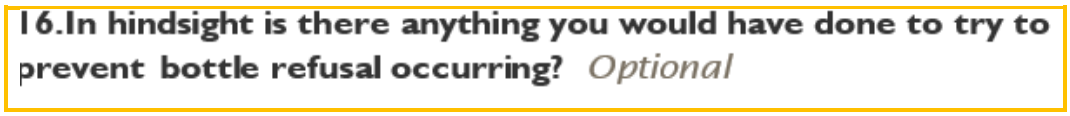
A question was developed to explore the impact of bottle refusal on a mothers' overall breastfeeding experience. (see figure 16). This was developed with particular reference to Egan's study (Egan 1988), where only a negative impact was found.

Figure 16 Screenshot of impact related question taken from online questionnaire



An optional question was developed in relation to what mothers would have done in hindsight to prevent bottle refusal (see figure 17). This was in order to explore why mothers thought their baby might refuse a bottle. This was developed with particular reference to Egan's study, where a suggestion to 'prevent' bottle refusal was made (Egan 1988).

Figure 17 Screenshot of hindsight question taken from online questionnaire



4.5 Pilot Study

The online questionnaire was piloted in order to ensure 'construct validity'. A URL link to the questionnaire was sent to eight midwives, a health visitor and a social worker for their feedback. All ten responded with feedback via email or verbally. Five mothers known to the researcher who had experienced bottle refusal also completed the questionnaire via a URL link. Feedback was sent using text. Three of the mothers also attended a focus group (see appendix I for notes from focus group). From the collective feedback, a small number of changes were made which are discussed below.

Two midwives highlighted that mothers may not recall some of the ages/timing exactly, especially if bottle refusal had occurred some time ago. In response to this, the term 'If you cannot remember exactly please put in the approximate age/time' was added to questions 4, 11 and 12. This had been used successfully in the IFS (McAndrew *et al.* 2012), although it was acknowledged that memory recall errors may be greater given that the current study covers up to five years. Peterson (2000), however, discusses 'encouragement' to try to answer accurately is more likely to gain a valid response.

In relation to why mothers introduced a bottle, 'difficulty in having a social life' was entered under 'other' during the pilot study. The term 'wanted some independence' was initially thought to encompass this reason, however it was decided to add the phrase 'more social life' to 'wanted some independence' to be more explicit. Thus, the option 'wanted some independence/more social life' was included.

In addition, feedback from one mother described how she had tried a number of times to introduce a bottle, but in between went back to breastfeeding. She was not sure how to answer the question regarding how long it had taken her baby to accept a bottle. Similar to Marquis *et al.* (1998), when they explored weaning off the breast, the question was designed to extract length of overall time it had taken to achieve bottle acceptance. The question was therefore altered to reflect this, by adding in the 'range' i.e. '*from your first attempt to the attempt that was successful*'. It was envisaged this question would be easier for mothers to understand, and would now deliver more accurate data that could be coded.

Two mothers fed back that they had tried a cup as a 'transition method' to try to move their baby from breast to bottle. This was included as a methods option. Completion time for the questionnaire was also gauged from the pilot and was found to be less than 10 minutes. Due to the changes made, a second pilot was undertaken with the same five mothers who initially completed the pilot. No further changes were made from this pilot.

4.6 Recruitment

Online recruitment of mothers has been undertaken successfully previously in relation to infant feeding studies via social media sites, websites and online forums (Brown *et al.* 2011; Lagan *et al.* 2011; de Jager *et al.* 2014). In relation to the current study, recruitment was initiated by a URL link being sent in March 2016 to five mothers from the North West of England who were known to the researcher. They were asked to share it, and posted it on closed Facebook breastfeeding groups and parenting groups to which they belonged. The URL link was also sent to a participant of a mailing group for women from different ethnic backgrounds. This was in a targeted attempt to reach mothers experiencing bottle refusal from ethnic minority groups. The URL link was closed after 841 mothers completed the questionnaire in two weeks.

Reflective stop off

The numbers completing the questionnaire came as a shock! It was released at 4pm and by the next morning 169 mothers had already complete it. I contacted my supervisor who was in turn surprised, we were anticipating it being a 'slow burn', and had contingency plans to leave it open for a year if need be. In addition, although it was not possible to calculate an appropriate sample size (there was no known population to use), I thought I would be doing well if I achieved 150 respondents. Numbers continued to rise. I could check them anytime using the BOS system and noticed mothers were completing it at all times of the day and night (including the early hours of the morning). Reflecting on the 'round the clock' completions, I wondered if some mothers may have been 'brexting' – a phrase coined by the Daily Mail for mothers who breastfeed and text (or use their phone) simultaneously. When numbers reached the 800's I became concerned about the manageability of the questionnaire – there was coding to do and free text was mounting up. I discussed this with my supervisor and I closed the URL after two weeks, with 841 respondents. I reflected upon a paper by Ellis-Barton who had discussed the term 'virality' in relation to her research being shared online without her control/knowledge, similar to mine. It was a learning curve. How I would approach this in relation to future online research I did not know, but through this experience I was able to understand the speed and connectivity of using online recruitment and the 'loss of control' that can occur. In addition, I reflected upon why so many mothers had completed the questionnaire in such as short space of time. I was aware of other PhD students who had posted their questionnaires on sites mothers used and had had little response over a long period of time. I felt my questionnaire had resonated with many mothers who wanted to share their experiences.

It was evident from the results of the questionnaire that geographical dispersal had occurred, although the routes it had taken were difficult to ascertain. A Google search using the questionnaire's title produced only one result, showing that it had been posted on the Scottish Perinatal Mental Health website. Tracking could have been achieved using analytics if the URL link had been shortened (e.g. using Tiny.url or goo.gl). However, the BOS generated long URL containing the questionnaire title was retained,

as it would look genuine to mothers and this could aid recruitment. In addition, tracking via analytics would not include snowballing, where mothers had texted/emailed the link to other mothers for example.

Reflective stop off (Part one)

I had begun to read the 'any other comments' section of the completed questionnaires. A number of mothers stated that they were glad to see someone was researching the topic, some wanted results 'asap' to try to help them, others described feeling 'desperate' for answers. Some emailed me to ask for advice. I began to feel a great sense of responsibility in my study being able to come up with answers for the mothers. I wanted to be able to help them. I attended an ethnography club and discussed my concerns. With relief, I met other PhD students who had been or were experiencing the same scenario. I was able to look at the study more objectively, focusing on its exploratory nature and its aim of providing a greater 'understanding' rather than answers to the scenario. I also focused on the study being able to give a voice to mothers and recognition of their experiences.

(Part two)

Whilst reading the free text I noted a minority of mothers that described the study as 'anti breastfeeding', and that by raising awareness of bottle refusal I would lower already very low breastfeeding rates. In addition, one of the mothers I sent the URL link to told me that her local NCT group were refusing to post the link on their Facebook site due to it 'not being supportive of breastfeeding'. I began to question whether the study could have a negative impact on breastfeeding. As someone who supports breastfeeding this concerned me. However, I also recognised that it was precisely this thought process that had potentially led to the scenario not being explored in the first place. In addition, due to the numbers of mothers completing the questionnaire, it had in effect 'touched a nerve'. I recognised a conflict in relation to the study and in turn understood it had to be disseminated carefully in order to preserve the mothers' experiences whilst also taking into consideration the wider impact on breastfeeding

4.7 Data Analysis

4.7.1 Data screening and coding

The online survey was imported directly into SPSS v.23.0, reducing input errors (Bryman 2016). Data was cleaned, screened for errors, coded and converted (where applicable). The data set variables were named, labelled and assigned values. When required, data responses were cross-referenced with the original online questionnaires.

4.7.2 Missing values

The data set was screened for missing values using SPSS descriptives. They were minimal for 21 out of the 22 questions due to these questions being 'required' (compulsory). A very small number of mothers had typed a letter or a full stop to bypass a required question. Missing values were apparent for 'optional' questions. These mostly followed up contingency questions generated by skip patterns i.e. 'Job title' as a follow up question to 'Employment status'. (All missing data is reported in the results section).

4.7.3 Coding of the variables 'eventual acceptance' and 'refusal'

Free text responses from mothers giving a length of time to acceptance, and age at acceptance (questions 11 and 12), were coded as 'eventual acceptance'. The term 'eventual' was used to illustrate that refusal had initially occurred. Free text responses from mothers to questions 11 and 12, which stated their baby was 'still refusing ', were coded as 'refusal'.

4.7.4 Conversion of age and time related data

Mothers' responses in relation to the age and time-related data for questions 4– age at which mother introduced a bottle, 11 – length of time to acceptance, and 12 – age of baby at acceptance, were converted to weeks using the age conversion strategy (see appendix H). Frequencies were run using SPSS to check for any errors in the age conversion process. Cases were then screened for errors using the equation (age at introduction + length of time to acceptance = age at acceptance) in relation to questions 4, 11 and 12. This resulted in 38 cases being excluded from the analysis of questions 4, 11 and 12 due to a discrepancy of greater than two weeks either way. After cross-

referencing against the original questionnaires, the cases were included for all other questions. They retained the code of 'eventual acceptance', as this was their status at completion of the questionnaire. During the conversion process, a further 14 cases were found to display errors in relation to time and age-related data. In these cases, mothers reported that their baby had briefly/once accepted a bottle, but had gone on to refuse. These responses could not be converted and were excluded from the analysis of questions 4, 11 and 12. After cross-referencing against the original questionnaires, the cases were included for all other questions. They retained the code of 'refusal', as this was their status at completion of the questionnaire.

4.7.5 Coding of job title

The ONS online occupation tool (ONS 2016) was used to code free text responses in relation to job title. Twenty eight cases were excluded due to some of the mothers' responses not being reconcilable with the online ONS occupation coding tool (ONS 2016).

4.7.6 Merged and recoded data

A small number of categorical variables were merged and recoded in order to undertake data analysis or to reduce categories (see appendix J).

4.7.7 Data not analysed

It was evident during data cleaning that data for a small number of follow up questions could not be analysed.

The follow up question to question 8 asked mothers to report how long 'cold turkey' had taken until bottle acceptance. Mothers reported this from a number of hours to weeks. It was recognised that further information was required as to whether the baby was eating complementary foods or not in order to contextualise the response.

The follow up question to question 13 asked mothers to report on which babies they had experienced bottle refusal with if they had experienced it previously. This question was possibly ambiguous as mothers may have reported on only previous babies or all

babies (including the current one) they had experienced bottle refusal with. Frequencies were reported, however no further analysis was undertaking concerning this question.

Question 3, which asked 'How long ago did you experience bottle refusal', had overlapping response categories i.e. a mother could be 'experiencing bottle refusal now' AND have legitimately 'experienced it in the last year'. Data were analysed using frequencies, as results remained potentially useful in relation to 'memory recall'. However, no further analysis was undertaken concerning this question.

4.7.8 Qualitative data analysis

Qualitative data in the form of free text was exported directly into NVivo11 and analysed using thematic analysis (Braun and Clark 2013). This looked for patterns of answers which were coded and then merged into themes.

4.7.9 Tests used for preliminary and further analysis

Preliminary descriptive analysis of data was undertaken using SPSS v.23 to produce initial results. The analysis was also used to check for violations of assumptions in relation to further analysis (Field 2013; Pallant 2016). Frequencies were obtained for categorical variables and descriptives for continuous variables. Continuous variables were assessed for normality using histograms as recommended by Tabachnick and Fidell (2013), due to the sample being defined as large (200+ cases). Box plots were used to check for outliers. The majority of histograms showed a non-normal distribution of continuous data. In relation to this, the median was used as the measure of central tendency, as being less vulnerable to outliers (Field 2013; Bryman 2016; Pallant 2016).

Further analysis was undertaken in relation to associations and differences between independent variables and the key variables of 'refusal/eventual acceptance'. This aimed to add to the initial understanding of mothers' experiences of bottle refusal which had been generated during descriptive analysis. Non-parametric tests were used due to non-normal distribution of data as recommended by Pallant (2016). Mann Whitney U tests were undertaken to compare differences in continuous data and categorical variables. Effect sizes for significant results were calculated using $r = Z/\sqrt{N}$ (Field 2013).

Kruskal-Wallis tests were undertaken to compare differences in continuous data and categorical variables with more than two categories. Significant results were investigated using Jonckheere's test to establish trends in medians (Field 2013). Spearman's Rank Order test (*rho*) was used to explore relationships between continuous variables. Chi-square tests for independence were used to explore relationships between categorical variables. Significant results were explored using standard residuals with significance determined by z scores > +/- 1.96, or odds ratio's (Field 2013). Significance for all 2-tailed probability tests was p<.005.

Reflexive stop off

I had undertaken descriptive analysis of the questionnaire data and began further analysis to test for associations, correlations and differences using the refusal and eventual acceptance variables. Analysis began well. However I quickly embarked on 'mass testing' of all the variables in my data set, looking for significant results. I was in effect undertaking the 'fishing trip' - a common term used by authors to describe researchers who undertake data analysis with little or no rationale behind it. This was something I had set out to avoid. I saw my supervisor and a statistician and discussed how my analysis was going. Both reminded me to refine my analysis and to test what would be potentially meaningful to my study. I reverted to my original focus but also recognised that the 'mass testing experience ' had been invaluable in recognising what was important to this study.

4.8 Results

4.8.1 Demographics and background data

Results from table 7 describe the demographic characteristics of the 841 respondents. Over 70% of the mothers were white, >29 years in age and had left education at 19 years or over. Although it was clear the questionnaire had 'travelled' UK wide, 40% of mothers resided in the North West (figure 18). This can be attributed to the initial recruitment strategy which was North West based.

Figure 18 Maternal residence by UK region

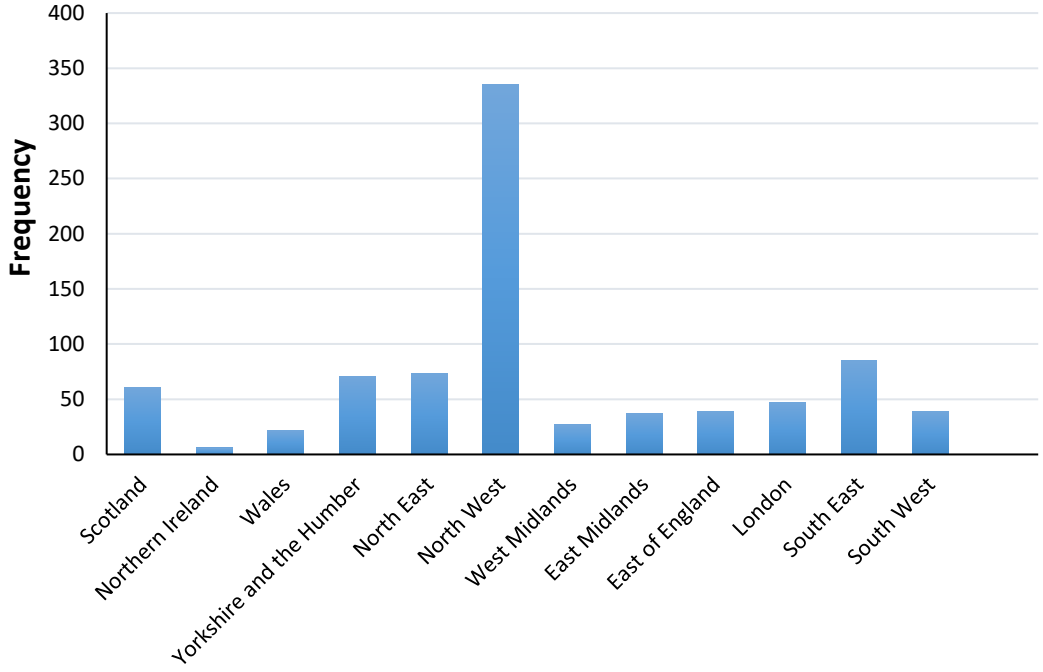


Table 7 Demographics/background data and bottle refusal/eventual acceptance

Demographic/background	***N = 841, n (%)***	***Refusal n (%)***	***Eventual Acceptance n (%)***
Age			
18-24	32 (3.8)	17 (3.3)	15 (4.6)
25-29	158 (18.8)	93 (18.0)	65 (20.1)
30-34	351 (41.7)	222 (43.0)	129 (39.9)
35-39	239 (28.4)	149 (28.9)	90 (27.9)
40+	60 (7.1)	35 (6.8)	24 (7.4)
Missing value	1 (0.1)		2 (0.1)
Total	841 (100)	516 (100)	325 (100)
Ethnicity			
White	806 (96.0)	496 (96.1)	310 (96.0)
Mixed/Multiple Ethnic Groups	20 (2.4)	11 (2.1)	9 (2.8)
Asian/Asian British	9 (1.1)	6 (1.2)	2 (0.5)
Black/African/Caribbean/Black British	5 (0.6)	2 (0.4)	2 (0.5)
Other	1 (0.1)	1 (0.2)	0 (0)
Missing Value	1 (0.1)		2 (0.2)
Total	841 (100)	516 (100)	325 (100)
Age left fulltime education			
16 or under	29 (3.4)	17 (3.3)	12 (3.7)
17	40 (4.7)	26 (5.0)	14 (4.3)
18	93 (11.1)	53 (10.3)	40 (12.4)
19 or over	678 (80.6)	420 (81.4)	257 (79.6)
Missing value	1 (0.1)		2 (0.1)
Total	841 (100)	516 (100)	325 (100)

Employment Status			
Employed	602 (71.6)	357 (69.5))	244 (75.1)
Self employed	66 (7.8)	44 (8.9)	22 (6.8)
Looking after family	119 (14.1)	82 (16.0)	37 (11.4)
Student/unemployed	53 (6.3)	31 (6.1)	22 (6.8)
Missing values	1 (0.1)	2 (0.1)	
Total	841 (100)	516 (100)	325 (100)
Employment category			
ONS categories 1-3*	492 (58.5)	296 (57.3)	196 (60.3)
ONS categories 4-6**	125 (14.9)	79 (15.3)	46 (14.1)
ONS categories 7-9 ***	23 (2.7)	14 (2.7)	9 (2.8)
Missing values	173 (20.4)	127 (24.6)	46 (14.1)
Excluded cases	28 (3.3)		28 (8.6)
Total	841 (100)	516 (100)	251 (100)
Sex (baby)			
Male	383 (45.0)	237 (45.9)	145 (44.8)
Female	458 (55.0)	279 (54.1)	179 (55.2)
Missing value			1 (0.1)
Total	841 (100)	516 (100)	325 (100)
Previous bottle refusal			
Experienced previously	209 (24.6)	144 (27.9)	65 (20.1)
Not experienced previously	631 (75.1)	372 (72.1)	258 (79.8)
Missing values	1 (0.1)		2 (0.1)
Total	841 (100)	516 (100)	325 (100)
Awareness of bottle refusal			
Yes	604 (71.8)	378 (73.3)	256 (69.7)
No	236 (28.2)	138 (26.7)	98 (30.2)
Missing Values	1 (0.1)		1 (0.1)
Total	841 (100)	516 (100)	325 (100)
Which baby mother reported on			
1st	441 (52.4)	252 (48.8)	189 (58.3)
2nd	290 (34.5)	187 (36.2)	103 (31.8)
3rd	83 (9.9)	59 (11.4)	23 (7.1)
=>4th	27 (3.2)	18 (3.5)	9 (2.8)
Missing value			1 (0.1)
How long ago experienced bottle refusal			
Experiencing it now	294 (35.)	237 (45.9)	57 (17.6)
Up to 1 year ago	206 (24.5)	94 (18.2)	111 (34.3)
Up to 2 years ago	137 (16.3)	72 (14.0)	65 (20.1)
Up to 3 years ago	85 (10.1)	53 (10.3)	32 (9.9)
Up to 4 years ago	45 (5.4)	22 (4.3)	23 (7.1)
Up to 5 years ago	74 (8.8)	38 (7.4)	36 (11.1)
Missing values	1 (0.1)		1 (0.1)
Total	841 (100)	516 (100)	325 (100)

Botte refusal/eventual acceptance	
Refusal	516 (61.4)
Eventual acceptance	324 (38.5)
Missing values	1 (0.1)
Total	841 (100)

* Managers, directors, senior officials, Professional occupations, Associate professional and technical ** Administrative and secretarial, Skilled trades, Caring, leisure and service, *** Sales and customer service, Process, plant and machine operatives, Elementary occupations

4.8.2 Reasons why mothers wanted to introduce a bottle to their breastfed baby

Table 8 shows that the most frequently reported reasons for introduction of a bottle were 'wanting partner/family to be able to feed baby' (59%) and 'wanting some independence/more social life' (36%). Subsequent cross analysis revealed 21% of mothers jointly reported these reasons for introduction.

Table 8 Reasons why mothers wanted to introduce a bottle to their breastfed baby

Reason	*N = 841, n (%)**
Wanted partner/family to be able to feed baby	499 (59.3)
Wanted some independence/more social life	299 (35.6)
Wanted to spend some time with other children	129 (15.3)
Returning to work	121 (14.4)
Attending an event	39 (4.6)
Other	112 (13.3)
Wanted to give up breastfeeding	28 (3.3)

** Mothers could select more than one option therefore figures add up to more than 100%/841*

Some mothers described the lack of involvement in feeding as having a detrimental effect on the father- baby relationship:

> *It had a negative impact for my husband because he was unable to give baby the bottle so he struggled to bond with her at first. (Id 469).*

It was also evident that some mothers felt breastfeeding and bottle refusal placed restrictions upon them socially:

I loved breastfeeding however it made me hate it at times during the last month or two when I needed some rest or had a special event I wanted to attend. I would have enjoyed it more and continued for longer if baby could take the occasional bottle. (Id 191).

She wouldn't have a bottle or a cup and I felt totally trapped (Id 041).
It was more about having the choice to do things which a bottle would have helped with. (Id 706).

The category 'Attending an event' was coded from free text originally in the 'other' category (see appendix J). Mothers reported the following, n= 39: court case, attending a wedding (including own), funeral, college course, exam, work related, concert, night out, hairdressers, gym, training for a marathon, hen night, driving test. Some mothers described challenging scenarios:

It was a difficult time for us …my father had only weeks to live and was in intensive care and we needed her to take a bottle so I could spend some time with him (Id 242).

One hundred and twelve mothers remained under the category of 'other' reasons for introducing a bottle, they were analysed using TA (Braun and Clarke 2013) (see appendix K for details of coding and theming). Four themes emerged: health and medical-related, breastfeeding-related, forward planning and miscellaneous. Maternal hospitalisation/mothers being unwell was especially challenging for mothers whose baby refused a bottle. One mother reported delaying an emergency procedure in order to try to introduce her baby to take a bottle.…*I was facing an operation and wanted to ensure my baby could bottle feed beforehand….(Id 696)*. Another mother described how her friend breastfed her baby for her whilst she was in hospital. Another mother described being sectioned under the mental health act and how her prescribed medication was incompatible with breastfeeding. In addition mothers illustrated the demands breastfeeding made upon them, 'I *was too tired to feed - baby was cluster feeding for 3/4hrs in the middle of the night' (Id 708).* Mothers also described

introduction as a way of planning for the future, '*In preparation for nursery' (Id 512).* For some mothers the introduction of a bottle had a more unusual context, *'I was part of a research study looking at teats for breastfed babies' (Id 673).*

4.8.3 Intended frequency to feed by bottle if accepted

Mothers reported how frequently they wanted their baby to feed from a bottle if it accepted. It is evident from table 9 that the majority of mothers wished to continue to predominantly breastfeed.

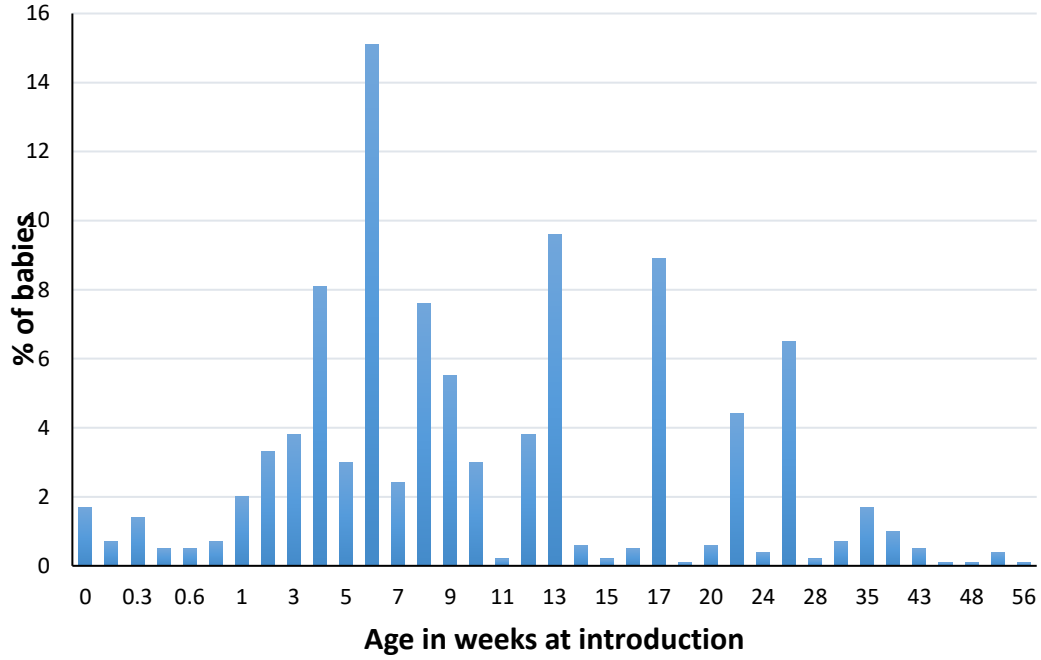
Table 9 Mother's intended frequency to feed from a bottle if accepted

Frequency	N = 841, n (%)
Every feed - no more breastfeeding	23 (2.7)
Daily - alongside breastfeeding	184 (21.9)
Occasionally - not on a daily basis/one off event	634 (75.4)
Total	841 (100)

4.8.4 Age of baby at mothers' first attempt to introduce a bottle

Mothers' responses for age at first attempt to introduce a bottle were converted to weeks (see appendix H for conversion strategy) and are represented in figure 19. Median age at first attempt to introduce a bottle was 9 weeks, (*IQR* (interquartile range) = 11, *min* = 0, *max* = 56, *R* =56, *N* = 788). Excluded cases = 52. Missing value = 1.

Figure 19 Age in weeks of baby at first attempt to introduce it to a bottle, n = 788



By six weeks of age, 39% of mothers in this study had attempted to introduce a bottle to their baby, with the majority of mothers' first attempt to introduce a bottle being after six weeks (61%). Nearly all mothers (95%), had attempted to introduce a bottle to their baby by 26 weeks of age (= six months). Consulting figure 19, the most frequent age at first attempt to introduce a bottle was six weeks, reported by 15% of mothers. Further peaks were noted at four weeks (= one month), 13 weeks (= three months), 17 weeks (= four months) and 26 weeks (= six months). A small percentage of mothers (2%), reported that their first attempt to introduce a bottle was at birth.

4.8.5 Methods used by mothers to facilitate bottle refusal

The median number of methods used by mothers to facilitate bottle refusal was 4 *(min* = 1, *max* = 9, *R* = 8, *N* = 841). The most frequently reported method used by mothers was partner/family fed the baby. A cup was included as a 'transition method' and had been identified in the pilot study as a method tried by mothers. Table 10 displays a comparison between methods used and methods that worked. The majority of methods had a low success rate (<22%) apart from cold turkey - although this was the method least used by mothers. Over half of mothers 59% (486), reported 'nothing had worked'. Fifteen cases were excluded from this comparison due to mothers stating 'nothing had

worked' whilst also reporting that their baby had eventually accepted a bottle. Missing value = 1. 'Other' methods reported by mothers included sweetening the teat/milk, warming or cooling the milk, dream feeding (waking the baby in the night to feed it whilst it is still drowsy), and paced bottle feeding.

Table 10 Comparison between methods used and methods that worked

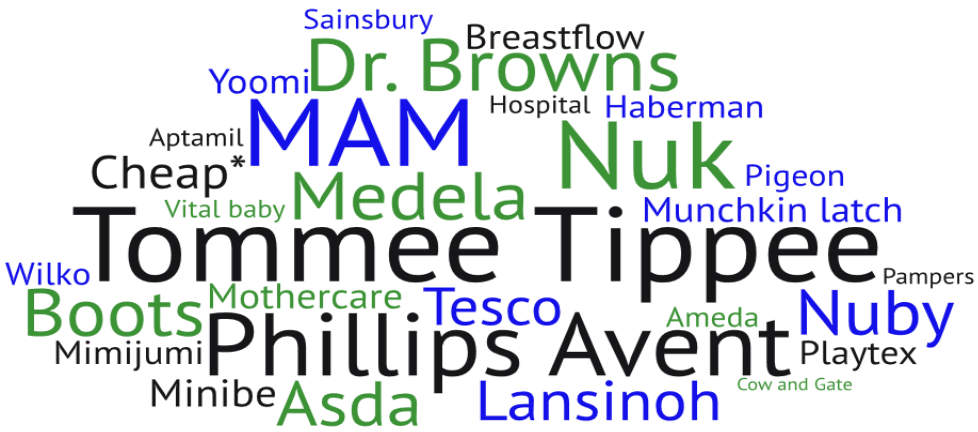
Method	Method used N = 825, n (%)*	Method used that worked N = 825, n (%)*
Partner/family fed baby	791 (95.8)	167 (21.1)
Cold Turkey	73 (8.8)	31 (42.4)
Used different bottles/teats	601 (72.8)	93 (15.4)
Used EBM in a bottle	777 (94.1)	100 (12.8)
Used a cup	359 (43.5)	69 (19.2)
Gave bottle only when baby not hungry	282 (34.1)	16 (5.6)
Gave bottle only when baby hungry	411 (49.8)	43 (10.4)
Tried different formula milks	180 (21.8)	15 (8.3)

* *Mothers could select more than 1 option therefore total adds up to more than 100%*

Mothers used free text to report the brand(s) of bottle/teat they used to introduce their baby to a bottle. The median number of brands used was 3 (*min* = 1, *max* = 9, *R* = 8, *N* = 578). Missing values = 23. Twenty nine different brands were reported (figure 20). Tommee Tippee was reported the most frequently by mothers (77%), followed by Phillips Avent (39%) and MAM (27%). It was evident that some mothers believed the key to bottle acceptance was finding the right bottle/teat and that this could entail multiple and costly purchases,

> *I tried every bottle known to man! (Id 091).*
>
> *I spent a small fortune. (Id 114).*

Figure 20 Word Cloud depicting bottle brands used by mothers

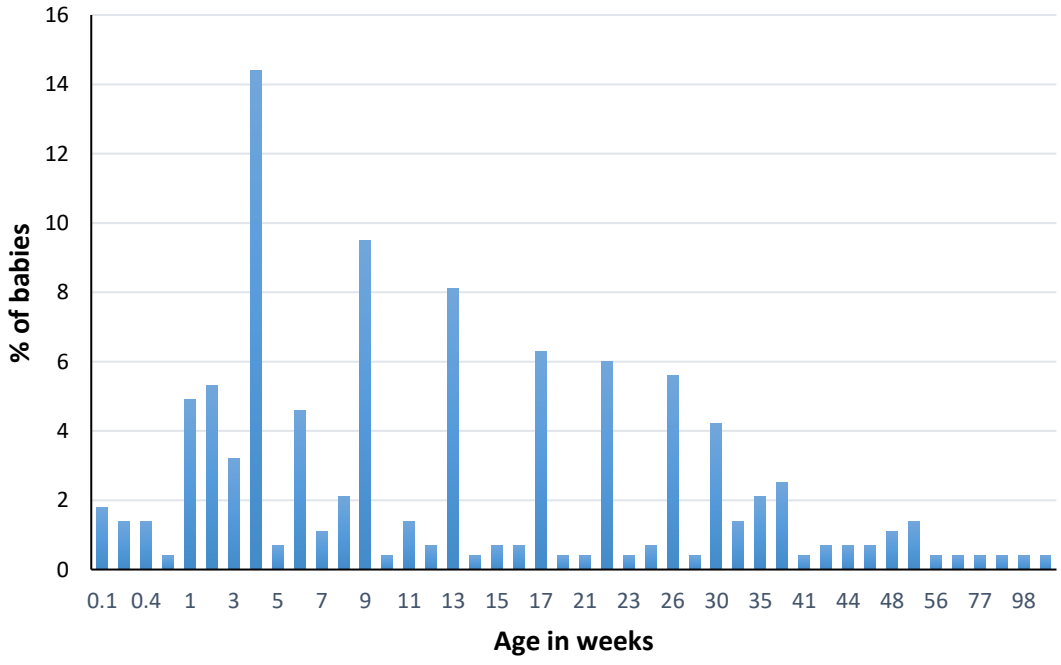


Mothers also reported using branded cups including: Munchkin Miracle 60 cup, Tommee Tippee sippy cup, Doidy cup, and Nuby no spill cup.

4.8.6 Length of time taken to eventual acceptance

Mothers' responses for length of time to eventually accept a bottle were converted to weeks using the conversion strategy (see appendix H), and are represented in figure 21. The median length of time was 9 weeks, (*IQR* = 18, *min* = 0.1, *max* = 104, *R* = 103.9, *N* = 285). The shortest length of time to eventual acceptance was <1 day with the longest being 104 weeks (2 years). Excluded cases = 52. Missing value = 1.

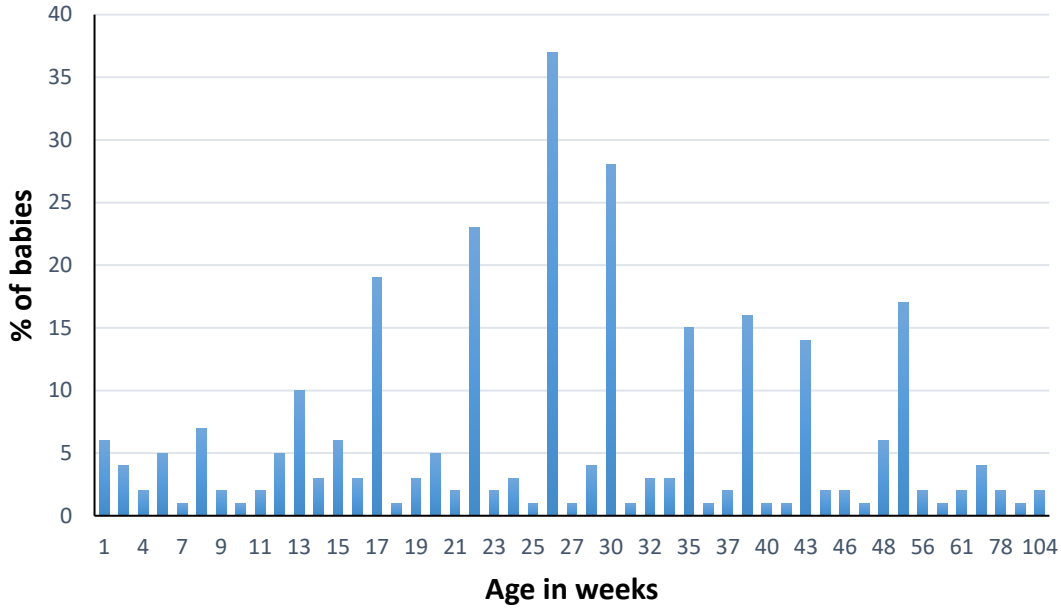
Figure 21 Length in weeks of time taken for baby to eventually accept a bottle, n = 285



4.8.7 Age of baby at eventual acceptance

Mother's responses for age at eventual acceptance were converted to weeks using the conversion strategy (see appendix H) and are represented in figure 22. Mean age at eventual acceptance was 28 weeks, (*N* = 285, *SD* = 16.24). The youngest age at eventual acceptance was 1 week, with the oldest being 104 weeks (2 years). Excluded cases = 38. Missing value = 1.

Figure 22 Age in weeks baby eventually accepted bottle, n = 285



4.8.8 Advice/support for mothers experiencing bottle refusal

The majority of mothers (86%), sought advice/support, however 14% sought no advice. Of the mothers who did seek advice/support, 36% did not think any advice had helped them. Mothers sought advice/support from a number of sources, (*Mdn* = 3, *min* = 1, *max* = 6, *R* = 5, *N* = 720), displayed in table 11. Breastfeeding support groups and other mothers were found to be most helpful. Seven cases were excluded due to mothers selecting 'did not seek any advice', whilst also selecting sources of advice that had helped them.

Table 11 Comparison between advice sought and advice that was helpful

Source of advice/support	Advice/support sought N = 720, n (%)*	Advice/support sought that was helpful N = 720, n (%)*
Health visitor	324 (45.0)	55 (16.9)
Other mothers	446 (61.9)	197 (44.1)
Family/friends	385 (53.4)	108 (28.0)
Breastfeeding support groups	353 (49.0)	202 (57.2)
Internet	488 (67.7)	155 (31.7)

* *Mothers could select more than 1 option therefore total adds up to more than 100%*

Mothers highlighted the lack of awareness/understanding of bottle refusal and its potential impact:

> *Many health care professionals have just shrugged their shoulders in a way that suggested I just needed to get on with it. Some other breastfeeding mothers appeared appalled that I would want to give my baby a bottle in the first place and would ask 'why on earth I might want an evening off? ' implicitly judging me for doing so. (Id 447).*

> *All the comments I received from midwives and health visitors was that it was massively important to exclusively bf (breastfeed) and bottles were what bad mothers did. But then when I hit 6 months and he still wouldn't accept a bottle no one wanted to help and I felt trapped breastfeeding. (Id 041)*

> *I found very little advice from the Nhs and Nhs staff as they were more concerned that baby would get nipple confusion and stop feeding. I was made to feel guilty for suggesting I needed the occasional night out or time with my husband and so wanted my baby to take a bottle as a result I stopped sooner. (Id 191)*

4.8.9 Impact of bottle refusal upon breastfeeding experience

The majority of mothers reported bottle refusal had had 'no impact' on their breastfeeding experience represented in table 12. A total of 18% (148) of mothers selected 'other'. Free text comments were analysed and themed using TA (Braun and

Clark 2013). One hundred and nine mothers described the impact in both positive and negative terms, this was coded as 'mixture of positives and negatives'. Thirty nine cases were not applicable to the question and were excluded from subsequent analysis.

Table 12 Impact of bottle refusal upon breastfeeding experience

Impact	N = 841, n (%)
Negative	221 (26.4)
Positive	58 (6.9)
No Impact	414 (49.2)
Mixture of positives and negatives	109 (12.9)
Not applicable	39 (4.6)

Mothers used free text to describe the impact,

> *Sometimes it's a positive feeling, giving us a special bond and feeling needed. At other times it's negative; worry about stopping breastfeeding, being the only one who can do the nights, going back to work and coming back to a 'broken baby' as she can't get to sleep without a feed, not being able to have a date night with my husband, occasional resentment at doing a lot of the hard stuff alone. (Id 756).*

> *I breastfed for longer due to baby refusing his bottle but I felt trapped into continuing breastfeeding. (Id 771).*

> *I appreciated a baby is only doing what is natural to them. I felt frustrated then guilt as I was being selfish wanting a one off night out. (Id 450).*

4.8.10 Hindsight – can bottle refusal be prevented?

Mothers free text comments on hindsight were coded and themed using thematic analysis (Braun and Clarke 2013). A total of 23% of mothers did not complete this question which was not compulsory. It is clear from table 13 that the majority of mothers would have given or considered giving a bottle earlier to prevent bottle refusal.

Table 13 Hindsight to prevent bottle refusal

Hindsight to try to prevent bottle refusal	N = 649, n (%)
Given a bottle earlier	303 (46.7)
'Considered' giving a bottle earlier	90 (13.9)
Would not have done anything differently	211 (32.5)
Would not have given a bottle in the first place	39 (6)

Mothers demonstrated the reasoning behind their answers,

> *I would have offered a bottle within a week or so of birth and ignored advice about nipple confusion as now i (sic) am trapped breastfeeding and desperately want to stop. Really fed up and wish healthcare workers had been honest about this happening. (Id 084).*
>
> *None, I tried early and regularly but it made no difference. (Id 112).*
>
> *The only thing I would have done differently is not try in the first place. Babies are all different. If they don't want to drink expressed milk in a bottle we shouldn't be trying and trying to get them to do it. We should be led by our babies and just accept they are not happy with it. (Id 588).*

4.8.11 Demographics and refusal/eventual acceptance

The relationship between demographics and bottle refusal/eventual acceptance was investigated using a chi-square test. No significant association was found between: sex of baby x^2 (1, n = 840) = .07, p = .79, *phi* = .01, (missing value = 1) employment status, x^2 (1, n = 839) = 4.49, p = .21, V = .07, age left full time education x^2 (3, n = 839) = 1.19, p = .76, V = .04, or mother's age x^2 (4, n = 839) = 2.06, p = .73, V = *.05*. Missing value = 2. Ethnicity could not be analysed due to low numbers of mothers from ethnic minority groups.

4.8.12 Awareness and previous experience of bottle refusal and refusal/eventual acceptance

There was no significant association between a mothers' awareness of bottle refusal prior to their current experience and refusal/eventual acceptance, x^2 (1, n = 840) p

= .271, *phi* = .038. Missing value = 1. However a chi-square test showed a small significant association between previous experience and bottle refusal/eventual acceptance, x^2 (1, n = 839) = 6.02, *p* = .014, *phi* = .088, *r* = .088. Missing value = 2. Further analysis calculating an odds ratio, found the odds of bottle refusal were 1.53 times higher if a mother had experienced bottle refusal previously, compared to if she hadn't experienced it previously.

4.8.13 Intended frequency to feed if accepted and refusal/eventual acceptance

A chi-square test showed a small significant association between how frequently mothers wanted their baby to feed from a bottle if accepted, and bottle refusal/eventual acceptance, x^2 (2, *n* = 840) = 25.35, *p* = <.001, *V* = .174, *r* = .174. Missing value =1. Further analysis was undertaken using standardized residuals (Field 2016). When mothers wanted their baby to feed from a bottle at every feed (no more breastfeeding) significantly more mothers than expected reported eventual acceptance (z = 2.7), *p* = .01, and significantly less than expected reported refusal (z = -2.2), *p* = .05. When mothers wanted their baby to feed daily from a bottle alongside breastfeeding, significantly more mothers than expected reported eventual acceptance, (z = 2.3), *p* = .05.

Further analysis was undertaken to investigate how frequently mothers wanted their baby to feed from a bottle if it accepted and differences in length of time taken to accept. A Kruskal-Wallis test found a significant difference, *H* (2, *n* = 285) = 19.6 *p* = <.001. Excluded cases = 38. Missing value = 1. Jonckheere's test revealed a significant trend, with the median time taken for the baby to eventually accept a bottle increasing with the less frequently a mother wished to feed her baby from a bottle if accepted (table 14). *J* = 12514, z = 4.183, *p* = <.001, *r* = .25.

Table 14 Intended frequency to feed from bottle if accepted and median length of time to eventual acceptance

Intended frequency to feed	N = 285, n (%)	Median length of time in weeks to eventual acceptance
Every feed - no more breastfeeding	15 (5.3)	4
Daily - alongside breastfeeding	82 28.7)	9
Occasionally - not on a daily basis/one off event	188 (66.0)	13
All	285 (100)	9

4.8.14 Age of baby at first attempt to introduce a bottle and refusal/eventual acceptance

Differences in the baby's age at first attempt to introduce a bottle and refusal/eventual acceptance were explored using a Mann Whitney U test, with a small significant difference found. Babies who eventually accepted a bottle were older by 4 weeks at first attempt to introduce a bottle (*Mdn* = 12 weeks) than babies who refused (*Mdn* = 8 weeks), n = 788, U = 61018, z = -3.52, p = <.001, r = .125. Excluded cases = 52. Missing value = 1.

Further analysis was undertaken to explore the correlation between age of the baby at first attempt to introduce a bottle and the length of time to eventual acceptance. Spearman's rank order correlation (*rho*) found a small significant association, with the older the baby was at first attempt to introduce a bottle being associated with a shorter length of time for the baby to eventually accept a bottle, *rho* -.179, n = 285, p < .002. Excluded cases = 52. Missing value = 1.

4.8.15 Impact upon breastfeeding experience and refusal/eventual acceptance

The relationship between impact upon a mothers' breastfeeding experience and bottle refusal/eventual acceptance was explored, with a chi-square test finding a small significant association, x^2 (3, n = 801) = 19.26, p = <.001, V = .151, r = .151. Excluded cases = 39. Missing value =1. Further analysis using standardized residuals (Field 2016) showed that significantly more mothers than expected reported a negative impact with eventual

acceptance (z = 2.1), *p*.<0.05 and significantly less mothers than expected reported a positive impact with eventual acceptance (z = -2.2), *p*.<0.05.

4.9 Discussion

This study aimed to provide an initial understanding of mothers' experiences of bottle refusal by their breastfed baby. It aimed to explore the background and characteristics of bottle refusal, and to capture the demographic data of the mothers experiencing it. In addition, it aimed to investigate potential relationships between bottle refusal and independent variables. Findings from the study would be expanded upon in studies two and three. The following section will discuss the results of the online questionnaire, beginning with an overview of the main findings in relation to the research questions. It will then discuss the findings in more detail relating them to the literature surrounding infant feeding.

This study is the first of its kind to extensively explore mothers' experiences of bottle refusal by their breastfed baby, using a large scale sample and employing quantitative methods. As such, it makes a considerable contribution to the current limited body of knowledge surrounding the scenario. The study findings also play a pivotal role in informing the subsequent studies in this programme of research. Additionally, the completing of the online questionnaire both during the night as well as day, gives a valuable insight into the 24 hour lives of breastfeeding mothers and their use of online resources. The study illustrates that the context surrounding why mothers wish to introduce a bottle to their breastfed baby is influenced physically, psychologically and socio-culturally. The study findings depict mothers using a number of anecdotal methods to try to 'solve' bottle refusal, which generally had a low rate of success (<22%). The study indicates that advice and support for mothers experiencing bottle refusal is not always helpful, particularly from health professionals, where breastfeeding appeared to be the priority. The impact of bottle refusal on a mother's breastfeeding experience was varied, with 26% of mothers experiencing it negatively. The study found bottle refusal/eventual acceptance was significantly associated with the independent variables of: previous experience of bottle refusal *(p* = <.001), intended frequency to feed if accepted *(p* = <.001), age of baby at introduction at first attempt to introduce a

bottle *(p* = <.001), and impact upon breastfeeding experience *(p* = <.001. In hindsight, the majority of mothers (60%) reported that they would have given or considered giving a bottle to their baby 'earlier', to prevent bottle refusal.

The current study participant sample comprised predominantly of white, well educated, older mothers, in professional/managerial occupations. When cross-referenced against the IFS of 2010 (McAndrew *et al.* 2012), age, education and occupation of the mothers in the current study, was comparable to three of the five demographic characteristics associated with mothers most likely to breastfeed and for the longest duration in the IFS (McAndrew *et al*. 2012). The IFS also found breastfeeding mothers were more likely to come from the least deprived areas and from minority ethnic groups (McAndrew *et al.* 2012). Mothers from minority ethnic groups were underrepresented when compared to the IFS (14% IFS versus 4% current study). The IFS found areas outside of London to have the lowest numbers of mothers from minority ethnic groups. This can be compared to the current study in that 94% of mothers resided outside of London (McAndrew *et al.* 2012). However, it is also acknowledged that none of the five mothers who initiated the original posting of the URL link were from ethnic minority groups. This could have limited the questionnaire link being posted on Facebook and parenting groups most likely to be used by mothers from ethnic minority groups. Furthermore, the language barrier could have been a hindrance to completion. Although the URL link was sent to a colleague who was part of a mailing list which included women from different ethnic minorities, this did not offset the poor recruitment of mothers from these groups.

Although the participants in this study were fairly comparable to mothers who breastfeed in the UK from a demographic perspective, the results cannot be generalised to the breastfeeding population as a whole. This is due to the use of convenience and snowball sampling, which led to self-selection of participants and non-response bias. Due to the sampling strategy, the study is unable to determine who typically experiences the scenario of bottle refusal. Although the study sample was large and could potentially exhibit data similar to a representative sample of mothers experiencing bottle refusal, the results are applicable to this study sample only.

The majority of mothers in the current study reported that their baby was refusing a bottle (61%), although it is recognised that some of the babies who were refusing may go on to accept a bottle at a later date. It was also apparent that eventual acceptance might never occur for some mothers and babies, with refusal being permanent. Although it is difficult to ascertain why some babies refuse and some eventually accept from this data, theories of weaning, which depict babies resisting weaning due to breastfeeding providing them with oral and sexual satisfaction could provide some context (Klein 1952, Freud and Strachey 1969, Winnicott 1988).

The current study findings show that the majority of mothers (72%) were aware of bottle refusal prior to the experience they were reporting. This somewhat challenges any view that bottle refusal is potentially 'under recognised' as a scenario. However, apart from the 25% of mothers who had experienced it previously, it is not clear how or where mothers gained an awareness of bottle refusal. One can assume that due to the lack of research surrounding bottle refusal and its omission from health professional infant feeding literature such as BFI, that mothers' awareness is generated from lay sources. Importantly, this indicates a disparity in information surrounding the scenario, which appears to be 'invisible' in relation to health professional literature and discussions, yet conspicuous elsewhere. This disparity in information concerning infant feeding is not uncommon. Previous studies have shown midwives' discussions surrounding formula/bottle feeding to be limited when compared to breastfeeding, with a 'bias' towards the latter (Lee and Furedi 2005; Crossley 2009; Lagan *et al.* 2014; Leurer and Misskey 2015).

It is evident from the study findings that 25% of mothers had experienced bottle refusal previously, yet decided to breastfed with a successive baby. However, this does not exclude the possibility of bottle refusal impacting negatively upon subsequent breastfeeding decisions, voiced online by mothers stating they would not breastfeed future babies. Indeed, previous negative breastfeeding experience has been suggested as a reason behind the decision to formula feed a subsequent baby (Bentley *et al.* 2016). However, recurrence of feeding practice is well evidenced for both exclusive breastfeeding and formula feeding, and is strongly associated with maternal

demographics (Phillips *et al.* 2011; Sutherland *et al.* 2012; Bentley *et al.* 2016) and replication of feeding practice (McAndrew *et al.* 2012), rather than breastfeeding experience. In addition, although 26% of mothers reported bottle refusal to have had a negative impact upon their breastfeeding experience, the majority of mothers reported it as having no impact (49%), with 7% reporting it had had a positive impact. Furthermore, 72% of mothers were aware of bottle refusal yet still went on to breastfeed a subsequent baby. Thus, this current study shows that being aware of bottle refusal, or having previously experienced it, does not necessarily have a detrimental effect on subsequent breastfeeding decisions. This information can be used by those supporting breastfeeding to have an open and honest dialogue with pregnant women and postnatal mothers regarding bottle refusal, whilst allaying fears that this can impact breastfeeding initiation. This also responds to mother's requests in previous studies for 'realistic' information concerning the challenges of breastfeeding (Lavender *et al.* 2005; Hoddinott *et al.* 2012; Leurer and Misskey 2015), which should include bottle refusal.

The study findings showed a significant association between experience of previous bottle refusal and refusal/eventual acceptance. The odds of bottle refusal were 1.53 times higher if a mother had experienced bottle refusal previously, compared to if she had not experienced it previously. One could speculate that mothers who have experienced bottle refusal previously are more realistic in their knowledge that acceptance is not always readily achieved, and can be a time-consuming and costly process. Thus, they may be better prepared for accepting continued refusal, and less likely to pursue acceptance, with the opposite being true of mothers who have not experienced it previously. However, this analogy although plausible, is difficult to substantiate at present, and there is no existing literature with which to compare it.

Mothers' reasons to introduce a bottle were multi-factorial and were not mutually exclusive. They painted a complex picture associated with a number of social, physical, economic, cultural and environmental influences. Such influences have been found previously to contribute to the dynamics of breastfeeding, including its initiation and cessation (Hoddinott *et al.* 2011; Radzyminski 2016; Rollins *et al.* 2016). They are also comparable to previous studies where mothers introduced a bottle/formula to return

to work, (Neifert *et al.* 1995; Hauck and Irurita 2003; Gatrell 2007; McCarter-Spaulding 2008; McAndrew *et al.* 2012; Skafida 2012; Johns *et al.* 2013; Cripe 2017; Felice *et al.* 2017; GOV.SCOT.UK 2018). In addition, studies have cited bottle introduction as a reason for fathers to be involved in feeding (Stewart-Knox *et al.* 2003; Johnson *et al.* 2009; Hoddinott *et al.* 2012; Leeming *et al.* 2013; McInnes *et al.* 2013; Spencer *et al.* 2014; Crossland *et al.* 2016), which was the most frequently reported reason in this study. Why mothers in the current study wanted their partner to be involved in feeding is unclear, although bonding and allowing mothers some independence were reported. The mothers may also have wanted to adopt more of a 'shared parenting' approach, which from a liberal feminist perspective, can be seen as a way of minimising gender differences and ensuring child rearing is 'gender neutral' (McCarter-Spaulding 2008).

Under closer scrutiny the reported reasons to introduce a bottle could be aligned to features of westernised motherhood, where breastfeeding mothers are expected to work, socialise and raise a family (MacKean and Spragins ND). It is evident from the current study however, that for some mothers this was not necessarily achievable, with the demands of breastfeeding competing with the demands and needs of their everyday lives. This has been voiced by mothers in studies by Lavender *et al.* (2006), Hoddinott *et al.* (2012) and Spencer *et al*. (2014), and was found to underpin decisions to formula feed in a study by Lee and Furedi (2005). It can be postulated that the introduction of a bottle enabled mothers in the current study to achieve a 'balance' or as described by a mother in this study as 'having the choice'. It should be noted however, that the demands of residing in a westernised country do not always impact negatively upon breastfeeding, with countries such as Norway having a substantially higher exclusive breastfeeding rate than the UK – 35% v <1% at 6 months (Victora *et al.* 2016).

In line with this, the influence of socio-cultural factors on decisions to introduce a bottle require consideration. Breastfeeding is not viewed as the cultural norm in the UK, having been replaced with formula (via bottle) feeding (Brown 2015; Crossland *et al.* 2016; WBTi 2016; UNICEF 2017). This is in effect supported by data from the IFS (2010) which showed that less than one per cent of mothers were exclusively breastfeeding at 6 months (McAndrew *et al.* 2012). In addition, UK mothers are reluctant to breastfeed in

public (Boyer 2012; Scott *et al.* 2015; Grant 2016), as reported in the current study. Thus, the subliminal effect of residing in a bottle feeding rather than breastfeeding culture cannot be underestimated in relation to the context surrounding bottle introduction. This resonates with Bourdieu's theory of dispositions, where decisions surrounding feeding are underpinned by unconscious collective norms within the environment a mother resides (Amir 2011).

The current study found other reasons for bottle introduction presented an obvious dilemma for mothers. Factors included mothers who required hospitalisation, babies who were temporarily unwell, and babies who were losing weight and required supplementary feeds. These are comparable to the 'life events' described in a study by Hauck and Irurita (2003), were impromptu weaning from the breast was required. It is evident that for some mothers in the current study, the decision to introduce a bottle may not have been entirely their own, instead being medically indicated. This echoes findings from a study by McInnes *et al.* (2013), were tangible reasons for the introduction of formula such as illness, or separation, were not always within maternal or parental control. Such scenarios have the potential to be further complicated when bottle refusal occurs, and exacerbated if current lack of understanding of bottle refusal remains. A greater recognition of bottle refusal by breastfed babies and the potential challenge it poses, could enable those supporting and caring for mothers (and babies) experiencing bottle refusal to respond empathetically.

The majority of mothers in the current study (75%) intended to predominantly breastfeed, and only wanted to feed their baby by bottle occasionally or as a one off event if accepted. It is acknowledged however that a mother's reported intention to bottle feed can change. This is especially due to the dynamic nature of breastfeeding, described by Dykes (2005, p.2292), as an *'ever-changing activity influenced by the counterbalancing effects of past events, the daily lived experience and future plans'*.

The study findings demonstrate that mothers' intended frequency to feed via bottle was found to have a significant association with bottle refusal/eventual acceptance. Of the mothers who wanted to feed by bottle at every feed (cease breastfeeding), significantly

more reported eventual acceptance and less reported bottle refusal. These mothers also reported the shortest times to eventual acceptance. In addition, of the mothers who wished to feed their baby daily alongside breastfeeding, significantly more reported eventual acceptance. These associations may be influenced by mothers being more determined in their efforts for their baby to feed from a bottle, in particular those who wished to discontinue breastfeeding. A study by Hauck and Irurita (2003) supports this theory, in that once mothers had made the decision to wean their baby from the breast, they persevered even when faced with their baby's opposition. Furthermore, previous studies have found features of maternal character/personality including determination, perseverance and self-efficacy, as factors in overcoming breastfeeding challenges and increasing breastfeeding duration (Hegney *et al.* 2008; Burns *et al.* 2010; Williamson *et al.* 2012; Brown 2014). From this, it could be construed that the idea of maternal determination being an implicit factor in eventual acceptance, is certainly a plausible one. However, it is questioned somewhat when referring to Ryan and Deci's self-determination theory (Ryan and Deci 2000). The majority of mothers in the current study cited reasons that were extrinsically motivated (influenced by external factors), in relation to why they wanted to introduce a bottle. However, extrinsic motivations are negatively correlated with self-efficacy (Ryan and Deci 2000), which would be an underpinning component of a mother's determination to secure bottle acceptance.

It could also be hypothesised that the mothers who wished their baby to feed from a bottle more frequently if accepted, tried more regularly and followed a routine in order to achieve acceptance. Online guidance and advice in relation to introducing a bottle to a breastfed baby places similar emphasis on these actions (NHS 2016; Kelly.Mom 2018). In addition, familiarity and consistency are often encouraged in relation to the successful introduction of complementary foods to infants (NHS 2018; WHO 2018b).

Conversely, study findings highlight that mothers who wished to feed their baby from a bottle occasionally, reported the longest length of time to eventual acceptance. It could be hypothesised that these mothers did not have the same determination or commitment to achieve bottle acceptance, and adopted less of a routine in their management of it. However, both hypotheses are hampered by the study not collecting

data regarding how often mothers tried their baby with a bottle, this being considered too complex to report after feedback from the pilot study. In addition, mothers in the current study reported trying 'regularly' and 'often', yet were still met with refusal. Thus, although there is a link between mothers' intended frequency to feed and bottle refusal/eventual acceptance, and length of time to eventual acceptance, it appears to be more complex than resting on intention to feed alone.

The current study findings evidence a wide variation in age of the baby at which mothers first attempted to introduce a bottle (0-56 weeks). Several age peaks were noted, the largest being at six weeks. This was likely to have been influenced by current un-evidenced advice to introduce a bottle at six weeks or later, when breastfeeding has been established and in order to avoid nipple confusion. The further peaks at three, four, five and six months indicate that 'rounding' of ages took place. However, they may also represent mothers setting goals by month in relation to continuing to exclusively breastfeed or to introduce a bottle, a not uncommon practice amongst breastfeeding mothers (O'Brien *et al.* 2009; Gustafsson *et al.* 2017). In the case of the six month peak, this is likely to be mothers adhering to WHO advice to exclusively breastfeed for at least six months (WHO 2002).

The majority of mothers (61%) reported waiting until after six weeks to attempt to introduce their baby to a bottle, suggesting a degree of compliance with the un-evidenced guidance currently proffered to mothers. However, the vast majority of mothers (95%) had attempted to introduce a bottle to their baby by six months, which if using formula, deviates from WHO guidance to exclusively breastfeed to six months (WHO 2001). Ironically, however, although the majority of mothers within the current study aimed to deviate from WHO guidance, the fact that their baby refused to accept a bottle meant they continued to breastfeed exclusively for longer. Although from a health perspective this is a positive outcome (Victora *et al*. 2016), it should be balanced against the potential negative impact bottle refusal can generate. For the mothers in this study this not only included a negative impact upon breastfeeding, it also led to mothers feeling physically exhausted due to not having a 'break' from breastfeeding. In

addition, mothers' described their social lives being curtailed, feeling trapped, and experiencing feelings of guilt, stress and frustration.

The current study depicts a multi-method approach used by the majority of mothers to encourage bottle acceptance. However, the majority of methods exhibited a low level of success (<22%), apart from cold turkey which was used by the least number of mothers. This is probably due to the withholding of nutrition, which many mothers will have found unacceptable. In addition, cold turkey can potentially lead to dehydration in the baby (Staub and Wilkins 2012), and mastitis and/or breast abscess in the mother due to acute cessation of breastfeeding (Noonan 2010). Further methods associated with potential adverse health outcomes included mothers sweetening their baby's milk and putting jam on the teat. This resonates with a study by Dykes *et al.* (2012), who found parents undertook harmful infant feeding practices when facing feeding challenges. Similarly, mothers in Egan's study put sugar on the teat in an effort to overcome their baby's bottle refusal (Egan 1988).

Current study findings highlight a focus on 'finding the right bottle'; although this method had a low success rate (15%). However, with the mass marketing of bottles and teats specifically to mothers who are breastfeeding (medela.com, mimijumi.com, tommeetippee.co.uk), and in some cases marketed solely for bottle refusal (minibe.co.uk), it is perhaps unsurprising that mothers made multiple and costly purchases. The latter is exhibited by taking the average number of bottles mothers used in the study (three) and multiplying this by the cost of the top three reported brands, which equates to £41.90[7]. Moreover, this cost would most likely increase when mothers purchased different flows of teats to accompany the bottles. The evidence to support certain brands of bottles and their ability to solve bottle refusal, reduce nipple confusion, and ease the transition from breast to bottle, is currently poor and in some cases non-existent. Only two peer reviewed studies have been undertaken, (in relation to the Medela Calma teat) with both displaying a number of limitations (Geddes *et al.* 2012; Segami *et al.* 2012). The current study calls for information concerning bottle

[7] Based on 9oz bottle starter pack purchased from Tesco in 2018.

brands and teats for breastfed babies to be clear in relation to the evidence supporting their claims, so that mothers can make informed decisions when making purchases.

Mothers in the current study used a cup as a method to feed their baby, however again this had a low success rate (19%). Current guidance encourages mothers to introduce a cup to their baby by six months, and if possible to move straight from breast to cup negating the need for a bottle. However, the IFS found only 54% of mothers had introduced their baby to a beaker or cup at six months of age (McAndrew *et al.* 2012). Previous studies have found that cup feeding leads to spillage (Dowling and Thanattherakul 2001), evidence of concerns over inadequate intake (Malhotra *et al.* 1999; Dowling and Thanattherakul 2001), and that mothers have found it inconvenient especially at night (Malhotra *et al.* 1999). In addition, mothers in this study described experiencing cup refusal. Alternative feeding options to breast, bottle and cup warrant further exploration. Studies are needed surrounding potential feeding mechanisms such as finger feeding, syringe feeding, straw, paladai and spoon feeding, which could be effective substitutes when bottle refusal occurs. In addition, the possibility of 'wet nursing' cannot be discounted as a method, successfully employed by one of the mothers in this study.

The length of time taken for a baby to eventually accept a bottle in the current study varied from < one day to 56 weeks. The median time was nine weeks, although data regarding how often mothers tried within this time was not collected. Existing online advice to mothers regarding length of time to eventual acceptance is often underplayed and vague, possibly due to no evidence being available to underpin it. However, bottle manufacturers often cite testimonials/reviews from mothers describing how their baby took to the particular brand of bottle '*straight away*' (minibe.co.uk),' *within the first 3 attempts'* (tommeetippee.co.uk) and over a *'few days'* (mimijumi.com). Therefore information is also likely to be governed by marketing.

Few studies have investigated length of time to wean off the breast. Neighbors *et al.* (2003) describe a range of 0-90 days with the majority falling within 2-14 days, although they do not report a median age of weaning, making it difficult to exact a comparison

with the current study. Similarly, Williams and Morse (1989) describe weaning taking place gradually over 1-8 weeks, but again do not describe a mean or median length of time for this. In addition, these studies are not comparable to the current study where the majority of mothers did not wish to wean entirely off the breast.

The results from the current study regarding length of time are not representative of all breastfeeding babies who accept a bottle; some will accept without any refusal. In addition, some babies may eventually accept more easily than others. However, it is evident that the lack of current information surrounding bottle refusal, and the descriptions of 'quick' acceptance on bottle manufacturer's websites, can lead to mothers having an unrealistic view of how long acceptance can take. This may have consequences for mothers if they are factoring in time when returning to work or in relation to hospitalisation. This is compounded by online information not including the caveat that some babies may never accept a bottle, which may lead to mothers viewing their baby's refusal as something abnormal. The current study findings show that for many mothers and babies eventual bottle acceptance is not a 'given'. In addition, it shows that eventual acceptance can be a lengthy process, which affiliates with theories of weaning where a baby's relationship with the breast is such that he/she is unwilling to relinquish it easily (Abraham 1916 cited in Eccleson 2005). Transparent information needs to be made available to mothers regarding length of time to bottle acceptance being variable, and that they may experience continued refusal. This will enable mothers to make informed decisions regarding introducing a bottle, and also manage the scenario realistically.

It is evident from the current study that although the majority of mothers sought advice regarding bottle refusal, 35% did not find it 'helpful', comparable to a study by Egan (1988). Breastfeeding support groups and other mothers were reported the most frequently as being helpful sources of support, comparable to the IFS (McAndrew *et al.* 2012). However, only 17% of mothers reported health visitors - the health professional most likely to be contacted regarding bottle refusal - as giving advice that was helpful. This could reflect the fact that there is no evidence to draw upon in relation to bottle refusal and therefore support and advice is hampered. Previous studies have found

health professionals to prioritise breastfeeding, whilst limiting information surrounding bottle feeding in infant feeding discussions (Lee and Furedi 2005; Crossley 2009; Lagan *et al.* 2014; Leurer and Misskey 2015), which may have been replicated by the health visitors referred to in the current study. A further explanation for this finding could however be provided by Trickey and Newburn (2014), who describe health professionals facing a 'dilemma', when supporting mothers to formula feed, due to it conflicting with the obvious health benefits of breastfeeding.

A further likely 'barrier' to advice from health professionals is the potential of 'nipple confusion'. Indeed, Renfrew *et al*. (2000) describes how health professionals 'fear' nipple confusion. The causal link between bottle feeding and nipple confusion has not been proved (Zimmerman and Thompson 2015), yet as evidenced in this study, it remains at the forefront of some health professionals' advice. Furthermore, as alluded to in chapter two, a potential legacy of the ten steps to successful breastfeeding (UNICEF 2010), where bottles and formula were strongly discouraged, may have led health visitors to deter mothers from feeding by bottle. Future research is needed to investigate the negative impact of nipple confusion on breastfeeding.

When exploring advice and support, one must also take into account that mothers' definitions of what is 'helpful' are open to interpretation. In addition, it is likely that some mothers would equate helpful advice purely with their baby accepting a bottle. This is not wholly consistent with the current study however. Although 61% of mothers reported that their baby was refusing a bottle, only 35% of mothers reported no advice to be helpful. Added to the 14% of mothers who sought no advice, this still leaves 12% of mothers who found advice helpful, yet their baby had not accepted.

The current study findings show that almost half of the mothers (49%) reported bottle refusal had had no impact upon their breastfeeding experience, whilst over a quarter (26%) of mothers reported bottle refusal had had a negative impact upon their breastfeeding experience. However, this was not necessarily associated with their baby continuing to refuse a bottle. Significantly more mothers reported a negative impact when their baby had eventually accepted a bottle, and more reported a positive impact

when their baby continued to refuse. Similar to how helpful support was perceived by mothers, this indicates that the impact of bottle refusal upon breastfeeding experience is not solely outcome driven. Furthermore, 7% of mothers reported bottle refusal had a positive impact on their breastfeeding experience. Although similar to 'no impact' and 'negative impact' it is difficult to distinguish the factors behind mothers' responses, however, some mothers described breastfeeding being extended, bonding occurring, and feeding being led by their baby, as a result of bottle refusal.

The majority of mothers in the current study believed 'early introduction' of a bottle was key to bottle acceptance, with 60% reporting in hindsight they would have given/considered giving a bottle earlier to prevent it. However, this belief contradicts the study's findings. Babies who eventually accepted a bottle were significantly older - by four weeks - at first attempt to introduce a bottle, than babies who were refusing. Furthermore, small numbers of mothers reported that their baby had refused at birth and that their baby had initially accepted a bottle and then gone on to refuse. Eventual bottle acceptance was also reported to have occurred with babies whose first introduction was up to 56 weeks of age. This depicts the unpredictable nature of bottle refusal as a scenario. It also indicates potential decisions being made by babies about feeding preference at a very young age. This decision making is supported by studies regarding the introduction of complementary foods, with infants making it clear to parents what they will and will not accept, but which is not always consistent (Hittner and Myles 2011; Shim *et al.* 2011; Caton *et al.* 2014; Nekitsing *et al.* 2016). The current study found no association between 'early' introduction of a bottle and eventual acceptance. However, a sample including breastfed babies that did not refuse a bottle is needed to produce generalisable findings for this association.

4.10 Limitations of the study

This study is not without its limitations. Maternal recall was up to five years, which could have affected mothers' answers. Although an equation was developed to check for accuracy in mothers' responses to 'time' and 'age-related' data, it is clear due to the cases that had to be excluded that recall was not always accurate. The nature of the

online convenience sample would have led to non-response bias and participant self-selection, limiting the application of the findings to the wider population. In addition, the sample was underrepresented by mothers from ethnic minority groups, the mothers most likely to breastfeed in the UK (McAndrew *et al.* 2012). Furthermore, a sample including mothers whose breastfed baby accepted a bottle with no refusal would have provided more generalisable findings. However, this was an exploratory study, focusing on mothers' experiences of bottle refusal, which contributed to a larger mixed methods study where the emphasis was on qualitative data. Thus, the overall focus was on the transferability of findings, rather than their generalisability. In addition, the sample size of 841 mothers provided a valuable and unique overview of a large number of mothers' experiences of bottle refusal by their breastfed baby.

Although some of the questions in the questionnaire were based on previous questions from the IFS (McAndrew *et al.* 2012) and ONS categorisations (ONS 2011), the majority of questions had not been validated previously, and were developed for this study alone. This was in part due to the unknown nature of bottle refusal, and as discussed previously due to the lack of consensus on how to report infant feeding data, particularly in relation to numerical data. However, a number of measures were undertaken prior to release of the questionnaire to confirm validity and reliability. These included the undertaking of the focus group, feedback being sought from health professionals, and the piloting of the questionnaire. This does not detract however, from a lack of validated questions being a limitation of the design.

4.11 Conclusions

This study has illustrated the complexity of bottle refusal by breastfed babies. The reasons why mothers' wished to introduce a bottle to their breastfed baby are in addition complex, and were influenced by psychological, physical and socio-cultural factors. Mothers employed various methods to overcome bottle refusal, however bottle acceptance did not always occur. Mothers did not always find support to be helpful, and the impact of bottle refusal upon breastfeeding for over a quarter of mothers was a negative one. It is evident that the mothers in this study believed 'early' introduction of

a bottle would prevent bottle refusal, although the study findings challenge this belief. The study provides the basis for a strong rationale for bottle refusal to be acknowledged as an outcome of breastfeeding. It has provided a greater understanding of bottle refusal, which can be used to begin to underpin advice and support for mothers who are experiencing it. In addition, this study provides preliminary data which will be further explored in stages two and three of this programme of research, to gain a more complete understanding of mothers' experiences of bottle refusal by their breastfed baby. Recommendations for practice and suggestions for further research from this study are discussed in chapter 8.

The following chapter will present study two, an exploration of mothers' experiences of bottle refusal by their breastfed baby using semi-structured interviews.

Chapter 5 - An exploration of mothers' experiences of bottle refusal by their breastfed baby using semi-structured interviews (study two)

5.1 Introduction

This chapter presents study two of the programme of research, an exploration of mothers' experiences of bottle refusal by their breastfed baby using semi-structured interviews. The chapter discusses development of the interview schedule and the recruitment strategy employed. In addition, it presents an overview of data analysis and the themes that emerged. The study findings are presented, interwoven with illustrations of the mother's verbatim comments. The chapter concludes with a discussion of both the interpretation of findings and limitations of the study. 'Reflective and reflexive stop offs' taken from a reflective diary are dispersed throughout the chapter and have been used to put thoughts and actions during this stage of the research into 'real time' context.

5.2 Study aim and research questions

The aim of this study was to further understanding of mothers' experiences of bottle refusal by their breastfed baby and to expand upon the results of study one. This would provide a more holistic and comprehensive picture of the mothers' experiences. Findings were triangulated with those of study three. It focused on answering the research questions as detailed in chapter 1, section 1.3.

5.3 Interview schedule design and development

Semi-structured interviews were undertaken guided by an interview schedule (see appendix L), which was developed from the results of study one, findings from the literature review, the conceptual and theoretical frameworks, and the overall programme of research aim and questions. In addition, fellow colleagues with an interest in infant feeding were consulted, as were the PhD supervisory team.

The interview schedule contained 'ice breakers' which included obtaining consent, discussing confidentiality, the practicalities of the interview, and asking where mothers had seen the online questionnaire. The icebreakers were also included to establish rapport, relax the interviewee (and interviewer) and to check that the equipment being used was working. Questions were then 'funnelled' (Kvale and Brinkmann 2014), from the broader context of the mothers' breastfeeding experience to topic areas more specific to bottle refusal.

Kvale and Brinkmann (2014) describe how when scripting the interview schedule, questions have thematic and dynamic dimensions. Thematic dimensions are related to the 'what', i.e. the research topic, and its aim and objectives. In the case of the current study, the questions developed expand upon previous questionnaire data and were aligned to the research questions. Dynamic dimensions are related to the 'how', i.e. fostering positive interaction between interviewer and interviewee whilst encouraging the interviewee to talk about their experiences (Kvale and Brinkman 2014). In the case of the current study, the questions developed were focused on the mother, so she could tell her story about bottle refusal.

Main questions were open ended and had follow up questions to elicit more information. In addition the use of 'probes' (for example, can you tell me more about that?), were included to use if required. It was acknowledged that the follow up questions and probes would not be applicable to all participants however, and that they were dependant on the participants' previous answers. Importantly, although the interview contained 'set questions' based on selected topic areas, it was used 'flexibly' rather than prescriptively and the sequencing of questions inevitably differed due to the interview taking on a '*participant–led' approach* (Roulston and Choi 2018, p.233). Mothers' discussions perceived to be 'outside' of the schedule's questions were not prevented, thwarted or dismissed, as the value of these discussions at this point was unknown. In addition, they could make a valuable contribution to the understanding of mothers' experiences.

As with most sequential designs the interview schedule was developed fully after the questionnaire results had been analysed (Ivankova 2006; Feilzer 2010).

5.4 Pilot study

To establish rigour a pilot study was undertaken with two mothers who were known to the researcher. Both mothers met the inclusion criteria of the study. The interviews took place face to face in the participants' homes, were digitally recorded, and lasted 48 and 58 minutes respectively. The interviews were transcribed verbatim by the researcher and exported into NVivo11. They were analysed using thematic analysis as described by Braun and Clarke (2013). As a result of the pilot study, a small number of changes were made to the interview schedule to merge questions which were felt to be repetitive. The interviews were transcribed and analysed using Braun and Clarke's thematic analysis as described in chapter three. Thus, the pilot study not only refined the interview schedule, it presented an opportunity to trial and develop data analysis.

5.5 Study participants and recruitment

Mothers who had completed the questionnaire and who expressed an interest in being interviewed were asked to leave their contact details (phone/email) at the end of the questionnaire. Three hundred and fifty four mothers left their contact details (see reflective stop off). An excel spreadsheet was set up including contact details and a link to the mothers' online questionnaire. In order to recruit a sample of mothers who displayed varying experiences of bottle refusal, the spreadsheet also contained the mothers' answers to the following variables: impact upon breastfeeding experience and whether the baby had accepted a bottle or not, the rationale for which is discussed under section 3.6.2.

Reflexive stop off

As with the numbers completing the questionnaire, the large number of mothers expressing an interest to be interviewed came as a shock! From a positive perspective, recruitment to interview was potentially complete. My concerns that I would find recruitment difficult were eradicated. However, I now needed to develop a new

recruitment strategy to enable me to choose from the 354. The high numbers also led me to pursue other possibilities: could I undertake email interviews with a larger number of mothers, possibly 50? After searching the literature I realised that to undertake email interviews effectively, multiple contacts between researcher and interviewee would be required. In addition, in-depth discussion could prove problematic. Furthermore, the ease at which to stop responding to the researcher 'mid interview' was often cited, so this method was eventually discounted. I also considered undertaking a number of virtual focus groups and explored 'google hangouts' as a way to bring mothers together to discuss bottle refusal. However, after refocusing on my aim and objectives and recounting my reasons for discounting focus groups previously (breastfeeding per se can be a very personal emotive subject and a focus group could be a barrier to discussion), I reverted to interviews. I needed 'quality' rather than 'quantity' for this stage if I wanted to explore bottle refusal credibly.

As discussed in chapter 3, recruitment had been set at 30 interviews. Eight mothers were selected weekly from the database over a period of seven weeks. This was in order to give mothers a week to decide if they wanted to participate, and to allow mothers from the previous week to respond. Mothers were selected who exhibited variations of the key variables of impact and refusal/acceptance. They were contacted via email/text and an electronic participant information sheet was sent (see appendix D). Mothers were contacted again one week later to see if they wanted to be interviewed. For those who consented, a date, time and choice of interview mode was agreed upon, either face to face, telephone, SKYPE or FaceTime. A further email was sent to mothers who did not respond initially, however no further contact was made if they did not respond to the second email. Fifty four emails/texts were sent giving a recruitment rate of 56%.

Recruitment continued for approximately eight weeks until the target number of 30 completed interviews was reached (see table 15 for details of interview sample). The digitally recorded interviews took place over seven weeks (April to June 2016), and lasted between 42 -120 minutes. Most mothers opted for telephone interviews n=17, followed by face to face in their own home n=6, SKYPE n=4, and FaceTime n=3.

Table 15 Interview sample: semi-structured interviews

Id	Interview mode	Interview length (mins)	Impact on breastfeeding experience	Employment status/ONS, age, ethnicity	Accepted bottle?	Breastfeeding duration
1	Face to face pilot	53	Positive	1-3, 30-34, white	Yes	Stopped at 9 months
2	Face to face pilot	52	No impact	4-6, 30-34, white	No	Still feeding 4 months
3	Face to face	58	Negative	Student, 25-29, white	No	Still feeding 2 ½ years
4	Phone	100	Positive	1-3, 30-34, white	Yes	Stopped 13 months
5	Phone	44	No impact	1-3, 30-34, white	No	Still feeding 22 months
6	Phone	58	Positive	LAF*, 35-39, white	No	Still feeding 14 months
7	FaceTime	57	Negative	SE**, 30-34, white	No	Still feeding 6 months
8	FaceTime	53	Other	1-3, 25-29, white	No	Still feeding 6 months
9	Phone	48	Negative	LAF, 30-34, white	No	Still feeding 6 months
10	Face to face	64	Negative	1-3, 35-39, white	Yes	Stopped at 15 months
11	SKYPE	59	No impact	LAF, 35-39, white	No	Still feeding 10 months
12	SKYPE	104	Negative	1-3, 30-34, mixed	No	Still feeding 10 months
13	Phone	101	Positive	1-3, 30-34, white	No	Still feeding 4 months
14	Phone	58	No impact	1-3, 25-29, white	Yes	Stopped 3 years
15	Phone	52	No impact	LAF, 30-34, white	Yes	Stopped 7 months
16	Phone	42	No impact	1-3, 35-39, white	No	Still feeding 10 months
17	SKYPE	71	Negative	1-3, 30-34, white	yes	Stopped 1 year
18	Phone	52 partial	No impact	4-6, 30-34, white	yes	Still feeding 4 months
19	Phone	45	No impact	1-3, 30-34, white	No	Still feeding 6 ½ months
20	SKYPE	52	Negative	1-3, 35-39, white	No	Still feeding 11 months
21	FaceTime	45	No impact	LAF, 30-34, white	No	Still feeding 9 months
22	Phone	64	Negative	3-6, 25-29, white	yes	Still feeding 13 months
23	Face to face	59	Negative	1-3, 30-34, white	No	Still feeding 4 months
24	Phone	46	Negative	1-3, 30-34, white	yes	Stopped 15 months
25	Phone	52	Negative	1-3, 35-39, white	No	Still feeding 7 months
26	Phone	50	Negative	1-3, 30-34, white	No	Still feeding 9 months
27	Phone	45	Positive	LAF, 30-34, white	No	Still feeding 1 year
28	Face to face	50	Positive	1-3, 30-34, white	No	Still feeding 7 ½ months
29	Phone	48	No impact	1-3, 25-29, white	yes	Stopped 11 months
30	Phone	46	Negative	1-3, 30-34, white	Yes	Not known
31	Face to face	42	Positive	1-3, 35-39, white	No	Still feeding 13 months
32	Face to face	140	Positive	1-3, 40+, white	No	Still feeding 1 year

* Looking after family ** Self-employed

Reflective stop off

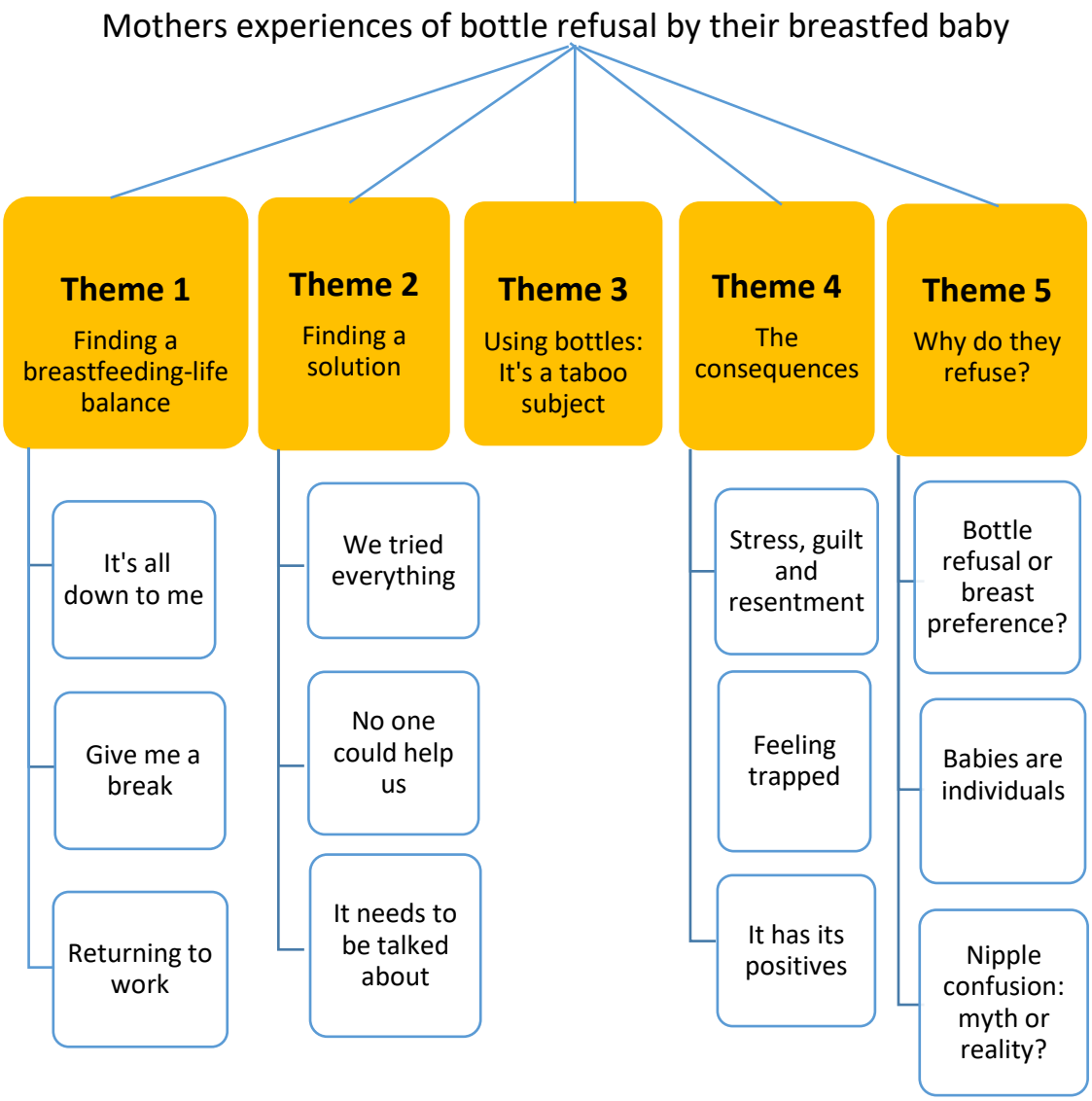
A number of mothers wanted to be interviewed when their baby was in bed or having its daytime nap. This added an element of 'clock watching' for some and for others they would be 'keeping an ear out' in case their baby woke during the interview. In addition, some interviews (all modes) were undertaken with babies present, which presented additional distractions. Initially I was acutely aware of these potential issues and questioned if they were impacting upon the quality of the interviews. However, I soon had to accept that this was going to be the norm, this was the reality of undertaking interviews with mothers of young babies. A further concern was the 'reconciling' of the data from the different interview modes, would one prove to be better than another? Whilst listening and re-listening to the interviews afterwards this was not something I noted. Furthermore, I began to recognise that by offering different modes to the mothers it gave them an option to choose the one which they felt most confident and comfortable with, thus potentially enhancing the interview rather than being detrimental to it.

5.6 Data analysis

Twenty four interviews were transcribed verbatim by the researcher. The remaining six were transcribed by a university approved professional transcriber in order to save time. During transcribing it was found that one of the interviews had only been partially recorded (Id 18) however, the interview data that had been recorded was still used. All identifying data were removed from the transcriptions to ensure anonymity. The word documents of the transcriptions were imported directly into NVivo11.

Data were analysed using Braun and Clarke's six stage thematic analysis (Braun and Clarke 2013) as discussed in chapter three, section 3.7.2. Five themes and twelve sub-themes emerged from the interviews (see figure 23).

Figure 23 Themes – study two



5.7 Findings

5.7.1 Study sample

Similar to study one, the majority of the study sample comprised of white mothers, who were employed, working within ONS categories 1-3, and aged 30+ years. Two thirds of the mothers interviewed reported that their baby was refusing a bottle, with the remaining third reporting that their baby had eventually accepted. Thirteen mothers reported that bottle refusal had had a negative impact on their breastfeeding experience, ten mothers reported that bottle refusal had had no impact and seven reported a positive impact. Length of time of breastfeeding ranged from four months to

two and a half years. Twenty three mothers were still breastfeeding at the time of the interview. The following section discusses the themes illustrating them with excerpts from the interview transcriptions.

5.7.2 Theme 1: Finding a breastfeeding - life balance

The theme 'Finding a breastfeeding - life balance' represents the context surrounding why mothers wanted their breastfed baby to feed from a bottle. For many mothers, breastfeeding appeared to dominate their lives at the expense of everything else, therefore their life balance was skewed. If their baby would accept a bottle this was seen as an attempt to recalibrate the scales or at least have the option to do so. A number of mothers saw being able to give their breastfed baby a bottle (of either EBM or formula) as the 'perfect compromise'. It was described in positive terms by most mothers:

> *…had I been able to introduce a bottle it would have made it easier I would have had the best of both worlds. (Id 14).*

> *I know its like having your cake and eating it, having your baby breastfeed and then it will take a bottle when you need it to. (Id 16).*

Three sub-themes emerged from the theme 'Finding a breastfeeding - life balance'. 'It's all down to me', 'Give us a break' and 'Returning to work', which are discussed below.

It's all down to me

'It's all down to me' depicts the demands of breastfeeding and how bottle refusal was viewed as intensifying these demands. Many mothers discussed the fact that feeding was essentially *'all down to me'* with no respite and that if their baby had taken a bottle this would have given them some reprieve. The exclusivity of their role in feeding led many mothers to explain how their experience with their baby became '*all about the feeding*':

> *I don't think I was prepared for how much my body, my actual physical presence at all times would be central to childcare. (Id 12).*

…it was like feeding is the entire ball game. (Id 17).

The breastfeeding it just dominated everything in our family. (Id 4).

In line with this, some mothers indicated that other aspects of being a mother and a woman were becoming lost due to the requirements of breastfeeding. They described how breastfeeding should not be the only priority in a breastfeeding mother's life, and that by allowing it to 'take over', it could impact upon a mother's psychological health and well-being:

I mean of course we should be supportive of breastfeeding but there is also being aware of a woman's mental health and her identity and feeling of wellness in herself …(Id 17).

….cos as lovely as breastfeeding is, and it's really rewarding, it's not the only part of being a mum and sometimes I think it can stop you enjoying the rest of being a mum. (Id 3).

The physical demands of exclusive breastfeeding were frequently cited as a reason to introduce a bottle. Sleep deprivation in particular was cited by mothers due to them not having time off from breastfeeding:

He was feeding every half hour and I just thought 'yeah I'm going to die, I can't do it, I need to have at least one hour's sleep at least when my husband gives him a bottle'…..(Id 12).

There have been times when all I've wanted to do is go to sleep but you've got to feed her cos she won't take a bottle (laughs). (Id 6).

I mean it's the sleep deprivation, you just want a night off don't you? (Id 15).

Mothers were acutely aware that in many cases, they were the 'sole provider of nutrition' to their baby and this incurred a great sense of responsibility. Many mothers voiced concerns about 'something happening to them' (for example being too unwell to

feed). The introduction of a bottle was seen as a safety net in this instance. For some mothers the fear of not being able to feed was actualised:

> *I had a breast abscess and it was looking like I would have to have a general anaesthetic and I didn't want one until we were really sure he would feed other than from my breast, so it became a very stressful situation you know, I was ill and we needed to get him on a bottle. (Id 24)*.

It was evident that being hospitalised and experiencing bottle refusal by their breastfed baby presented the mother and her family with an undeniably testing scenario. Mothers reported this creating an amount of stress for both themselves and their families.

Give me a break

'Give me a break' captures the mothers' wish to have time away from breastfeeding. They saw the introduction of a bottle as a possible facilitation of this. The majority of mothers wanted some time to socialise or at least have the option to do so, although this was usually only temporary and infrequent. Routine events such as attending the hairdressers were frequently cited as occasions mothers wanted their baby to feed from a bottle, but which became increasingly difficult due to bottle refusal. A number of the mothers resorted to using a hairdresser who attended their home, in an effort to minimise the disruption breastfeeding their baby during an appointment would cause:

> *Things like just going for a haircut, you know, it was a mammoth task… and what would I do as he would never take a bottle. (Id 5).*

> *I was looking at it more as giving me the option if say I want to go out for the afternoon or wanted to go out for the evening, it meant I could leave him and I wasn't worried that he'd be crying for milk or, you know, would be unable to settle. (Id 27).*

> *I wanted to go on the occasional date night with my husband, just to give us some space together. (Id 29).*

Some mothers illustrated a perceived cultural norm of bottle feeding and that mothers should be independent of their baby. Mothers described feeling pressured to introduce a bottle due to this:

> *You think 'this is all for what? Because you feel they SHOULD take one because that's what babies do or that they must take one. (Id 12).*

> *I think its pressure by society that's put on mums, it's really sad that it thinks you shouldn't be with your baby all the time. (Id 7).*

The majority of mothers stated that their overall experience of breastfeeding had been an enjoyable one, and they showed a clear commitment to breastfeeding. Almost all believed feeding to be a mother's role, with partner involvement in feeding to give the mother an occasional break, rather than facilitating bonding, or as a division of parenting. Interestingly, one mother described the influence of formula companies on the perception that others should be involved in the feeding process. This she believed was a marketing tool to ensure mothers shared feeding and consequently used the formula company products to do this:

> *Interviewer: And what are your thoughts about your partner or family being involved in feeding?*

> *Interviewee: I think it's a bit of a misnomer and something the formula companies say to get you to feed. I've definitely bought into that whole culture of 'they just want to sell you a product' and they have built this idea of 'this is how a baby gets fed and that everyone should do it and it's a family activity' and it's like 'no its doesn't have to be, they can just be fed by their mother but nobody can make any money out of that happening so you won't see that around anywhere. (Id 12).*

Returning to work

'Returning to work' was illustrated by many mothers as the catalyst to introduce a bottle. Some mothers described having to postpone their return to work due to their

baby potentially being without milk. However, for most mothers, postponing their return to work was not an option, this was of particular reference to mothers who were self-employed:

> *I had to go back to work when she was 4 months, I'm self-employed so didn't have an option.* (Id 6).

> *Our plan was for E to share parental leave and for me to return to work, but due to the bottle refusal I ended up continuing my maternity leave whilst E had to carry on working. (Id 31).*

Although most of the mothers stated that their workplace would be able to facilitate the expressing and storing of breastmilk, this was of little use due to their baby's bottle refusal. Mothers described well-meaning employers not understanding that bottle refusal would negate any of the provisions put in place, which led to frustration at times. The possibility of breastfeeding and working was viewed as impractical for many of the mothers. None of them had access to a work-based nursery and so could not breastfeed their baby during the day. Bottle feeding was regarded as the more realistic alternative:

> *I think that (breastfeeding) presumes that I will always, always, always be there. That there will never be any other demand on my time and in a way it presumes that women have to be stay at home mothers I think. There's an assumption that you will be less interested in your work. (Id 9).*

> *I will be going back (to work) at 12 months and I won't be breastfeeding then, hopefully she'll be on the bottle by then (laughs). (Id 20).*

5.7.3 Theme 2: Finding a solution

The theme 'Finding a solution' captures the mothers' experiences of attempting to manage bottle refusal and the help and support they sought. Mothers cited an overall lack of recognition of bottle refusal, exacerbated by the dearth of evidence surrounding the scenario. Three sub-themes emerged, 'Finding a solution', 'We tried everything' and 'No one could help us'.

We tried everything…

It was clear that the majority of mothers employed many methods – wholly anecdotal - to try to facilitate bottle acceptance. Mothers described going to great lengths, and employing multiple methods, often including others in their pursuit. Methods reported using EBM in a bottle, formula in a bottle, using others to feed their baby, feeding in different environments, different positions, and heating and cooling the milk. Some mothers reported going 'cold turkey'. In addition, some mothers resorted to more unusual techniques. One mothers encouraged her husband to wear her clothes, another, on advice, wore a fur coat:

> *Somebody at one point told me to try wearing a fur coat, so I did, but that didn't work. (Id 26).*

> *We did all sorts, A took his top off, A wore one of my tops, A cuddled him, put him in the chair, everything, everything we could think of and just…nothing worked. (Id 10).*

> *We tried everything, heating the teat up, putting the teat under my arm, leaving him in a different room, just everything and he wasn't having any of it. (Id 16).*

> *In the end I had to go cold turkey. (Id 17).*

In addition, many mothers tried to feed their baby using a cup, the recommended alternative to a bottle. 'Cup refusal' was also experienced by some mothers alongside bottle refusal, with some babies only accepting water in a cup not EBM or formula. Only a small number of mothers transitioned straight from breast to cup with the rest not seeing it as a viable alternative:

> *I tried him with a doidy cup and he was ok with it, but you know it wasn't able to give 19 fluid ounces or whatever you are supposed to give (laughs) I could only just get about 2 ounces down him (laughs) and I thought; 'this is not going to work for us'. (Id 15).*

A cup doesn't give them the comfort, I think a baby needs to suck for comfort and a lot longer than the 6 months they say you should let them. (Id 3).

Few other alternatives to a bottle or cup were discussed or attempted by the mothers. Most mothers tried a number of different bottles and teats with some describing feeling '*desperate*' to find a bottle that would work. Many mothers experienced frustration at the expense of the bottles and teats, which were not interchangeable between bottle brands. One group of breastfeeding mothers had formed a 'bottle lending library' where other breastfeeding mothers could borrow different brands of bottles and teats without incurring cost.

It was evident that for those mothers whose baby did eventually accept a bottle it was a time consuming affair, with one mother describing how it took her a year before her baby eventually accepted. Some mothers believed the bottle brand had been instrumental, however the majority did not. Some mothers could not pin point the eventual reason for acceptance:

I spent 6 weeks getting her onto the breast and the best part of a year getting her off it. (Id 17).

He suddenly just took it, I did nothing different … to this day I still don't know why. (Id 24).

No one could help us

'No one could help us' captures descriptions of advice and support mothers sought whilst trying to manage their baby's bottle refusal. Although the majority of mothers described having sought some form of support and advice, they found it lacking and at times unhelpful:

She (health visitor) was like 'have you really tried?' and I was like 'yes I have really really tried' 'have you tried different bottles?' 'yes I have' 'have you done it every day?' 'yes I have' it's like she thought I had not gone to any real effort about it. (Id 23).

….people say 'well if they are hungry enough they will take it' but as my mum found out no they won't, if they do not want it they will not take it, even if they are hungry they will not take it. (Id 19).

Mothers referred to a number of sources for help and advice including health visitors, midwives, family and friends, breastfeeding support groups and the internet. Advice was anecdotal and very often based on 'hearsay'. Having been unable to facilitate bottle acceptance themselves, some mothers described employing willing family members and friends to help out, often with an unsuccessful outcome:

…my mum …she tried and tried and tried, she was determined he was going to feed from her but he didn't. (Id 2).

I had friends who kept saying 'you really need to sort this out' and I used to say to them when they came round 'well you try' and 'you try' and 'you try' and it almost became a competition to who could get the baby to take a bottle – he never did! (Id 14).

The majority of mothers consulted online sources such as parenting forums, breastfeeding Facebook groups and YouTube, not only for advice on methods used by other mothers, but also for reassurance that others were experiencing it. Most of the mothers recognised that there was no easy solution. A number of mothers cited health professionals as having few ideas, leading to many of them being left to manage bottle refusal on their own:

…it got to the point that it was the same stuff that was coming out and it was like she (health visitor) had run out of tape and still the answers hadn't helped me, but that was clearly all she had as she just kept coming out with the same points. (Id 20).

…she (health Visitor) came round but she would just listen and let me come up with solutions (laughs) and I said to her 'I will just have to get on with it won't I?' (Id 10).

One mother described how helping mothers to 'accommodate' bottle refusal would be the most useful type of advice given. This could be done by health professionals suggesting how mothers could continue to breastfeed, and carry on with their busy everyday lives:

> *….you can find a way to make everything work like haircuts to dentist appointments to nights out or whatever. There is always a way to do it, you just have to be a bit more creative. That's probably the best advice midwives could give I would say … think of the things you've got to do and think of a way you can do it and feed. (Id 12).*

Many mothers discussed the issue of bottle refusal not being taken seriously, that it was not recognised as an issue and that it was 'no one's priority':

> *…they (NCT) went through a list of problems and bottle refusal wasn't one of them, because they wouldn't consider bottle refusal to be a problem in their world. (Id 12).*

> *I could literally see she (health visitor) was thinking I've got to be somewhere and here I am being held back by a 'bottle feeding breast feeding' question. It's the least of their worries and to be honest they will be thinking 'it's just a really little thing, why bother a health professional over that – just get on with it and sort it out yourself'. (Id 4).*

> *I felt like I didn't have a voice in complaining cos I had the home birth I wanted and I was able to breastfeed my baby so who was I to complain basically. (Id 10).*

One mother discussed being referred to hospital as an emergency by her midwife and her husband being left with two young children and her baby who would not accept a bottle. Yet there was no discussion as to who would be feeding her baby in her absence:

> *….he (husband) ended up having to ask one of the assistants who worked at Tesco's what he should do. (Id 21).*

It needs to be talked about

'It needs to be talked about' captures mothers dialogues surrounding the perceived 'withholding' of information concerning bottle refusal and the need for the subject to be discussed openly. There was an emphasis on breastfeeding as the feeding method of choice, and a number of the mothers felt pressured by this. None of the mothers could recall the subject of bottle refusal having been introduced or discussed with them by health professionals or breastfeeding support groups, unless they had introduced it themselves. Some mothers rationalised this as being due to the potential negative outcome it could have on breastfeeding uptake, as mothers may choose to bottle feed instead:

> *When we were trying to get my first one on a bottle we said to each other 'no one ever tells you how difficult this bit is' … they don't want to put you off breastfeeding I think. (Id 15).*
>
> *(Interviewer) Why do you think no one tells you?*
>
> *(Interviewee) I think it might stop people breastfeeding and I think that's why they don't tell you. (Id 23).*
>
> *I could see why they don't because they don't want to put people off, do they? …So, I can see why being told, 'oh you might get trapped into it' they're kind of like, 'oh, no, this isn't for me then, better get them on the bottle now'. So, I know why they don't. (Id 28).*

All of the mothers believed bottle refusal should be acknowledged and discussed openly by those facilitating and supporting breastfeeding:

> *…certainly to say this might happen, just to give mothers an informed choice really, because without that it isn't an informed choice. (Id 23).*
>
> *Not being told about it means you are making a choice without all the information. (Id 22).*

So then if there is some good evidence or advice to say 'yeah some babies don't take a bottle straight away, and here is some stuff you can do about that, and also don't try all of these other things, and it's a really natural response, and obviously they will like that cos it's nice to be cuddled and breastfed if that's what they are used to', and as I think with all of these things, I think it's framing it within that baby and that is much more useful. (Id 24).

5.7.4 Theme 3: Using bottles: it's a taboo subject

The theme 'Using bottles – it's a taboo subject' captures the negativity a number of mothers experienced surrounding the subject of feeding their breastfed baby by a bottle. Disapproval from health professionals was described, which in some cases left mothers reluctant to seek help. Mothers also referred to feeling judged when they wanted to introduce a bottle. They alluded to a perceived stigma attached to bottle feeding, even when they used EBM with their bottles.

Most mothers described support surrounding infant feeding being focused on breastfeeding, with very little mention of bottle feeding. No mothers had had any discussion of the possibility of breast and bottle feeding and few were told about cup feeding. Using a bottle appeared to be a 'taboo subject' when it came to infant feeding discussions:

Some of the Facebook groups say things like 'we can't advise on bottle feeding' 'we can't promote formula feeding' and I'm thinking well you are trying to accept someone's breastfeeding journey by supporting it. (Id 8).

X (a local breastfeeding support group) *was so fundamentalist and I don't find that helpful. It was like pro-life, rather… it felt like they were slightly brainwashed …some of my friends found them helpful. I found them quite irritating. (Id 32).*

There was also a certain amount of disapproval from health professionals concerning the use of bottles, often with no discussion as to why:

…so as soon as she (midwife) mentioned the bottle as being 'off the record' I immediately associated it with doing something wrong. (Id 13).

I did mention it to one of the midwives and she was like 'oh no no no no' so I didn't ask them again after that. (Id 11).

I was just given the flatline 'we don't recommend it before six weeks' she wasn't coercive she said 'do what you want but we don't recommend it before six weeks.' I kind of shut down after that…. (Id 12).

The perceived negativity surrounding using bottles made some mothers feel apprehensive about asking for support when trying to introduce one. In some cases this led to them not asking for support at all. In addition, mothers' individual circumstances and reasons for wanting to introduce a bottle to their breastfed baby were not always recognised:

In reality there are people who are self-employed, they have other commitments that they have to do and they have to leave the baby and it's great that those people want to give their baby breastmilk, but they can't necessarily do it all the time. So for those people it's very real isn't it, it's a real situation that they need to give a bottle. It's a bit 'dictatorship' to be saying we shouldn't be giving a bottle. (Id 7).

One mother also alluded to there being different 'rules' for breastfeeding and bottle feeding mothers, with there being an expectation that breastfeeding mothers should not be apart from their baby:

I was lucky that I had the breastfeeding support number, and I was really nervous and worried about ringing them and get the whole 'what do you mean you want to give your baby a bottle, why would you want to do that?' 'Well because I want to go out' 'well why you would want to do that?' and the whole thing of being to be made to feel like a bad mother for wanting to do that, whereas everyone else does it and no one bats an eyelid. (Id 6).

Some mothers made reference to feeling 'judged' for wanting to introduce a bottle to their baby and/or wanting to give up breastfeeding:

> *Well I went to X (local breastfeeding group) when my first was two, to have them (breastfeeding support group staff) saying 'the best thing for you to do is to wait until your child self-weans'. I'm more of the opinion that the breastfeeding journey should go on as long as it's good for the baby AND the mum. It was very much along the lines of 'you are damaging your child' and that whole judgement of the way they look at you as if to say 'you could be doing so much better' I mean I breastfed him for two years! (Id 9).*

> *I felt I was given the cold shoulder by the other mothers in the group because I had moved her onto a bottle and it was a shame… it was like I couldn't attend that group anymore as I wasn't breastfeeding. (Id 15).*

Other mothers referred to the perceived stigma they felt when attempting to bottle feed in public:

> *Like when I was in X's (department store) café and I took out a bottle of EBM I was embarrassed trying to feed with that. I felt like I was being judged using it, I mean it was breastmilk in the bottle and I was just trying to get rid of the supply but I did feel embarrassed that I had this bottle in my hand. (Id 3).*

> *I mean if you do manage to give them a bottle with expressed breast milk you sort of want to say 'its expressed breast milk'. (Id 24).*

5.7.5 Theme 4: The consequences

The theme 'The consequences' captures mothers' discussions on the impact bottle refusal had upon them and their families. The impact was described in physical, psychological and social terms, covering many aspects of their lives as well as their breastfeeding experience itself. Three sub-themes illustrated how mothers felt during the scenario, 'Stress, guilt and resentment' 'Feeling trapped' and 'It has its positives'.

Stress, guilt and resentment

'Stress' was cited by the majority of mothers in relation to bottle refusal. Stress was experienced by mothers when they were ill and did not feel they could physically feed their baby, or when they had a special event they wanted to attend without their baby. Stress was often described when mothers faced separation from their baby which was not optional, such as their imminent return to work. In line with this, some mothers described the stress of their baby going 'nil by mouth' whilst they were at work:

> *…knowing that he wouldn't take a bottle I found that really stressful. I knew I was leaving him and he wouldn't take a bottle or a dummy so how was he going to get comfort? It worries me that the thing they get comfort from most isn't available and that makes me worried. (Id 7).*

> *I've never been so stressed in my life when I was going back to work and the bottle thing wasn't happening. (Id 22).*

> *I was working full time and it was becoming a problem because he was feeding literally all night because he hadn't drank all day. We were at the end of our tether as to where we were going to go cos he wouldn't even drink from a sippy cup and he wouldn't drink anything else. He was refusing EBM as well, he just wouldn't take it. (Id 5).*

> *I went back to work just before she was six months…I was really stressed because she wasn't going to be weaned either…so she wasn't eating. She wouldn't drink water out of a cup either at that time and wasn't drinking any milk. (Id 31).*

Stress was not just exclusive to the mother. Many described their partner and/or family members experiencing stress because of bottle refusal. This was described in relation to them being left to look after the baby with no way of feeding it, or when they were employed to try to introduce the bottle:

> *…if I had to leave him at my mums I'd leave her with a bottle just in case, cos my mum would stress and panic like 'you've left me with nothing, no food'. So even*

though I knew he wouldn't take it, for her piece of mind I'd leave one….. and then she didn't want to mind him and now no one is willing to really mind him. (Id 3).

So after about ten minutes of screaming he'd (partner) be like 'I've had enough of this' (trying to give a bottle) and give her back kind of thing. He just got so stressed by it… (Id 2).

A number of mothers reported feeling guilty for trying to give their baby a bottle, which it obviously did not want:

I felt quite tied and I felt bad for that cos I thought if she doesn't want it maybe I shouldn't want to go out, maybe I shouldn't want to leave my baby, I felt really guilty. (Id 16).

I feel guilty for trying to make her take a bottle when she doesn't want one, and for my own purposes if that makes any sense. (Id 6).

The feelings of guilt were on occasion compounded by comments from those around the mothers. Mothers were 'blamed' for their baby's bottle refusal due to introducing a bottle too late, or by indulging their baby with breastfeeding which had led it to feed for comfort:

I remember my mother-in-law saying 'well if you had tried sooner you wouldn't be having all of these problems' and 'you've made a rod for your own back'. (Id 4).

…that's what annoys me – people who imply I've created that situation 'you've made that baby like that cos you just comfort it with your boob all the time' and I'm like 'no I don't if the baby is hungry I'll feed the baby, fed on demand, that's how it works'. (Id 13).

Some mothers referred to themselves as 'failing' to get their baby to accept a bottle and blamed themselves for this:

I felt like I'd failed…you know you look around and see all these babies bottle feeding and I couldn't get him to do it. (Id 4).

Yes, and then I kind of questioned whether it was my fault…. and there was definitely a sense of failure. (Id 27).

It was my fault really, I should have persevered (with the bottle) but I just got lazy. (Id 14).

Some mothers also candidly described feeling resentful, both of their baby for refusing a bottle and of breastfeeding itself. Resentment of partners was also cited by some mothers due to them not being able to help. A small number of mothers reported feeling they were breastfeeding because they had to (due to their baby refusing a bottle) and not through choice:

….when I'm out and about and I see other mothers who are (breast) feeding I've started to wonder if they are feeding because they want to or because they have to - like me. (Id 23).

Although for some mothers bottle refusal led to breastfeeding duration being extended, this was not always seen in positive terms. Mothers described 'having to' feed their baby long term, with no respite due to bottle refusal. One mother described her resentment at feeding her baby for two years who never accepted a bottle. Another mother saw herself as a 'vending machine' having breastfed for longer than she anticipated due to bottle refusal:

…but my second who refused the bottle – he never ever took a bottle… I found that emotionally very very difficult and I was very resentful of breastfeeding by the time I managed to get him off the boob at two years. (Id 9).

Cos of the refusal I've done it (breastfeeding) way longer than I thought I would…but I can't imagine say five years of my life in which I have to continue to be a vending machine essentially. (Id 12).

Feeling trapped

Many mothers used negative terminology such as feeling 'restricted', 'tied' or 'trapped' which they attributed to their baby not accepting a bottle. 'Feeling trapped' captures these feelings. Some mothers described their baby feeding frequently even as they became older:

> *He's quite a hungry baby and never went more than an hour and a half right up to seven months so I felt if I wanted to go to the gym I had to go there and back straight away …..I really did feel trapped, really trapped. (Id 9).*

> *…we used to probably, you know, have quite a nice life and then suddenly you find that actually you almost can't go anywhere because in fact you can't even leave him with somebody with a bottle with expressed breastmilk. (Id 26).*

The restrictions extended beyond the mothers' social lives. Mothers described how it affected their work, with one mother not applying for a promotion due to being too tired and knowing she would have to take her baby to interview with her. Another mother described having to postpone her return to work due to her baby's bottle refusal. A further mother described how staying in touch days would be difficult to not being able to leave her baby:

> *…like there is a promotion at work this week but I've not applied because I just don't feel like I can because I don't get a rest, like my husband can't help me and I wouldn't be able to attend the interview without having him (baby) with me anyway. (Id 23).*

> *I need to attend some staying in touch days at work but I can't see me being able to do that. (Id 13).*

Another mother illustrated how it affected her other children. She described how activities such as attending the pictures or swimming pool with her other two children were prevented, as she would have to take her baby with her. In the case of the cinema this wasn't practical, in the case of the pool this wasn't allowed, due to her having to supervise too many young children:

It's also limiting me taking the other two to places cos he has to come all the time, so I can't take them to the pictures…If he would have had a bottle I could have left him with grandparents like the other two. And my other little boy he loves swimming and I used to take him loads but when J came along I couldn't do that cos I would have to take both of them and the pool won't allow that. (Id 3).

One mother candidly described the 'burden' breastfeeding placed upon her, one which could not be alleviated due to bottle refusal:

…this sounds awful but it's like carrying a big ball and chain around with you. (Id 15).

Another described a 'long term' picture of the impact her baby's bottle refusal would have upon her:

…when it became apparent that it was never going to happen I sort of felt a little bit weary, demoralised …there was going to be no bottles of wine and no meals out and nothing for goodness knows how long and I would still have to feed you know, even if I was ill or tired or whatever. (Id 26).

Some mothers gave examples of particular places they did not feel comfortable breastfeeding in. These included breastfeeding in church and breastfeeding in shops. In both scenarios, mothers cited their baby accepting a bottle as the solution. One mother described feeding her baby in her car during a hospital appointment, as she did not want to feed in the hospital waiting room. In addition, mothers expressed their dislike of breastfeeding in public in general. This in turn led to them spending extended time at home or restricting their time in public:

…people would say to me 'you need to get out' but in fact it was way more stressful for me to go out and attempt to breastfeed in public than stay at home. (Id 22).

I think there was the additional issue, and always has been for me, of breastfeeding in public and especially with babies who perhaps needed feeding

quite often… because of the issue it was quite difficult to plan a life round not having to feed in public, does that make sense? (Id 26).

It can have its positives

'It can have its positives' emerged from the impact of bottle refusal which was constructed positively by some mothers. This included extended breastfeeding, increased bonding and restrictions on those who would be able to feed their baby:

Yeah – when I look back I'm really quite proud of myself and him and what we've managed to do, and in some ways I'm glad he didn't have a bottle as he's never ever had any formula and we've done it all by ourselves right to the very end, and I'm proud of that. So in a way it was a positive thing. (Id 5).

They also referred to bottle refusal positively in terms of the baby preferring them instead of a bottle which could boost their confidence and self-esteem:

I like it that they only wanted me, it was a good thing. (*Id 6*).

It always made me feel kind of proud as he knew exactly what he wanted and I'd think he had chosen me over the bottle. (Id 4).

The fact that their baby would only feed from them was also seen as a protective mechanism, a strategy some mothers could use to prevent their baby from being fed by others or passed around to feed:

…also and this sounds a bit controlling – but I wanted that control over who was feeding my baby as well, in a way I quite liked the fact that it was only me who could do it . (Id 16).

…there is so much pressure from others to feed your baby, I felt quite pressured that people wanted to take him off me at times and this was something I was trying to avoid, so bottle refusal was a blessing as well as it being a problem – I mean you can't have it both ways can you? (Id 15).

Some mothers saw exclusive breastfeeding and bottle refusal as facilitating a closer bond with their baby. In addition, some mothers reflected pragmatically upon their experience of bottle refusal and were able to look back at it in a less negative light:

> *I think when they are getting up four or five times a night you pray to god they will take a bottle. That's when you are in the midst of it and you think 'just take the bottle' and I think once you are through that, once they are sleeping a bit better, once your routine has settled down a bit and it's not as intense, then I think well it doesn't matter as much. (Id 11).*

5.7.6 Theme 5: Why do they refuse?

The theme 'Why do they refuse?' captures mothers' thoughts on why their baby refuses a bottle. Three sub-themes illustrate mothers' explanations for their baby's refusal, 'Bottle refusal or breast preference?', 'Babies are individuals' and 'Nipple confusion: myth or reality'.

Bottle refusal or breast preference?

A number of mothers saw the physical nature of bottle feeding as being the reason why their baby refused. The shape and texture of the bottle and teat was described by a number of mothers as being a cause for refusal, with the cold, hard, plastic teat being compared unfavourably to the breast. In addition, some mothers believed feeding from a bottle was not a natural concept to their baby and due to this refusal ensued:

> *I think he just didn't like the feel or sensation of a teat in his mouth, I think it felt completely alien to him. (Id 4).*

> *I just think it's this alien concept that there is this thing in her mouth that's not a nipple. (Id 8).*

Many mothers cited the different sucking mechanism of bottle feeding being a skill their baby just did not understand and thus could not master:

> *He just doesn't know what to do at all he just can't make it function and he just doesn't understand. (Id 23).*

…she doesn't understand, she just finds it fascinating and she chews the end and thinks 'oh that looks very interesting but what is it?' so she doesn't sort of understand… (Id 25).

Interestingly, several mothers also reported that their baby refused a dummy, and again attributed this to the physical sensation of it being in their baby's mouth and the different sucking mechanism. Many mothers made a link between bottle and dummy refusal, often using the phrase *'he/she refused a dummy as well'.*

Conversely, many mothers saw the prime reason for refusal being due to their baby's desire and continued attachment to breastfeeding and ultimately to themselves. Breastfeeding was a '*comfort*' to their baby, a '*quick fix'* if their baby was upset or tired. It pacified their baby and appeared to be the '*answer to everything'*. In effect, these mothers were giving examples of the non-nutritional properties of breastfeeding:

It was just, kind of…it is amazing. It is fantastic how breastfeeding just seemed to sort every problem out. (Id 29).

Well you see Y ….he didn't have an attachment with anything, he never had a dummy, he never had a blanket, he never had a particular toy that he was interested in, so I think I was his comfort, I was providing everything he needed, he didn't need anything externally. (Id 5).

In addition, some mothers described breastfeeding being inextricably linked with their baby needing their physical presence rather than the need for milk. Again, this was indicative of breastfeeding providing benefits that were not linked to nutrition:

I pick him up its almost an instant calming effect and it's a very symbiotic relationship….it's not even that they are hungry it's that they have got to the point that they need to reconnect with the mum. Sometimes he will be crying and I'll think 'oh he must be really hungry' and he'll have the tiniest little feed and then he'll be happy again and you think 'oh he just wanted that little bit of comfort and reassurance'. (Id 9).

These aspects of breastfeeding were not seen as being available with bottle feeding, with some mothers defining bottle feeding in terms of providing nutrition only:

> *Interviewee: I think in an ideal world to look on it as a combination of both, so your partner could feed it - but then I think you are just looking at it purely from a feeding perspective just to get food into them and that's not what breastfeeding is all about. (Id11).*
>
> *Interviewer: What is it about?*
>
> *Interviewee: It's the bonding, it's the benefit to the baby, if we were only interested in nourishment then there would be no bottle refusal would there? (Id 11).*

Babies are individuals

During the interviews, the mothers often referred to their baby's personality or individual behaviour when describing bottle refusal. Many mothers described their babies as '*knowing what they want* ' in relation to the breast versus the bottle. In addition, they often attributed strong characteristics to their baby's personality and linked this to their refusal to accept a bottle:

> *He's stubborn as anything, he knows his own mind. (Id 22).*

Mothers gave various examples of their baby's sometimes inexplicable or unpredictable behaviour. Some babies initially accepted then refused a bottle, they refused a cup, would refuse milk in a cup but not water, or went 'nil by mouth'. For some babies who did accept a bottle, it was only from a certain bottle brand or only from a certain individual. Other babies would only accept formula and not EBM.

The differences described between baby's behaviours were also reiterated in their reactions to a bottle. Some babies would smile, or look 'q*uizzically*' at the bottle, others would cry, scream or turn away. Some babies would not let the teat near their mouth, others would chew it or attempt to play with the bottle. One mother described the different reactions of her two babies that refused a bottle:

S used to just sit with it in her mouth refusing even to try and suck the milk, and would be screaming. Whereas T will suck it and then …well actually she just spat it out in a fountain last night right across the room. (Id 3).

Some mothers described their concerns that there was something 'wrong' with their baby due to it refusing a bottle. Others however attributed it to their baby '*only doing what was natural to them*', which gave greater credence to babies as an individual:

I think we don't allow people enough to acknowledge the differences between babies. (Id 24).

Nipple confusion myth or reality?

'Nipple confusion myth or reality' captures mothers' feelings surrounding the subject of 'nipple confusion' and its relationship to bottle refusal. Many mothers believed that the advice from health professionals/breastfeeding support personnel to delay the introduction of a bottle due to the possibility of nipple confusion was a contributing factor in their baby's bottle refusal. Mothers often discussed their delay to introduce a bottle being based on '*doing as I was told'*. They also described being '*scared*' even '*terrified*' of introducing a bottle to their baby too early, as it could lead to nipple confusion:

….the big thing that's drilled into you is nipple confusion and it's like a big massive fear – but then no one tells you on the other side that there is bottle refusal. (Id 8).

The majority of mothers queried the evidence supporting nipple confusion. They had rarely ever seen a baby preferring a bottle to the breast. Some mothers were critical of information that was not fully evidenced:

I kept being told about nipple confusion will happen if you give the bottle too early ….but I have seen no evidence of that in my circle. The only evidence that I've seen is that they won't take the bottle… It feels almost like a conspiracy to

force people to breastfeed because you kind of get stuck having to do it because you've got no alternative. (Id 12).

I think there is a lot of pressure due to nipple confusion and I'm not convinced having breastfed five children that's it's a problem that people say it is. (Id 14).

I think it's nonsense (laughs) its confused the other way. (Id 22).

Most mothers referred to other mothers who had not waited to introduce a bottle and who were breast and bottle feeding successfully:

All my friends who introduced a bottle earlier, none of them had any issues with going between nipple and bottle. (Id 29).

I really wish I'd done it sooner, a lot of the mums I've spoken to who have successfully managed to breast and bottle feed all did it early on. (Id 5).

Due to their belief that delaying giving a bottle had contributed to their baby's bottle refusal, many mothers discussed not waiting to give a bottle with their next baby, or giving advice to others not to:

I was conscious of the whole six weeks to wait thing, which I know is probably rubbish. I told my friends it was rubbish anyway afterwards. I was like, 'get them on the bottle early'. (Id 28)

…in the middle of the night I'm thinking 'this is a myth' (laughs). I don't know anyone who has struggled with it. I'm sure there are some people but I don't know anybody. The only people I know are the opposite who have been terrified by this nipple confusion therefore waited so long and then have got to the stage that I'm in with the baby won't take a bottle. And we've all said the same things in our desperation that we would all probably have started a bottle from a couple of weeks old and just given them one a night. (Id 8).

Interestingly only a very small number of mothers discussed that introducing a bottle too early could disrupt their milk supply, the majority linking it to causing nipple confusion only.

5.8 Discussion

This study was undertaken to increase knowledge of mothers' experiences of bottle refusal by their breastfed baby, building upon the results of study one. It aimed to provide a more complete picture of mothers' experiences, and to gain a wider and more in-depth understanding of them. It is the first of its kind to be undertaken with UK mothers, and with such large numbers qualitatively. As such, it has not only made a unique contribution to knowledge within the UK context, it has provided a contemporary understanding of mothers' experiences.

Five themes emerged from the interviews. Mothers wanted to introduce a bottle to their breastfed baby in order to 'find a breastfeeding-life balance'. This theme illustrates the challenges mothers face in their everyday lives, which can be exacerbated by bottle refusal. The theme 'finding a solution', depicts how mothers attempt to manage bottle refusal. They describe using numerous methods, however, they are not always met with success. The theme 'Using bottles: it's a taboo subject', represents mothers' descriptions of being met with disapproval and feeling judged in relation to wanting to introduce a bottle to their breastfed baby. The theme 'The consequences' describes the impact of bottle refusal, which is mainly a negative one for mothers, although some mothers describe how it can have its positives. The final theme 'Why do they refuse', discusses mothers' thoughts on why their baby refuses to bottle feed. These include the physical differences in breast and bottle feeding, babies preferring to breast rather than bottle feed, a baby's personality having an effect, and the delaying of the introduction of a bottle due to nipple confusion.

The current study illustrated tensions between the demands of breastfeeding and the mothers' everyday lives. The introduction of a bottle was an attempt to bridge the demands and find a 'breastfeeding-life balance'. Breast with optional bottle feeding was idealised by some mothers as the perfect feeding scenario. Conversely, breastfeeding

was seen as unpredictable and demanding, consistent with mothers' experiences in earlier studies (Balsamo *et al.* 1992; Carter 1995; Dykes 2005; Lavender *et al.* 2006; Williams *et al.* 2013a). In effect, mothers' experiences of breastfeeding in the current study challenge feminist perspectives of breastfeeding, where it is described as 'empowering' for women, due to it being gender specific (Van Esterik 1994).

The mothers in the current study defined the demands of breastfeeding not just from the bio-medical perspective of physically providing nutrition for their baby, but also in psychological, socio-cultural, and economic terms. It impacted upon their identity, their ability to socialise, and had the potential to affect their career. It was clear the mothers displayed a commitment to breastfeeding, however they also voiced their own needs and responsibilities as being important within their breastfeeding experience. This is a picture described in previous studies (Carter 1995, Hauk and Irurita 2003, Crossley 2009, Burns *et al.* 2010), and one that begins to provide a greater understanding of findings from study one, concerning the context of bottle introduction.

Although the current study findings showed that many mothers viewed breastfeeding being 'all down to me' in a negative way, the majority of mothers also believed that feeding was a mother's unique role. According to the mothers in the current study, partner and family inclusion in feeding was viewed as a means of facilitating a temporary break not as a way to increase bonding, which somewhat challenges previous findings (Stewart- Knox *et al*. 2003, Johnson *et al*. 2009, Hoddinott *et al*. 2012, Leeming *et al.* 2013, Crossland *et al*. 2016). In addition, this view differs from findings from a study by Thomson *et al.* (2015), where some mothers described themselves as being '*mean*' or '*selfish*' (p.41), due to their choice of feeding method (breastfeeding), that only they could assume.

The current study found mothers wanted to introduce a bottle in order to have a break from breastfeeding, a finding reported in study one. This finding is comparable with previous UK studies where mothers expressed breastmilk to be given by someone else in order to have a break (Johnson *et al.* 2013, Ryan *et al*. 2013) and to allow some freedom from breastfeeding (McInnes et al 2015; Crossland *et al.* 2016). From a socio-

cultural perspective, the changing roles of breastfeeding mothers in Western society have led them to value their independence and their sense of identity outside of being a mother (MacKean and Spragin N.D). Thus being able to have a break from breastfeeding and their baby was considered an expectation or the norm. How this norm has been defined however, is seen by some as a cultural expectation that mothers may feel pressured to conform to (Maher 1995, Dykes 2005). This is illustrated by Brown (2015), who describes how , '...*in the West new mothers are often expected to revert to their former lives within days of the birth*' (p.58).

It was evident from the current study findings that breastfeeding did not always fit well with the lives of many of the mothers. The majority of mothers were working mothers and many indicated their return as the catalyst to introduce a bottle or to cease breastfeeding, a practice that is not uncommon (Egan 1988; Neifert *et al.* 1995; Hauck and Irurita 2003; Dykes 2005; Gatrell 2007; McCarter-Spaulding 2008; McAndrew *et al.* 2012; Skafida 2012; Cripe 2017; GOV.SCOT.UK 2018). The combination of breastfeeding and working was not always regarded by the mothers in the current study as realistic or practical. This is likely to have been influenced by the fact that breastfeeding and working is not viewed as the cultural norm in the UK and other westernised societies (Balsamo *et al.* 1992; Dykes 2005; Gatrell 2007; Andrew and Harvey 2011; Lagan *et al.* 2014). Ironically, due to their baby refusing a bottle, many of the mothers in the current study did go on to work and breastfeed – though this was not their original intention. These study findings provide a more in-depth understanding of those from study one, where mothers reported their return to work as a reason for bottle introduction.

It is clear from the study findings that most mothers saw bottle refusal in terms of a 'problem' to be solved, with a distinct focus on finding a practical solution. This view resonates with findings from Dykes *et al.* (2012), who described parents being part of a '*quick fix society'* (p. 767), where resolutions to infant problems needed to be solved immediately. In addition, health professionals described parents wanting/needing to manage what were often normal infant phases and behaviour (Dykes *et al.* 2012). This could be compared to mothers in the current study, whereby bottle refusal was not viewed as a normal response by the majority of mothers, and needed to be managed.

This can be seen to resonate with a medicalised model of care, with bottle refusal being 'diagnosed' and the methods employed by mothers being undertaken to 'cure it'. This is also indicative of the current technological and medicalised approach to breastfeeding (Qureshi and Rahman 2017), which mothers in the current study may have unconsciously transferred to how they viewed and managed bottle refusal.

The current study found that due to a lack of guidance or evidence surrounding bottle refusal, mothers adopted multiple strategies to try to solve it, as reflected in the theme 'We tried everything'. They relied on anecdotal methods, with many seeing 'finding the right bottle' as the solution, purchasing various brands in the hope that one would work. This builds upon findings from study one, where mothers reported using a multitude of bottles in order to overcome bottle refusal. Although advertising of bottles and teats goes against the International Code of Marketing of Breast-milk Substitutes (WHO 1981), many companies violate the code, particularly in the UK (Thorley 2011; BMA 2012). In addition, marketing of bottles is targeted towards potential bottle refusal, with bottles developed to minimise nipple confusion (mimijumi.com; minibe.co.uk), to ease the transition from breastfeeding to bottle (mambaby.com; medela.com; Phillips.co.uk; tommeetippee.co.uk) and to solve bottle refusal itself (minibe.co.uk). However, the evidence to support such claims ranges from non-existent to small sample studies displaying various limitations (Geddes *et al.* 2012; Segami *et al*. 2012). It is not without irony that it is bottle manufacturers who have given much needed recognition to bottle refusal, and in doing so have dominated the discussion by defining it as being a problem which can be solved by their bottle brand. Further to this, the impact of the UK 'bottle feeding culture' (Dykes 2005; Renfrew *et al.* 2007; Brown 2015), where a bottle is the 'Gold Standard' replacement for the breast, and the move to a bottle being seen as progress for a baby (Dykes 2005), cannot be underestimated in relation to the mother's focus.

The current study found feeding by cup, the recommended alternative to a bottle (NHS and UNICEF 2015c), was 'unpopular' with mothers as an alternative method to a bottle. This is a view consistent with findings from previous studies (Malhotra *et al.* 1999; Dowling and Thanattherakul 2001; Yilmaz *et al.* 2014). Very few other alternatives to a

bottle or cup were utilised by mothers. This may be because there is little, or no evidence, to support alternative feeding receptacles such as a straw, spoon, syringe or paladai in relation to healthy older (as opposed to unwell preterm) babies. The current study shows a need for research into feeding alternatives to bottle, breast and cup so that mothers facing bottle refusal (and cup refusal) have options to at the very least 'tide them over'.

Advice and support for mothers trying to manage bottle refusal was found to be hampered by a lack of recognition of the scenario, and it being trivialised at times. This was illustrated in the theme 'No one could help us', and was reminiscent of findings from Egan's study, where mothers felt unsupported by health professionals (Egan 1988). It also contributes to an understanding of why mothers in study one reported no advice had helped them. There was an emphasis by health professionals on the fact that the mothers were breastfeeding successfully rather than the negative issues they were experiencing with bottle refusal, with some mothers almost being made to feel 'thankful' that they were breastfeeding. This demonstrates health professionals employing a breastfeeding-centred, rather than woman-centred model of care (McInnes *et al*. 2013). Furthermore, it prioritises the baby's needs over the mothers. When applying agency theory to this situation (Ryan *et al*. 2017), the health professionals can be seen to be acting as 'agents' for the baby and breastfeeding, rather than as a 'co-agent' with the mother. This served to diminish the mothers' experience of bottle refusal and prioritised breastfeeding over the mothers' individual circumstances. This prioritising of breastfeeding is not a new observation however, with previous studies finding health professionals being 'biased' towards breastfeeding, particularly in relation to formula/bottle feeding (Lee and Furedi 2005; Dykes *et al.* 2012; Lagan *et al*. 2014; Thomson *et al*. 2015; Komninou *et al.* 2016).

To intensify the seeming trivialisation of bottle refusal, the study findings point to mothers believing information was withheld by health professionals in relation to the scenario. Although this was identified by mothers as being an attempt to preserve breastfeeding rates, some mothers felt it could impact upon informed choice. 'Withholding' of information by health professionals, particularly in relation to

formula/bottle feeding, has been identified in previous studies (Lee and Furedi 2005; Crossley 2009; Lagan *et al.* 2014; Leurer and Misskey 2015) and has also led to mothers feeling their choices are restricted (Thomson *et al.* 2015). In addition, it shows a paternalistic approach to information giving, rather than one based on a model of woman-centred care. The current study shows a gap in information giving concerning the scenario of bottle refusal. It supports an open and honest dialogue taking place between health professionals and mothers concerning bottle refusal, to ensure informed choice is promoted concerning infant feeding decisions. In addition, this dialogue could help mothers to 'prepare' for bottle refusal as a potential outcome. In essence, although it was acknowledged by the mothers in this study that 'finding a solution' for bottle refusal was not always an easy exercise, this appeared to be compounded by poor support and advice, with the mothers' needs often being disregarded. These findings provide insight into the data captured in study one, concerning advice and support.

None of the mothers in the current study described receiving advice to enable them to manage alongside bottle refusal and continue to breastfeed, and this may have been helpful for some. In addition, being introduced to other mothers who were experiencing bottle refusal might have provided the advice and support some of the mothers were seeking in their management of the scenario. This form of positive role modelling has been found to benefit breastfeeding mothers previously, with mothers in a study by Thomson *et al.* (2012) finding it realistic, situational and reassuring. In addition, a move to 'normalising' bottle refusal by health professionals, by viewing it as a normal response by a healthy, well baby, could enable mothers to view it through a less problematic lens.

The study findings indicate an aura of 'disapproval' from health professionals and those supporting breastfeeding in relation to using bottles with breastfed babies, which was alluded to in study one. This is however, paradoxically at odds with the UK culture of using bottles to feed. From a physiological perspective, potential disruption to milk supply and the potential for nipple confusion could have fuelled this disapproval. However, the evidence surrounding nipple confusion is poor (Hargreaves and Harris 2009; Zimmerman and Thompson 2015). Additionally, the evidence to support bottle

feeding having a detrimental impact on breastfeeding is inconclusive. Health professionals' views may stem from a 'legacy' of the original BFI ten steps, which stated nothing other than breastmilk should be given to a newborn baby unless medically indicated (step six) and that no artificial teats should be used (step nine) (UNICEF 2010). (The revised BFI standards (UNICEF 2012) no longer make reference to the content of steps six and nine).

Mothers in the current study portrayed health professionals as being inflexible in relation to the advice they gave concerning the introduction of a bottle. This was suggestive of an uncompromising view of breastfeeding, which was rigid in its application to the mothers' individual circumstances. This is reflected in a qualitative study by Hoddinott *et al.* (2012), where an '*all or nothing'* culture of feeding advice was highlighted (p.5), and where mixed feeding was opposed. It also resonates with findings by Spencer *et al*. (2014), who described health professionals' approach to breastfeeding as '*rule based and regimented*' (p. 1081). There appeared to be very little discussion or information for mothers in the current study concerning 'combi-feeding', 'breast and bottle feeding' (using EBM or formula) or 'breast and any other receptacle feeding' other than when framed negatively. Again, this is akin to findings from Hoddinott *et al's* study, with messages concerning infant feeding being perceived as '*presenting breast or bottle as a dichotomy, you can't do both'* (Hoddinott *et al*. 2012, p.6). It is also comparable to how Lagan *et al.* (2014) described breastfeeding support in Scotland, which did not appear to *'individualise choice or acknowledge the lived reality of infant feeding for mothers'* (p.50). Thus, the mothers in this study were facing a double-edged sword: trying to introduce a bottle which was 'frowned upon' and then facing bottle refusal which was not recognised, was not understood or at times was dismissed.

It is evident that bottle refusal presents a potential dilemma for health professionals, in that whilst trying to provide individualised woman-centred care they may be compromising breastfeeding and the numerous health benefits it affords (Victora *et al.* 2016). This 'dilemma' was highlighted in a study by Jones (2011), who discussed the difficulties midwives experienced when breastfeeding mothers wished to introduce a bottle to their baby. Tensions were apparent, between the midwives' role as an

advocate for the mother, and one as a health professional. This was also evident in a study by Furber and Thomson (2006), where midwives exhibited 'positive deviance' when giving breastfeeding mothers bottles of formula milk. This potential conflict in relation to infant feeding is also recognised by Battersby (2014, p.552), who describes it due to '*two diametrically opposed duties'* being present, and by Trickey and Newburn (2012), who state it is whether to '*promote breastfeeding or to promote feeding choice*' (p.72). When applying this to the current study, it would appear that the health professionals chose to be an advocate for breastfeeding, rather than for the mothers and their individual circumstances.

The current study found a number of the mothers felt judged for wanting to introduce a bottle, in some cases by other mothers. There appeared to be a hierarchy surrounding feeding which could be affiliated to the good (breastfeeding) and bad (formula feeding) mothering analogy (Murphy 1999, Dykes 2005; Crossley 2009; Stearns 2013; Callaghan and Lazard 2012). This was apparent in a UK study on formula use by Lee and Furedi (2005), were mothers consciously or unconsciously judged others by their breastfeeding ability. It was also emphasised in a study by Shloim *et al.* (2015), where exclusive breastfeeding was aligned to '*total devotion'* (p.64) and the '*ideal mother'* (p.641). In addition, it resonates with recent UK studies which have found mothers who combi-feed or formula feed (by bottle) experience stigma and guilt (Komninou *et al.* 2016; Fallon *et al.* 2017). By wanting to introduce a bottle, the mothers in the current study could also be seen to be exhibiting, 'deviancy', described by Murphy (1999) when mothers knowingly break the rules and choose to formula feed their baby.

The current study findings show that although many of the mothers described using EBM with their bottles - a practice defined as 'breastmilk feeding' by Thorley (2011) - they were still subject to the same judgements and perceived stigma as a mother who was formula feeding her baby. This is probably due to the bottle being synonymous with formula feeding rather than with EBM. Interestingly, some of the mothers also indicated that they experienced a perceived social stigma if they gave a bottle in public and wanted to correct this by telling people they were using EBM. Thus, the mothers themselves appeared to be perpetuating the hierarchy surrounding feeding, and the

taboo of feeding by bottle. They may also have been trying to 'neutralise' their 'deviant behaviour and in turn deflect the suggestion of bad mothering (Murphy 1999).

The current study found that the impact of bottle refusal was predominately discussed negatively as 'consequences'. Feelings of stress were experienced by the majority of the mothers and appeared to be most evident when they were faced with events that were not deemed 'optional', such as work or hospitalisation, which led to some extremely testing scenarios. In addition, stress filtered across to family members and those involved in trying to solve bottle refusal. There appeared to be a feeling of lack of control in relation to bottle refusal, which perpetuated the stress experienced. Conversely, the baby appeared to be very much in control of the scenario, exemplified by going 'nil by mouth' when its mother had returned to work. This echoes the behaviour of babies in studies by Egan (1988), Marquis *et al*. (1998), Hauck and Irurita (2003), and Eccleson (2005), who all described cases of babies 'resisting' weaning from the breast and is consistent with theories of weaning (Klein 1952, Winnicott 1988, Fouts *et al*. 2000). Thus, it could be construed that a 'power struggle' was occurring between mother and baby during the bottle refusal scenario.

The study findings depict guilt experienced by mothers. Guilt appeared to emerge from an apparent conflict between the mother and baby, with mothers believing they were prioritising their own needs ahead of those of their baby, thus deviating from the expectation that their baby's needs should be prioritised (Williams *et al.* 2013a). Paradoxically some mothers in the current study also described feeling that they had 'failed' in relation to bottle acceptance, a term usually reserved for breastfeeding rather than bottle feeding (Lee and Furedi 2005; Crossley 2009; Ryan *et al.* 2010; Spencer *et al*. 2014). This resonates with MCcarter-Spaulding (2008), who states that '*however mothers decide to feed their babies infant feeding is a highly accountable matter*' (p.22) and one that '*carries considerable moral baggage'* (p.19).

In addition to stress and guilt, the study shows some mothers also experienced feelings of resentment both in relation to their baby refusing a bottle and in relation to breastfeeding, comparable to mothers' comments in study one. This echoes findings

from Egan's study, where mothers described resentment towards their baby due to its refusal to accept a bottle (Egan 1988). In addition, the mothers in the current study described feeling 'trapped' or 'tied' to their baby due to bottle refusal, which are feelings comparable to those espoused in other studies in relation to breastfeeding (Raisler 2000; Stewart-Knox *et al.* 2003; Marshall *et al.* 2007; Andrew and Harvey 2011). These feelings were compounded by some mothers not wanting to feed in public, a common theme in the UK, where breastfeeding is not the cultural norm, and where sexualisation of the breasts continues to prevail (Boyer 2012; Scott *et al.* 2015; Grant 2016; Morris *et al.* 2016). These findings provide an understanding of the wider impact of bottle refusal, expanding on findings from study one, which focused on impact on breastfeeding experience.

It could be argued that due to breastfeeding requiring continued close proximity between mother and baby, mothers had somewhat unrealistic expectations of being able to have time away. However, the mothers reasoned that if their baby had accepted the occasional bottle, the restrictions they felt were placed upon them would have been more palatable.

Although the study found that most mothers viewed bottle refusal through a predominantly negative lens, there were some who illustrated a more positive discourse. Bottle refusal for these mothers extended their breastfeeding journey, facilitated greater bonding and gave them a sense of achievement. These 'benefits' are similar to those described previously by mothers in relation to their experiences of breastfeeding (Burns *et al.* 2010; Leeming *et al.* 2013; Luerer and Misskey 2015). In addition, bottle refusal was depicted as a protective mechanism that prevented others from feeding their baby, allowing them to keep their baby close to them. Johnson *et al.* (2009) describes how this can be perceived as a mother being 'possessive' of her baby. However, it could be argued that for the mothers in the current study, a certain sense of control was experienced due to those wishing to take part in feeding being excluded 'legitimately'. These findings provide an understanding as to why mothers in study one reported bottle refusal had a positive impact on their breastfeeding experience.

The study findings show that the reasons why mothers believed their baby refused a bottle were complex. They appeared to be influenced physically, psychologically, by baby temperament and timing. A number of mothers focused on the acute physical difference of a bottle/bottle feeding compared to the breast/breastfeeding as the reason for refusal. These mothers appeared to favour the scientific or bio-medical discourse model surrounding breastfeeding, in that it is a practice exclusively concerned with nutrition (Stearns 2013; Beniot 2016).

In reference to the mothers' focus on the differences between breast and bottle, studies undertaken have concluded that there is an inability for an artificial teat to totally replicate the breast (Nowak *et al.* 1994; Nowak *et al.* 1995). In addition, there is evidence to support the mechanics of bottle feeding and breastfeeding being distinctive from one another (Franca 2008; Aizawa *et al.* 2010; Moral *et al.* 2010; Sakalidis and Geddes 2015). However, the fact that some babies do accept a bottle, and did so eventually in this study, indicates that the differences between breast and bottle are not insurmountable for babies. This is supported by Moral *et al* (2010) whose observational study of babies feeding by breast, bottle and breast and bottle (mixed), concluded that babies undertaking mixed feeding varied their sucking movements and adopted their own pattern of feeding. 'Flexibility' in sucking response by babies is also illustrated in seminal studies by and Sameroff (1968) and Wolff (1968). Thus the theory that bottle refusal is based upon the physicality of bottle feeding alone is somewhat simplistic.

It was evident from the current study findings that mothers saw information concerning nipple confusion, and practices employed to prevent it, as contributing to bottle refusal. They were sceptical regarding the evidence underpinning it, particularly in relation to delaying introduction of a bottle. The evidence surrounding nipple confusion has in itself been described as '*confused*' by Fischer and Inch (1996, p.174). In addition, studies have not been able to determine 'causality' between nipple confusion and a negative impact on breastfeeding (Zimmerman and Thompson 2015). To add to this, there is no evidence to support the 'six week' marker to safely introduce a bottle to avoid nipple confusion. This study illustrates a need for research concerning the current lack of evidence regarding nipple confusion. It also calls for information regarding the lack of nipple

confusion to be disseminated to mothers, in order for them to make informed choices regarding bottle introduction. Likewise, mothers should be informed that there is currently no evidence to support delaying the introduction of a bottle in order to prevent nipple confusion. However, it is acknowledged bottle feeding can have a potential detrimental effect on milk production, particularly if formula is used, thus information for mothers should reflect this.

The current study found mothers appeared to link early introduction of a bottle to acceptance, and delay to refusal. This builds upon findings from study one, where the majority of mothers reported they would have given/considered giving a bottle earlier to prevent bottle refusal. This depicts an emphasis on familiarity being required to overcome bottle refusal, and in addition timing and routine. These factors are very much linked to feeding in western society, where a more technical and medicalised model prevails (Balsamo *et al* 1992; Dykes 2005). However, the belief that delaying bottle introduction led to bottle refusal is challenged by mothers who reported that their baby initially accepted a bottle and then inexplicably refused it at a later date.

A number of mothers in the current study saw breastfeeding as providing their baby with more than nutrition. This is a theory that has been widely advocated (Gribble 2006; Entwistle 2014; Papp 2014; Harrison *et al.* 2016; Gibbs *et al.* 2018). In addition, the emotional benefits of breastfeeding have also been confirmed by breastfeeding children themselves (Gribble 2009). Bottle refusal was framed by some mothers as being more about 'breast preference', and ultimately their baby wanting to make a connection with them as mothers. This could also be explained by previous theories on weaning, where babies are described as 'objectifying the breast' (Klein 1952; Winnicott 1988) which can lead them to be unwilling to give it up.

Many of the mothers used breastfeeding to placate, pacify, and reassure their baby, indicating a psychological dependence being placed upon it. In line with this, Gribble (2006) describes breastfeeding as an example of a baby or child's attachment behaviour towards its mother, with the mother providing 'stress relief' through breastfeeding. Applying this to bottle refusal, the bottle could be seen as a 'threat' to the breastfed

baby, who refuses it in order to maintain breastfeeding and proximity to its mother. This analogy is challenged however, by evidence that has found infant feeding not to have an impact upon attachment security (Bowlby 1997; Britton *et al.* 2006; Jansen *et al.* 2008; Howe 2011). In addition, it does not fit with the scenario of a mother being the one to try to introduce a bottle, therefore maintaining close proximity to her baby, but her baby still refusing. Furthermore, it does not explain why some babies may refuse a bottle from birth.

The current study found mothers made links between their baby's individual personality and bottle refusal, highlighting 'strong' characteristics often associated with independence. This correlates with studies showing baby temperament to have an influence upon feeding (Lothina 1995; Lauzon-Guillain *et al.* 2012; Kielbratowska *et al.* 2015). In addition, Marquis *et al* (1998) found babies classed as 'demanding' and 'strong willed' were able to maintain their breastfeeding status, despite maternal wishes to wean them. It could be postulated that the babies in this study were unwilling to 'conform' to a bottle, insisting, instead, on undertaking feeding as nature intended. Interestingly, none of the mothers in this study referred to their own temperament as a possible contributory factor to their baby's bottle refusal. There is evidence however to suggest links between a mother's personality/temperament and breastfeeding duration/discontinuation and overcoming breastfeeding difficulties (Bottorff 1995; Hauck and Irurita 2003; Hegney *et al.* 2008; Ricotti *et al.* 2015; Jardine *et al.* 2017).

In essence, although the mothers in this study gave plausible reasons as to why they believed their baby had refused a bottle, it remains a complex picture with no clear answer. Perhaps the mother who stated her baby one day 'just took it' comes closest, in that bottle refusal and acceptance are very much down to the individual baby making its own decision in individual circumstances.

5.9 Limitations

This study is not without its limitations. The interview sample was recruited from a larger convenience sample, and although an attempt was made to vary the sample of mothers

in relation to their experiences of bottle refusal, demographically the sample comprised of white, older, mothers, employed in ONS categories 1-3. Although this does to an extent reflect the cohort of mothers who breastfeed in the UK (McAndrew *et al.* 2012), the mothers may have collectively exhibited certain perspectives and expectations which influenced the data collected. Hearing about the experiences of mothers from ethnic minority groups would have been useful in adding to the picture of bottle refusal. Due to the self-selective nature of the sample, the participating mothers may have displayed stronger opinions in relation to their experience. Inclusion criteria for the study meant some of the mothers could have experienced bottle refusal up to five years ago, which could have affected memory recall. In line with this, a certain amount of 'rosy retrospection' could have taken place, particularly for those mothers whose baby had eventually accepted a bottle.

5.10 Conclusions

This study has built upon the findings from study one, proving a greater understanding of mothers' experiences of bottle refusal by their breastfed baby. Findings show the context surrounding why mothers introduce a bottle to their breastfed baby is underpinned by tensions between the demands of breastfeeding and demands on the mothers' lives. By introducing a bottle, mothers believed demands on both sides could be met. Mothers ultimately saw bottle refusal as a problem, which was difficult to solve, even though they employed many methods to overcome it. Support for mothers was hindered by a bias towards breastfeeding and a lack of recognition and knowledge of bottle refusal as a scenario. The impact of bottle refusal was predominantly a negative one, although some mothers were able to frame it positively. Reasons why mothers believed their baby refused a bottle were varied. Differences in the mechanisms of breast and bottle feeding, their baby's preference for the breast, their baby's individual personality, and the avoidance of nipple confusion by delayed introduction of a bottle, were all discussed by mothers. This study illustrates the complexity of bottle refusal and the negative impact it can have for mothers. It points to recognition of the scenario being required, in order to improve support for mothers experiencing it. Findings from

this study will be triangulated with those from study three. Recommendations for practice and suggestions for future research from this study are discussed in chapter 8.

The following chapter will discuss study three, which used online forums to explore mothers' experiences of bottle refusal by their breastfed baby.

Chapter 6 - An exploration of mothers' experiences of bottle refusal by their breastfed baby using online forums (study three)

6.1 Introduction

This chapter presents study three of the programme of research, which explores mothers' experiences of bottle refusal by their breastfed baby using mothers' posts from online forums. The chapter discusses the development of the forum post guide and the sampling strategy used to capture the posts. In addition, it gives an overview of how data analysis was undertaken and presents the themes that emerged. The chapter concludes with a discussion of the interpretation of findings and limitations of the study. 'Reflective and reflexive stop offs' taken from a reflective diary are distributed throughout the chapter and have been used to put thoughts and actions during this stage of the research into 'real time' context.

6.2 Study aim and research questions

The study aimed to provide a unique 'mother to mother' perspective on bottle refusal by breastfed babies, using posts from online parenting forums. It aimed to explore discussions around bottle refusal between mothers without 'expert' interaction. It aimed to build on the findings of study one, and triangulate findings with those of study two, presenting a more complete understanding of mothers' experiences. It focused on answering the five overall study questions as discussed in chapter 1, section 1.3.

6.3 Forum post guide

A forum post guide was developed in order to aid the capture of online posts. Similar to the interview schedule, it was developed from the results of study one, findings from the literature review, with reference to the conceptual and theoretical frameworks, and the overall programme of research aim and questions. (see appendix M for forum post guide). Questions from the interview schedule were formatted to match an online format. The guide was not prescriptive in nature, and was used flexibly, so that potentially valuable data was not discounted.

6.4 Sampling of online forums

A purposive sampling strategy was used in relation to selection of the online forums. The is detailed below.

1. **Developing inclusion/exclusion criteria**

   As with previous studies on infant feeding forum analysis (Herron 2013, Morris *et al.* 2016), inclusion criteria were developed to select forums. This took into account the ethical approval secured from the University ethics committee and was based upon criteria used by Herron (2013) in her forum analysis of breastfeeding support. See table 16 for inclusion/exclusion criteria.

Table 16 Online forum inclusion/exclusion criteria

Eligibility criteria	Exclusion criteria	Rationale
UK site	Non-UK site	To explore UK mothers' experiences of bottle refusal only
Forum	Non-forums	To explore and analyse forum discussions only
Active > 50 posts/month	Inactive <50 posts/month	To enable contemporary discussions surrounding bottle refusal to be selected
Public forum (can view posts without a membership or login)	Closed forum (requires membership or login to view posts)	Ethical approval received for public posts only
Non-health professional/expert regulated (forum not administrated by health professionals/experts)	Health professional/expert regulated (forum administrated by health professionals/experts)	To explore discussions around bottle refusal between mothers without 'expert' interaction

2. **Searching for forums**

   Once the eligibility criteria were established, Google was searched using the term 'bottle refusal'. Not only is Google the largest and most used online search engine (statista.com), it has been identified previously as being the main source used by mothers to search for information (Lagan *et al.* 2011). This simple search elicited approximately 9,150,000 results.

3. **Selection of forums**

   Given that the majority of those using Google (91%) only consult the first page of results (Jacobson ND), the first online forums on the first page of the Google search that met the eligibility criteria were selected. This resulted in three forums: Netmums.com, Babycentre.co.uk and Mumsnet.com. (see table 17 for analytics on selected forums). They were crosschecked in Google using the additional search term: 'breastfed baby refusing a bottle', which resulted in the same three forums. Further crosschecking was undertaken using Alexa.com, an analytics software site. This cited Mumsnet and Netmums as the top two online parenting forums visited in the UK. (Analytics concerning babycentre.co.uk were unavailable as they are merged with USA based babycentre.com).

Table 17 Selected forums

Name	Background	Analytics
Mumsnet	UK forum. Established in 2000 by a UK mother. Aims to pool info/advice support together for parents. Ethos of not 'over moderating' and letting conversation flow. Funded by advertisements.	Majority users female. Majority users educated to graduate level. Majority UK based. (Alexa .com). 12 million users /month, 120 million views/month. (mumsnet.com)
Netmums	UK forum. Established in 2000 by three UK mothers. Provides information, advice and support to parents. Funded by advertisements.	Majority users female. Majority users educated to graduate level. Majority UK based. (Alexa .com) 7.3 million users/month (Similarweb.com)
Baby centre.co.uk	UK Forum. Established in 2000. Owned by Baby Centre LLC (USA based) which is owned by Johnson and Johnson. Multiple sites globally. Provides information, advice and support to parents. Funded by advertisements.	Majority users UK based. 7.6 million users/month (Similarweb.com)

6.5 Selection and capture of online threads and posts

A purposive sampling approach was used in relation to the selection of online threads and posts within the forums. The process is detailed below:

1. **Locating the appropriate discussion board to search for threads**

   Due to the size and nature of the three forums selected, there were numerous discussion boards through which mothers could potentially discuss bottle refusal by their breastfed baby. Each forum was therefore explored to locate a discussion board that contained the topic area of 'breastfeeding'. The discussion boards contained both active and archived threads by date, and were used exclusively by mothers – as opposed to 'health experts' who could post on some discussion boards (see table 18 for thread and post selection).

2. Searching for threads

The search term 'bottle refusal and bf baby' was used to search the chosen discussion boards for forum threads. After exploring the three forums this term was deemed to be the most accurate search to elicit threads and posts concerning bottle refusal by breastfed babies.

3. Selection of Threads

The initial search of the chosen discussion boards using the search term revealed large numbers of threads and posts in relation to bottle refusal. The number of posts used in online analysis of parenting forums varies and is dependent on topic, size of forum and sampling strategy. Knowles and Wilkinson (2017) extracted 'over 1000' posts from 12 discussions, Goh and Chi (2016) selected 967 posts from 136 threads, and Callaghan and Lazard (2012) captured 204 posts from just two threads. This gave very little guidance as to how many threads to select. The most recent 15 threads from each forum's discussion board (new to old) were selected, resulting in 45 threads. This was in effect an 'arbitrary' number, and forums would have been revisited and more threads selected, had data been deemed insufficient during analysis, however data saturation was achieved.

4. Selection of Posts

The online post guide was used to capture posts. The majority of posts within the 45 threads were selected using the forum guide, with very few being dismissed as not potentially contributing to the study. This resulted in the capture of 597 posts. The time range from which posts are captured varies, and like the number of posts appears to be influenced by topic, size of forum site and sampling strategy. The time scale from which the threads were captured for the current study was from two to four months, similar to previous time ranges which have been between one and four months (Callaghan and Lazard 2012; Herron 2013; Widemalm and Hjärthag 2015). The most recent threads were active but, due to the speed at which threads are archived on the forums, archived or 'dead threads' were also used.

5. **Anonymising and capturing posts**

   Each thread was allocated an id number followed by the initials of the forum source i.e. T1MN = thread one mumsnet, T2NM = thread two netmums, T3BC = thread three baby centre. All posts from each of the selected 45 threads were directly imported into NVivo 11 using NCapture and saved under their relevant thread id. The number of posts within threads ranged from 3 to 36.

Table 18 Thread and post selection

Name of Forum and discussion board	Initial search result (posts)	Number of threads selected	Dates taken from	Number of posts selected
Netmums (chat)	48,100	15	March – June 2017	228
Mumsnet (talk)	41,900	15	March – June 2017	183
BabycentreUK (community)	106,024	15	May - June 2017	186

6.6 Data Analysis

Data were analysed and managed using NVivo11 and Braun and Clarke's six stage thematic analysis (Braun and Clarke 2013). A multi-strategy approach was applied to the six stages in order to undertake the analysis. Due to the process used being the same as for study two and to avoid repetition, this is detailed in chapter three, section 3.7.2.

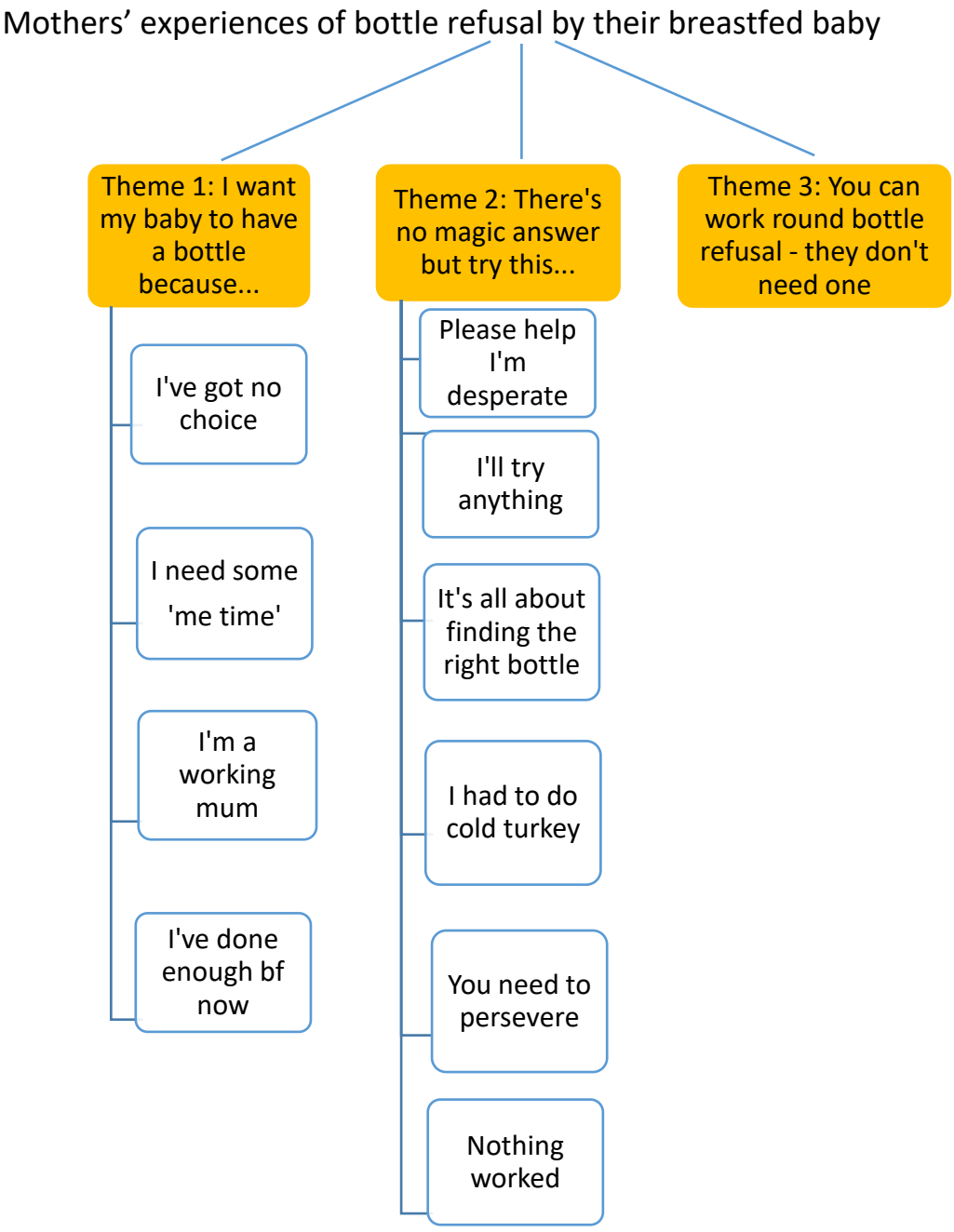
Reflexive stop off

Throughout this PhD, I have spent a large amount of time reading posts and threads online concerning bottle refusal. However, it was only during the analysis phases of the study that I began to realise there was a whole new world of 'forum speak' that I had not really engaged with. Now however, it became important to understand the idiosyncrasies of this forum speak in order to ascribe meaning to it and to code and theme the data. In addition, I realised that the readers of my work would also require an 'induction' into the world of 'forum speak', therefore I included the abbreviations at the beginning of the thesis.

6.7 Findings

Three themes emerged from analysis of the online forum posts (see figure 24). The following section will discuss the themes illustrating them with excerpts from the online posts.

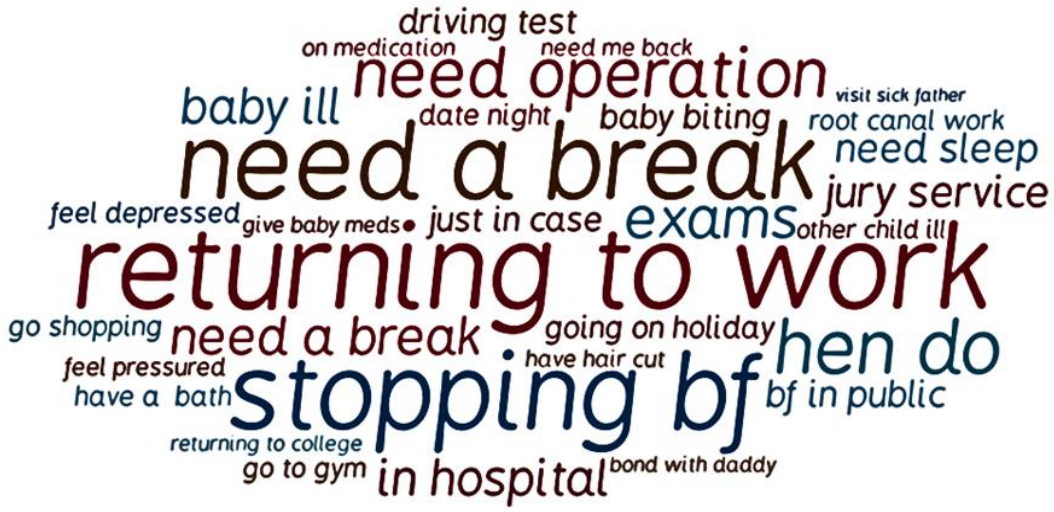
Figure 24 Themes – study three



6.7.1 Theme 1: I want my baby to have a bottle because…

The theme 'I want my baby to have a bottle because…..' evolved from mothers wanting to introduce a bottle. Although some reasons could be judged to be more critical than others, the phrases 'I need my baby to have a bottle' and 'I want my baby to have a bottle' were used interchangeably and were individual to each mother. Mothers gave a wide range of situations, which are illustrated in a word cloud. (see figure 25). The theme 'I want my baby to have a bottle because…..' is presented using the sub themes: I've got no choice, I need some 'me time', I'm a working mum and I've done enough bf now.

Figure 25 Mothers' reasons for introduction of a bottle to their breastfed baby



I've got no choice

'I've got no choice' depicts the varied circumstances mothers experienced which meant they would not be able to breastfeed their baby. The decision to introduce a bottle was due to having a perceived lack of choice. This was due to scenarios such as needing hospitalisation, attending a drivers awareness course, being called for jury duty, and having siblings hospitalised. Other equally challenging situations posted by mothers included needing to give their baby medication via a bottle, their baby being unwell and unable to breastfeed, and the mothers themselves being prescribed medication that was not compatible with breastfeeding:

> *I'm going into hospital in a few weeks and won't be able to fully breastfeed. (T12 bc).*

I'm currently on a course for 4 hours and daddy look (sic) after baby and he's crying hysterically and won't take the bottle! What can I do? I can't leave as it's a drivers awareness course x. (T5 bc).

I have a bit of a dilemma as my 6 month old exclusively breastfed baby doesn't take a bottle at all and I've been sent a letter to go for jury duty. She gets fed every couple of hours and literally doesn't take a bottle at all so not sure how she would get milk if I was to go to jury duty. Panicking!! (T6 nm.)

My son is in hospital… I can't stay with him as my daughter just will not have a bottle so can't be left. (T7 nm).

I need some 'me' time

'I need some me time' is derived from mothers discussing needing a break from breastfeeding and that bottle introduction could facilitate this. Having some '*me time'* or '*getting a bit of me back'* was frequently posted. Not being able to have time to themselves appeared to have a very negative impact upon some mothers:

I'm actually regretting ever breastfeeding as I want my life back, I just want to be able to go shopping or something and not always have to have the baby with me - I just want some ME time. I feel like a failure. (T3 nm).

Have to get ds (dear son) to take a bottle now for my own sanity. Have to be here to bf so am missing sisters 30th birthday tonight because of his complete refusal to take a bottle, had been planning to go for months …Can't handle the trapped feeling going (sic) getting seriously depressed. (T3 mn).

A number of mothers referred to feeling '*trapped*' with others feeling '*suffocated*' '*isolated'* and *'lonely*' in relation to not being able to have a break. Others described the tiredness they felt, how breastfeeding left them little time for their other child/children and how they did not like feeding in public. The majority of mothers discussed wanting only a short period of time away from their baby, citing having their haircut, going to the

gym and going to the dentist as examples. At times the 'break' requested was to do something exceptionally mundane:

> *I'm exclusively breastfeeding but wanted to start weaning my 4 month old onto a bottle so occasionally I can live (sic) my baby with my husband for a (sic) hour whilst I do the Asda shop - fat chance! (T2 nm).*

> *I just want to be able to have a bath while my DH (dear husband) gives her a feed. (T7 nm).*

Many mothers wanted to socialise or attend an event and some expressed feelings of guilt in relation to this:

> *I just want a night out - bad mummy. (T8 mn).*

> *I felt it was my 'selfishness' wanting him to take a bottle as opposed to a real "need" (T7 nm).*

In line with this, a number of mothers posted the impact bottle refusal had had upon their social life, which had led them to curtail it almost completely:

> *I didn't go out on my own without the baby until he was only feeding twice a day, morning and bedtime which was 12 months plus. (T11 mn).*

> *I just didn't go to things if he couldn't go. (T 11 nm).*

> *Haven't had a night out or any real time without ds since he was born 8 months ago. I didn't mind but can see it's frustrating if that's not the case. (T11 mn).*

One mother rationalised the restrictions upon time being a feature of parenthood in general and not particularly related to bottle refusal:

> *I think that feeling of having limited time is part of the whole being responsible for another human being thing, it gets less urgent as they get older but it's still there. (T11 mn).*

Another mother explicitly attributed her baby's bottle refusal to her postnatal depression:

> *…we have to do something, this issue is ripping apart our family. And it IS this issue, I had it with dd (dear daughter) too and when she finally accepted a bottle the pnd (postnatal depression) went. (T3 mn).*

I'm a working mum

'I'm a working mum' illustrates that returning to work is a primary reason why mothers wanted their baby to accept a bottle. The mothers often expressed feelings of panic, worry and anxiety at the thought of their baby not accepting a bottle by the time they returned:

> *I was panicking quite seriously when DS still wouldn't take a bottle properly and he was due to start with the CM (childminder) in two days. Cannot explain the relief when I was finally able to give her a bottle. (T2 mn).*

In addition, some mothers had scheduled 'staying in touch days' or training days during their maternity leave and were concerned they would not be able to attend them due to their baby refusing to accept a bottle. Further concern was expressed by some mothers in relation to their baby changing his/her feeding routine if it was not feeding during the day, commonly referred online by mothers as 'reverse cycling':

> *I don't want to stop bf just don't want to end up in position I did with ds who would refuse ebm in bottle or ff (formula feed) all day in nursery and then fill up bf all night when I got home from work .... Complete nightmare. (T7 nm).*

A number of mothers discussed having to resort to 'cold turkey' in order to ensure that their baby would be able to feed from a bottle in a day care setting. A small number of mothers requested advice regarding how to manage the return to work alongside bottle refusal, but this was in the guise of the 'worst case scenario' as their primary goal was bottle acceptance by their baby.

I've done enough bf now

'I've done enough bf now' reflects a number of mothers who wanted to introduce a bottle in order to stop breastfeeding altogether. For some mothers breastfeeding was having a negative effect:

> *I just can't go on – im (sic) in tears at the end of every feed. (T3 mn).*
>
> *i dont (sic) feel like there is an end. (T12 bc*).

Some mothers posted that they were breastfeeding when they did not want to. Others reported bottle refusal having led them to breastfeed for an extended period of time and beyond what they had planned. This did not always appear to be viewed positively:

> *I know a lot of mums love to breastfeed or wish they could but I am feeling so trapped by it with no way out…It never occurred to me that she could refuse it at 6 weeks. I was then completely ready to give up by 12 weeks but i (sic) had no option but to carry on. 8.5 months and I am still going. It is not about getting her to sleep through or anything I just dont (sic) want to breastfeed. (T12 bc).*
>
> *Yes, even now at 15 months!!!!!! I'm trying to stop her from having it but it's just so hard!!!! (T7 nm).*

A number of mothers described enjoying breastfeeding, however this was marred for some by having no other options available to them:

> *I don't want to breastfeed for years but happy to do it until teeth come! But knowing I have no choice but to BF is doing me in. (T2 bc).*

6.7.2 Theme 2: There's no magic answer, but try this…….

The theme 'There's no magic answer but try this…' captures the numerous posts mothers used to ask for advice, and those in which advice was given on how to manage and overcome bottle refusal. The methods suggested varied greatly and were based upon the mothers' own experiences. They included others feeding their baby, using formula and/or EBM in the bottle, feeding milk cold or heating it up, using different

bottles or teats, cold turkey, changing the feeding environment and dream feeding. Some mothers posted that, despite trying everything, nothing had worked. The following six sub-themes represent mothers' discussions: Please help - I'm desperate, I'll try anything, It's all about finding the right bottle, I had to do cold turkey, you need to persevere and nothing worked.

Please help – I'm desperate

It was evident from the titles of threads and posts posted by the mothers asking for advice, that many had tried a number of methods, yet their baby was still refusing a bottle. They appeared to be turning to the forums for help, sometimes in an act of desperation and as a last resort:

> *We've tired different temperatures, different teats, feeding when she's just a little hungry, feeding when she's very hungry, night time feeds. Makes no difference at all. I leave the room and sometimes the house, so it's unlikely that she can smell me. We've also tried formula, in case my expressed milk is no longer to her taste. Any creative ideas? I'm desperate (T9 mn).*

Phrases used by mothers included: *I'm at a loss, I'm desperate, I don't know what else to try, Nothing is working* – indicating a level of despair. Some mothers used emotive titles to their threads when posting:

> *How long would you starve your baby for it to take a bottle? (T2 mn).*
>
> *Am beginning to regret ever breastfeeding. (T7 nm).*
>
> *A tired and frustrated mummy – bf baby won't take a bottle. (T8 nm).*

Mothers asked various questions within their posts, with the majority requesting advice on which bottles, teats and/or cups best ensured success. In addition, mothers asked a number of other practical questions focusing on the temperature of the milk, when to introduce a bottle, and how long would it take to bottle acceptance.

Although many of the posts were requests of a practical nature concerning how to 'solve' bottle refusal, some mothers sought advice regarding why bottle refusal might be happening, and how long it was likely to last:

> *Is this just a phase? (T10 nm). Will he grow out of it? (T4 bc).*

> *Is this normal? (T9 nm). What might be the problem?* (T14 bc).

Whilst other mothers wanted reassurance that acceptance would occur:

> *Please say your baby took a bottle. (T4 bc). Please tell me this works. (T11 mn).*

Some mothers illustrated a dilemma in relation to the pursuit of bottle acceptance in the face of their baby's refusal:

> *DD's 4 months and exclusively breastfed, we've been trying for a few weeks now to introduce a bottle of expressed milk and she just won't have it! ….Should we just persevere or are we being cruel, if she really doesn't like it? (T8 mn).*

Interestingly, one mother requested 'expert' help and received a positive response from someone describing themselves as an 'expert' in solving bottle refusal:

> *Can anyone please recommend a maternity nurse in the West London area who can help with bottle refusal? (T12 mn).*
>
> *Reply: Hi, my email address is …….*

However, this was unusual as very few mothers referred to health professional information in relation to managing bottle refusal, although when they did, it was done negatively:

> *Hindsight is a wonderful thing but after having my eldest I realised the advice I was given by the midwife & HV to wait until my son was 6 weeks old before introducing a bottle to avoid "nipple confusion" was an utter load of *#% (insert word of choice!). (T7 nm).*

Few mothers focused on why their baby was refusing a bottle, although this may have been in response to the advice requested being mainly of a practical nature. A large number of mothers would finish their post with the words *'Good luck,'* possibly in recognition of bottle refusal being difficult to solve. In line with this, mothers pragmatically acknowledged that there was '*no magic answer'* to solving bottle refusal.

I'll try anything

It was clear that many of the mothers posting were resorting to a number of methods to elicit bottle acceptance. They often used the phrase *'I'll try anything'* in relation to asking for methods and advice. Some mothers posted some interesting, and at times dubious, methods, highlighting the lengths they would go to:

> *I used to say oh lets have a brew and make him a "brew" (just warm milk with a decaf tea bag dunked in for a second or 2 then he thought he was having same as me). (T2 nm).*
>
> *Ok so you've tried all the tips …. But it may be worth trying this one, wrap the bra you have been wearing around the bottle and get your OH (other half) to give it while you aren't there. (T2 nm).*
>
> *It can help to swaddle baby so his arms don't fight the bottle. We didn't have to do this this time round but found it effective with our DS1. (T12 mn).*
>
> *I applied a bitter liquid for blood purification easily available in asian stores (safe totally safe) and it worked. (T3 nm).*

Some mothers posted that they had used receptacles other than a bottle with the most popular being a cup. There appeared to be a certain amount of success with this method although it was often described with babies of six months and older. Other mothers however, responded to this method, posting that their baby was refusing a cup as well, or that their baby would have water or juice in a cup but not milk. Many posted how their baby wanted milk via breastfeeding only:

He (husband) tried a bottle and sippy cup and she was not impressed one bit…she looked disgusted that he'd even attempt to give her milk in anyway other than from source  *. (T2 nm).*

A few mothers posted that they had used a straw when their baby refused a bottle or cup:

I went through the same with my dd who is 8 months and still breastfeeding. When she was 6 months I tried her with a straw which she loved and it's the only thing she'll take milk out of!!! Hates bottles or cups. (T7 nm).

I've seen really tiny babies grasp the idea of a straw. (T9 mn).

It's all about finding the right bottle

'It's all about finding the right bottle' depicts the large number of mothers advising on certain brands of bottles in order to solve bottle refusal. They appeared to believe that finding the right bottle would lead to acceptance. Very few mothers advised 'sticking to one bottle' and the majority discussed making multiple purchases before they found the right one. No one bottle brand appeared to be more successful than another, and what worked for one baby did not always work for another:

I spent over £80 until I settled on the MAM ones. He took it straight away. (T7 nm).

We tried Tommee Tippee, MAM, NUK, AVENT, the medela ones that come with pump until someone suggested the minibe, she wolfed it down with that (T4 bc).

Mothers posting on the forums acted upon advice from other mothers and would make purchases in relation this:

Bottle refuser here too for months - he now accepts the Nuk! (T7 bc).

Reply

I've just ordered one - another bottle refuser here! Pleaseeeee work xxx (T7 bc).

Thanks for the suggestions, I'm going to order a Mam & Minbie bottle and see if those work better (T13 bc).

A number of mothers who suggested brands of bottles would describe the features of it, intimating they were instrumental in acceptance:

I switched to mam bottles which have really soft teats and he instantly took to them. (T 10 bc).

…with my 2 year old the only bottle she would take was a comotomo bottle, they aren't cheap but are designed to mimic your breast and worked a treat with her. (T11 bc).

It was apparent that some brands of bottle were considered to be particularly effective such as Minibe:

I'm considering a minbie bottle, they're meant to be good for bottle refusers! (T13 bc).

The teat, along with the bottle, was also highlighted in many posts as being crucial to acceptance. Some mothers used their knowledge of milk transfer during breastfeeding and aligned teat flow with this. Varied advice on teats was posted. Some mothers suggested using soft teats (latex) others hard teats (silicone). Mothers described 'fast flow' teats being akin to the let-down reflex, whereas others suggested vari-flow teats, as the baby had to 'work harder' to retrieve the milk as in breastfeeding. In line with advice on bottles, advice regarding teats was often contradictory and appeared to be based upon personal experience whilst influenced by the marketing of the bottles :

We tried tommee tippee first and she wasn't keen. Then tried Lanisoh which are supposed to replicate the boob in that milk will only flow if she latches and sucks. She loves these and guzzles it down (T6 bc).

Reflective stop off

I read a number of online posts that aligned bottle acceptance with certain bottle brands, using positive language such as he/she (baby) 'loved it', 'wolfed it down' 'took it straight away'. It was obvious mothers made purchases on these descriptions. I reflected on this, and not only could I see mothers endorsing certain bottles, I also recognised how easy it would be for someone from one of the manufacturing companies to post these messages to increase sales. All three forums described their support for breastfeeding, and carried the caveat that they did not advertise formula or bottles/teats. However, in this case, the posts would come under the guise of 'implicit' rather than 'explicit' advertising. Although I had no evidence to support the theory of bottle/teat companies posting on these forums, I also recognised that there was a need for evidence-based information for mothers to refer in relation to their purchases of these bottles and teats.

I had to do cold turkey

'I had to do cold turkey' portrays the advice a number of mothers gave in relation to using this method successfully, often as a last resort. Some mothers described it as being '*the only answer'* to bottle refusal. Cold turkey was undertaken with both babies that were solely reliant on milk, i.e. they were not old enough for complimentary foods, and with babies that were older and eating solids. The length of time until acceptance was often included in the mother's post, at times with detailed information of how to undertake the method:

> *Give your usual feed in the morning after 3 hours offer a bottle. It may be rejected. Don't force, but try about every 15 min. The bottle should be warm. Do not give in and offer the breast. I found he took the bottle after 6 hours with no milk. (T2 mn).*

A number of mothers described their baby as being 'stubborn' and illustrated their eventual acceptance in the form of a 'battle of wills', including how long it had taken to acceptance:

It took me twelve hours but he gave in eventually! (T2 mn).

He finally cracked at 4pm. (T2 mn).

He held out all day, caved at 3pm. (T2 mn).

Some mothers reported cold turkey in a positive light:

I did this, (cold turkey), it worked a treat and nowhere near as stressful as I had been led to believe. DS was about 6m and I was due back to work in a couple of weeks and had tried everything else. (T2 mn) .

I think cold turkey is much more stressful (and painful) for you than for the baby. (T13 bc).

For most mothers however, it was clear it had not been an easy process, leading them to experience stress and describe it as 'traumatic':

We spent a fairly traumatic night and by morning the next day she was taking a bottle. Really really tough, but there was simply no option and it worked. (T3 mn).

It took 48 hours of constant refusal and strops (on her part) but finally she took a bottle early Mon morning. It was a very stressful weekend! (T3 mn).

Although it appeared to be successful, cold turkey was not always viewed as a viable method for managing bottle refusal, with some mothers posting they would not '*starve their baby*' but would rather carry on breastfeeding. One mother described feeling judged for having used it:

The gentle approach and tips (expressing, all the money spent on different formulas or teats!!) werent (sic) working … I had to go back to work. So once I was sure that she knew how to drink milk from the bottle, I decided that she was just being stubborn. It took me 1 - 2 days of offering the bottle when she wanted feeding….I should have done that to begin with although it was heartbreaking. I

could have done with a bit more support instead i (sic) was made to feel like a bad mother. A couple of days with little food will not do any harm. (T2 mn).

Interestingly, the possible adverse health outcomes of using cold turkey for mothers were not referred to in any of the forums.

You need to persevere

'You need to persevere' summarises what many mothers cited as the key to success and bottle acceptance. It was often discussed in association with being *'patient*' with being *'consistent'* and with *'don't give up'* and *'keep at it'*. Additionally, perseverance appeared to underpin other methods used:

My LO (little one) was breasted for the first 7 months and refused the bottle for the first 2. She eventually took the bottle if I wasn't in the room so she couldn't hear/smell me. Just gotta keep persevering and you will get there. X (T4 nm).

Some mothers were candid in how long they had had to persevere in relation to very small gains made. However, some advancement was often seen as a positive upon which to work on:

My second one (18 weeks old now) will begrudgingly take only 2oz or so from them after screaming for 45 minutes first. We've tried once a week or so since 7 weeks old. (T15 mn).

A number of mothers described perseverance was required due to bottle feeding being a *'new skill to be mastered'*. This could also be aligned with a number of mothers posting that their baby '*just could not work it*' (the bottle):

You need to persevere as they need to learn how to take it. We used medela bottles.  *you just gotta work at it x (T7mn)*

Routine was also associated with perseverance, and a daily attempt at introducing the bottle was advised by mothers, often at the same time every day.

Nothing worked

'Nothing worked' encapsulates the many mothers who posted advice and responses on the forums but whose babies had continued to refuse a bottle. The mothers often recognised that their response could be difficult for other mothers to digest who were still trying to manage bottle refusal:

> *Sorry to be the bearer of bad news but my son was a bottle refuser! We tried EVERYTHING! … unfortunately you may be in for a tough ride! Sorry I'm no help (T4 nm).*

> *DS2 was a bottle refuser. I was desperate as he fed every 45 mins round the clock and I was insane from lack of sleep but to no avail. He did take a sippy cup from about 10 months, but wouldn't have milk (of any sort) in it. Sorry, that's not what you want to hear. (T8 mn).*

For some mothers, their baby would not accept any fluids other than from the breast. Self-weaning was reported by a small number of mothers as the eventual outcome of their baby refusing a cup or bottle. Many mothers were still trying to introduce a bottle but would be explicit in their advice that nothing was working. They also frequently used the term '*we've tried everything*'. A number of mothers used emotive language in their posts in relation to their circumstances such a bottle refusal being '*torture', 'unbearable',* and feeling like a *'failure':*

> *My DS refused a bottle completely and would not take milk (formula or expressed) from anything or anyone. Was torture! (T6 mn).*

> *The longer this battle of wills is going on, the more i'm just feeling like a failure. I just dont (sic) know what else to do. (T7 nm).*

Some mothers blamed themselves for their baby's continued bottle refusal. This was either due to them 'waiting too long' to introduce one, or because they did not continue with bottles regularly once their baby had accepted, which led to refusal again.

6.7.3 Theme 3: You can work round bottle refusal - they don't need one

The theme 'You can work round bottle refusal - they don't need one' emerged from mothers who, instead of giving advice on how to solve bottle refusal depicted ways to work round it. Posts usually discussed the benefits of breastfeeding, gave praise to the poster looking for advice that she 'had come this far', and attempted to rationalise why breastfed babies refused a bottle. Bottle refusal was often seen as being a normal response for a breastfeeding baby, with mothers reassuring other mothers that there was nothing wrong with her baby:

> *Why have a bottle when you can have draught. (T7 nm).*

> *It's not the bottle that's putting your DD off - it's just because it's not you and she knows what's nicer!!! (T7 nm).*

A number of mothers suggested waiting until the baby was eating complementary foods, as milk feeds were not as crucial to their diet. They also attempted to reassure mothers that this would not be for a long period of time and that the impact of bottle refusal would change as the baby got older. Working round bottle refusal came in a number of guises. Some mothers suggested to just 'accept bottle refusal'. Other mothers discussed how they managed to leave their baby for a period of time, with an emphasis on reassurance:

> *In the grand scheme of things, breastfeeding goes on for such a small period of time that its much simpler to just take the hit, and not go out. Soon your baby will be taking their nourishment mainly from solid food and you will fondly look back at breastfeeding days when your baby needed you. My younger two refused a bottle till (sic) 8 months old and two weeks later were no longer breastfeeding. Natural progression. (T2 bc)*

For me, the convenience of bf still outweighs the inconvenience of not being able to leave lo for long periods of time… My lo (little one) won't take a bottle really- he'll kind of have a minbie in his mouth and swallow some formula but it's not a proper feed. Still, I've managed two nights out and when lo woke my OH just basically tipped milk into his mouth and resettled him by rocking…Not ideal but he lived to tell the tale and so will yours! I've just accepted it. In 3 months time they'll be on solids and feeds will start dropping and before you know it you'll b (sic) longing for those days where lo snuggled down into U (sic) for a feed. It's a short moment in time, try. Try not to wish it away x (T2 bc).

Being old enough to eat food and drink water from a cup led some mothers to question the need for bottles at all:

No drastic measures required here. I went back to work at 9 months with DD and planning to do same again with DS and neither has ever had a bottle. The whole bottle thing seems a waste of time to me (T10 mn).

At 7 months DD was eating quite well and drinking water etc so I wouldn't (sic) necessarily panic she has never, ever had a bottle and actually it is fine. Was actually pleased I didn't have to have the hassle of bottles and sterilising on top of a full time job! Your child doesn't need a bottle (T10 mn).

Some mothers also gave advice regarding returning to work whilst experiencing bottle refusal and how they managed this. This usually involved an older baby who was able to receive complementary foods:

I fed DD before I went to work, on my return and a dream feed, Her 2 pm feed was quickly replaced with a snack. She drank from a cup from 8/9 months, I am still feeding her and she is 2.5 years ... For the first few weeks, she leapt on me when I got home, then it settled down. She has never, ever had a bottle and actually it is fine….so I woudnt (sic) necessarily panic. (T10 mn)

I was so worried I'd be leaving my baby without his mum at daycare AND hungry without a bottle. But that wasn't the case at all. And for me, breastfeeding really helped both me and my son feel ok about being apart for long periods when I was back at work. (T10 mn).

Interestingly, one mother suggested bottle refusal was a scenario that was subjective and personal,

It matters how much it matters to you. (T8 bc).

6.8 Discussion

This study aimed to provide a unique 'mother to mother' perspective on bottle refusal by breastfed babies, using posts from online parenting forums. It aimed to explore discussions around bottle refusal between mothers, without 'expert' interaction. It aimed to build on the findings of study one, and triangulate findings with those of study two, presenting a more complete understanding of mothers' experiences. It is the first study of its kind to explore mothers' experiences of bottle refusal using online forum posts. As such, it has generated new understandings of mothers' experiences, and made a valuable contribution to the almost non-existent evidence-base concerning the scenario.

Three themes emerged from the online forum posts. Mothers described psychological, physical and socio-economic reasons as to why they wanted to introduce a bottle to their breastfed baby. These included needing some 'me' time, having no choice due to acute scenarios, returning to work, and wanting to cease breastfeeding altogether. Mothers advised on numerous methods to try to manage bottle refusal, but there appeared to be no magic answer to bottle acceptance. Advice was often focused on 'solving' bottle refusal by practical means. However, some mothers posted advice to enable mothers to 'work around bottle refusal' and that bottles were not needed, advice underpinned by bottle refusal being a normal response by a baby. The impact of bottle

refusal was overwhelmingly negative for mothers, and for some, it had psychological consequences.

The following section will interpret the findings from the online forum posts and relate them to infant feeding theory and literature.

The current study findings illustrate the complexities surrounding the introduction of a bottle to a breastfed baby. Reasons to introduce a bottle were often based upon individual circumstances, which is consistent with findings by Hoddinott *et al.* (2012) and Lee and Furedi (2005). The mothers in the current study did not live generic lives, and as such, the context surrounding why they wanted to introduce a bottle was often 'mother specific'. From a more universal perspective however, reasons to introduce a bottle were underpinned by physical, (being unwell), psychological (needing 'me time', feeling isolated), and socio-economic (returning to work), factors.

Interestingly, the study findings show that the terms 'need' and 'want' were used interchangeably by mothers regarding bottle introduction. From this, it could be questioned if mothers 'need' to introduce a bottle, or merely 'want' to introduce a bottle, in essence, were mothers presented with a choice? McInnes *et al.* (2013), in their discussion of influences on infant feeding, frame this debate in terms of situations that are 'tangible' or 'perceptual', which can be applied to this study. They describe tangible situations as being 'within parental control' (mothers in the current study who wanted to attend a social event), and 'not within parental control' (mothers in the current study who were unwell). Perceptual situations were associated with emotional or physical feelings (mothers in the current study who felt isolated, lonely or depressed). This is perhaps a less hierarchical interpretation of why mothers wish to introduce a bottle, and reflects the importance of the 'situation' in mothers' decisions (McInnes *et al.* 2013). However, this does not prevent the mothers in this study from being labelled as 'bad mothers', a concept that has long been associated with mothers who are seen to place their own needs first when they decide to bottle feed (Carter 1995; Murphy 1999; Murphy 2000; Dykes 2005; Faircloth 2010; Hoddinott *et al.* 2012; Williams *et al.* 2013b). To counter this, mothers may need some 'social space' in order to maintain their mental

wellbeing after giving birth. Furthermore, in order to facilitate a baby's needs, a mother's needs should be recognised and met. However, the narrative surrounding this supposition remains predominantly weighted towards the baby taking priority (Maher 1995; Marshall *et al.* 2007; Lupton 2011; Williams *et al.* 2013b).

The current study findings present various scenarios where breastfeeding was just not possible for mothers, leaving them 'no choice' but to try to introduce a bottle – referred to as a '*crisis bottle'* by McInnes *et al.* (2013, p.9). Examples such as maternal hospitalisation, jury service and attending a drivers awareness course certainly posed challenges to mothers whose baby refused to feed other than by the breast. In these instances however, the need to introduce a bottle would not have been purely down to maternal separation, with UK rules and policies preventing babies from accompanying their breastfeeding mothers being an influencing factor. Publicised examples of these include a breastfeeding mother whose exemption from jury service was declined because she was told her baby could be fed by a bottle (Charlton 2015). In addition a breastfeeding mother was not allowed to bring her baby into a drivers awareness course (BBC.CO.UK 2017). Furthermore, a breastfeeding mother experiencing bottle refusal had to resort to recruiting mothers on Facebook to breastfeed her baby whilst she was hospitalised. The hospital would not allow her baby to stay with her (Telegraph.co.uk 2016). In addition, it is evident that the lack of recognition, knowledge and understanding surrounding bottle refusal has the capacity to further complicate such scenarios. It could be argued that if breastfeeding was the 'norm' in the UK instead of formula/ bottle feeding, mothers would not need to be separated from their babies in all instances. Rather than facing policies and rules that prevent babies from accompanying them, it would be acceptable for mothers to attend a driver's awareness course, jury service, or be treated in hospital with their baby alongside them. For the mothers in the current study who were facing bottle refusal, this could alleviate some of the challenges they faced. However, it is acknowledged that for this to happen a socio-cultural shift would be required, 'normalising' breastfeeding and reversing the UK bottle feeding culture (Brown 2015; Leahy-Warren *et al.* 2017).

In line with previous UK research, the current study found mothers' return to work to be a motivation to introduce a bottle (Gatrell 2007; Hoddinott *et al*. 2011; McAndrew *et al*. 2012; Skafida 2012; GOV.SCOT.UK 2018). Continued breastfeeding whilst working is not readily undertaken in the UK, due to lack of practical support, and it not being the cultural norm (Dykes 2005; Gatrell 2007; Andrew and Harvey 2011; Skafida 2012; Desmond and Meaney 2016). Gatrell (2007), discusses how breastfeeding and working presents a contradictory situation for mothers, between conforming to '*suitable embodied behaviour'* in the workplace, where breastfeeding is a 'taboo', and providing '*what was best'* for their infant (p. 393). The mothers in the current study who wanted to introduce a bottle in preparation for their return to work, were not attempting to undertake anything out of the ordinary, and were to an extent conforming to the socio-cultural norm. What sets them apart from mothers whose baby will accept a bottle however, is the anxiety attached to returning to work knowing their baby will not be accepting milk in their absence. This finding gives further insight into the complexities of working and experiencing bottle refusal, which were alluded to in study one.

The current study findings depict some mothers were 'breastfeeding against their wishes'. Although bottle refusal led to an extension of the duration of their breastfeeding, the lens through which this was viewed by the mothers was not always a positive one. These mothers were meeting the bio-medical, public health and moral rationale for breastfeeding, and exhibiting the 'good mothering' associated with it (Maher 1995; Carter 1995; Murphy 1999; Murphy 2000; Dykes 2005; Faircloth 2010; Hoddinott *et al.* 2012; Williams *et al.* 2013a; Spencer *et al*. 2014). However, it is clear these factors alone were not enough to influence the continuation of breastfeeding. This illustrates the complexity of breastfeeding which Dykes (2006) aptly describes as a *'biopsychosocial process that is dynamic, relational and changes over time*' (p.204). In addition, it implies that 'success' in breastfeeding does not necessarily equate to a positive experience.

Current study findings highlight that not all mothers saw the 'restrictions' of breastfeeding and impact of bottle refusal as wholly negative. Some adopted a more pragmatic view, evidenced by acceptance towards bottle refusal. This finding widens

understanding of those mothers that reported bottle refusal as having no impact or a positive impact on their breastfeeding experience in study one. Although mothers' differing responses to bottle refusal can be aligned to individual circumstances, the possibility of maternal personality or temperament being an influencing factor should be considered. This is reiterated in previous studies concerning breastfeeding, where maternal personality had an impact upon breastfeeding duration and the ability to overcome breastfeeding challenges (Bottorff 1995; Hauck and Irurita 2003; Hegney *et al.* 2008; Ricotti *et al.* 2015; Jardine *et al.* 2017).

The current study findings highlight the challenges mothers were facing in relation to their baby's bottle refusal which led them to seek help online. This is evident in study one, where mothers reported the internet as the most used source of advice and support. The use of online sources for advice and support by mothers is not a new concept. Mothers often offer, seek, and utilise, un-evidenced advice for all aspects of childcare, including infant feeding (McKeever and Mckeever 2017), an exercise that is increased by the presence of online resources (Morton Robinson 2001; Suler 2004; Fox *et al.* 2015; Newby *et al.* 2015; Yamada *et al.* 2016; Haslam *et al.* 2017; Bridges *et al.* 2018). In addition, due to the lack of knowledge of bottle refusal, there is little alternative professional evidence-based information for mothers to refer to. Thus, mothers' migration to online forums to utilise anecdotal advice from anonymous sources would seem inevitable.

The current study depicts an overwhelmingly negative picture of bottle refusal portrayed by the mothers, with emotive language used to describe their experiences at times. Emotive language is common within online discussions, (Morton Robinson 2001, Suler 2004), and may have been included by the mothers to engender a response to their requests for help. In addition, the '*disinhibition effect*' may be applicable, whereby people 'act out' more intensely due to the anonymity, invisibility and asynchronicity of online platforms (Suler 2004, p. 321). However, the anonymity of the online discussions may have allowed the mothers to express more openly and honestly how they felt about their experience of bottle refusal. This is a concept echoed by previous authors concerning online dialogues (Drentea and Moren-Cross 2005; Widemalm and Hjärthag

2015; Haslam *et al.* 2017). The option to discuss issues honestly and anonymously can be particularly applicable when the 'posters' are undertaking a practice that is deemed to be 'deviant' or against professional advice (Loudon *et al.* 2016; Germain *et al.* 2017). This can be applied to bottle introduction, where mothers exhibit 'deviant' behaviour due to wanting to introduce a bottle to their breastfeeding baby (Murphy 1999). Thus, in essence, although the posts may have been 'enhanced', and the disinhibition effect (Suler 2004) may have been active, the underpinning theme of a negative experience is likely to be real.

The study findings highlight the dilemma bottle refusal created for mothers due to their pursuit of bottle acceptance in the face of their baby's refusal. Previous studies concerning weaning from the breast depict different courses of action taken by mothers, when they have met with resistance from their baby. Marquis *et al* (1998) found most mothers continued to breastfeed, or at times undergo relactation, if their baby exhibited a negative reaction to weaning. Bøhler and Ingstad (1997) described a process of 'negotiation' occurring between mother and child when weaning was resisted. These courses of action see the mothers responding to the conflict by relinquishing control and 'giving in' to their baby. In contrast, Hauck and Irutia (2003) reported mothers 'dismissing' their baby's resistance to weaning. This course of action sees the mothers responding to the conflict by assuming control and waiting for their baby to 'give in', a course of action which appears to have been assumed by the majority of mothers in this study whose online posts were analysed.

The study findings show that mothers were willing to request and accept advice from anonymous sources, appearing to be driven by their 'desperation' to find an answer to solve their baby's bottle refusal. In addition, it is likely that the 'collective experiencing' of bottle refusal would have acted as an authentication of those posting advice and the advice they were posting. This concept is supported by Gray (2013), who in her study of online social support for breastfeeding, discusses how mothers probably prefer information from mothers who have '*been there'* (p. 8). This was also evident in a study of a closed Facebook breastfeeding support group undertaken by Bridges (2016), who found other mothers gave an *'authentic presence' (*p.7). In addition, both studies found

information-giving from mothers who had shared experiences as providing emotional support. In the case of the mothers in the current study, this could have amplified their receptiveness to advice.

It is clear from the current study findings that there was an emphasis by mothers on 'solving' bottle refusal, synonymous with a medicalised model of infant feeding (Dykes 2005). However, it was also clear that no 'one solution fits all' and for some mothers, it was not 'solvable' at all. Due to the lack of published research surrounding bottle refusal by breastfed babies, the advice being posted was purely experiential, anecdotal and un-evidenced. Of concern were the potentially 'harmful' practices being advised, particularly as many mothers were open to 'try anything' in order for their baby to accept. These findings provide additional understanding of how mothers manage bottle refusal, which was reported methods-wise in study one. In addition, it exhibits the lengths some mothers will go to in order to enable bottle acceptance, again advancing knowledge gained from study one. This study calls for information to be cascaded to mothers concerning the current lack of evidence to support the practices they employ. This should be balanced by support for mothers, including suggestions on how to continue to breastfeed alongside their baby's bottle refusal. This support could be disseminated via online breastfeeding support platforms which UK mothers access.

In contrast, the study findings highlight certain methods purported to be 'key' to success. One of the 'key methods' was that of 'finding the right bottle', akin to the mothers in Egan's study who tried different bottles and teats when faced with bottle refusal (Egan 1988). The UK bottle market is extensive, marketing bottles that manufacturers purport to exhibit the characteristics not only of a breast but the mechanism of breastfeeding as well (Geddes *et al.* 2012; Segami *et al.* 2012). The majority of the evidence to support the bottles being able to solve bottle refusal or reduce nipple confusion is almost entirely anecdotal. However, bottle company websites contain testimonials from parents and in some cases nurses and lactation consultants, which can increase credibility (mimijumi.com; tommeetippee.co.uk). In addition, 'tips' on how to overcome the challenges of moving from breast to bottle are often referred to on the websites (medela.com; mimijumi.com; tommeetippee.co.uk).

Returning to work, in particular, is focused upon as a time a bottle is needed, with one brand naming their bottle the '*back to work*' bottle (mimijumi.com). Interestingly, a recent report on the global baby bottle market, determines a key driver in growth as more mothers going out to work (Technavio.com 2018). With such focused marketing on the challenges mothers face when introducing a bottle to their breastfed baby, it is therefore not surprising that 'finding the right bottle' is rationalised by mothers as a way to overcome it. However, the fact that some babies in the current study refused to feed from any bottle indicates that this method is not universally successful, and to an extent confirms the low level of success reported in study one. Transparent information regarding bottles and teats, including the evidence underpinning their 'effectiveness' in relation to bottle refusal, would help mothers make informed decisions in relation to purchases. Furthermore, research is required in relation to bottle brands and how they overcome bottle refusal.

It is evident from the study findings that a bottle was the designated substitute for the breast rather than a cup, which is the suggested alternative (NHS and UNICEF 2015c). Previous studies have shown mothers not to favour a cup due to spillage (Dowling and Thanattherakul 2001), concerns over inadequate intake (Malhotra *et al.* 1999; Dowling and Thanattherakul 2001) and inconvenience, especially at night (Malhotra *et al.* 1999). In addition, 'cup refusal' - a scenario like bottle refusal that appears to be under recognised – was experienced in this study. Other receptacles such as a straw were mooted, however there is no current evidence to support them as an alternative to the breast. This study highlights a gap in research in relation to alternatives to breastfeeding, bottle and cup for healthy older babies, which could potentially be utilised by mothers experiencing bottle (and cup) refusal.

The current study found 'cold turkey' to be a further 'key method' leading to success, which confirms findings from study one. Cold turkey was usually undertaken as a 'last resort' and proved to be distressing for most mothers who used it, a finding which possibly explains why so few mothers reported undertaking it in study one. Although the current study found cold turkey appeared to be 'successful' - in that it led to eventual bottle acceptance - this success should be tempered with the possible adverse outcomes

for both mother and baby. Acute cessation of breastfeeding can lead to engorgement, mastitis and breast abscess (Noonan 2010). In addition, withdrawal of milk from a baby, especially one who is not eating complimentary foods, can lead to dehydration (Staub and Wilkins 2012). Furthermore, the impact of psychological distress for both mother and baby should not be discounted. The current study is unable to support the use of cold turkey as a method to 'solve' bottle refusal, however it also recognises that mothers will continue to use it. It suggests therefore, that mothers receive information concerning the potential adverse health effects of cold turkey - which were not always recognised by mothers in this study - in order to make an informed decision to undertake it.

The study findings exhibit 'perseverance' as a final 'key method' associated with success (bottle acceptance), which contributes to an understanding of the finding from study one, where mothers who intended to feed most frequently from a bottle, were most likely to report bottle acceptance. Perseverance is a personal quality which has been linked to mothers' ability to overcome breastfeeding challenges in previous studies (Bottorff 1995; Hauck and Irurita 2003; Hegney *et al.* 2008; Burns *et al.* 2010; Edmunds *et al.* 2013). Perseverance, in the current study, was described in terms of being persistent and routinely exposing the baby to a bottle. This is very much indicative of westernised model of parenting, where 'routine' and 'control' in relation to feeding are dominant (Dykes 2005). In addition, there was also a belief that bottle feeding needed to be 'learnt' by a breastfed baby, thus it could be mooted that a process of 'training' was being initiated by the mothers. Paradoxically, the notion of a baby having to be 'taught' to feed is currently reserved for the practice of breastfeeding rather than bottle feeding, with the former, once deemed an intuitive natural practice, being framed as something that now requires instruction (Dykes 2005, Burns *et al*.2012).

It is evident from the current study findings that bottle acceptance did not always occur, even in the event of having 'tried everything'. Mothers in Egan's study also faced permanent bottle refusal (Egan 1988), as did mothers in study one. The caveat that 'nothing worked' was often posted and there was a recognition that this may be difficult for some mothers to hear. On consulting online sources of online breastfeeding support

which mothers access, there are few who repeat this caveat. In addition, although accepted as a potential challenge, bottle refusal appears to be 'minimised' by bottle companies who often describe it as short term and solvable (medela.com, mimijumi.com). Thus mothers can be lulled into a false sense that bottle refusal is something that can, and should, be overcome with ease. For this not to happen may spell failure on their part, and this was alluded to by some mothers in this study. This may explain why mothers experience bottle refusal negatively, and builds upon findings in relation to the impact of bottle refusal from study one. In addition, the prevailing message that bottle refusal is a solvable scenario may lead mothers to believe their baby is exhibiting 'abnormal behaviour' if it consistently refuses. A 'normalising' of bottle refusal by breastfed babies, framing it as a natural response by a healthy, well baby, could help counter this, and information surrounding the scenario should reflect this.

The study findings demonstrate that not all mothers expressed the need to solve bottle refusal. There was, instead, an emphasis on 'working around it' and accepting it, with mothers being able to reconcile themselves to its occurrence. This illustrated a more pragmatic response to the scenario of bottle refusal, and resonates with a study by Jardine *et al.* (2017), who found mothers who viewed breastfeeding pragmatically were later able to acknowledge potential barriers and solutions to overcome them. This finding contributes to an understanding of how mothers experience bottle refusal, building on findings from study one concerning impact.

The theory that breastfeeding provides more than nutrition has been widely discussed (Gribble 2006; Gribble 2009; Entwistle 2014; Papp 2014; Reddy *et al.* 2015), and appeared to reverberate with the mothers in the current study who worked around bottle refusal. Bottle refusal was contextualised as a natural response, with the mothers seeing it as the baby making a preference for breastfeeding and the mother instead. This could be aligned to theories of attachment, where breastfeeding produces a secure base for a baby (Gribble 2006; Tharner *et al*. 2012; Gibbs *et al*. 2018; Weaver *et al.* 2018). The study also found some mothers depicted bottle refusal as an interlude in their baby's life. This appeared to enable them to accept the challenges it brought. However, this approach of being able to see the 'bigger picture' was often discussed in hindsight

and a certain amount of 'rosy retrospective' may have influenced it. In addition, this positive interpretation may be rather more difficult for mothers to adopt when in the midst of bottle refusal. Furthermore, for those mothers facing acute circumstances such as hospitalisation, a pragmatic response would be difficult to apply.

The study findings also illustrate that for some mothers bottles were simply not needed. This replicates current guidance that a breastfed baby should progressively move from breast to cup (NHS and UNICEF 2015c). However, as discussed earlier, the use of a cup as an alternative to a bottle is not always viewed positively by mothers. In addition, some mothers reported their baby refused a cup in addition to a bottle.

6.9 Study Limitations

Due to the nature of the mothers' posts (anonymous, using pseudonyms), it is difficult to ascertain the authenticity of their posts (Germain *et al.* 2017). Analytics undertaken regarding the forums do indicate a UK base of females (Alexa.com), however it is acknowledged that there are no measures to examine the authenticity of the posters themselves. Due to the majority of the posts focusing on wanting to 'solve' bottle refusal a negative perspective may have been increased, although posts are included in the findings concerning mothers who viewed the scenario more positively. Due to anonymity and the nature of online forum posts, dialogue it less likely to be mediated than if in a formal conversation. Thus, a more 'enhanced' view of bottle refusal could have been portrayed using emotive language. In addition, the fact that the data was selected from mothers who were posting on online forums could additionally reflect the views and experiences of mothers most likely to participate in such forums. Due to the posts being short in length, it could also be argued that only a 'snap shot' of bottle refusal was being portrayed and thus analysed. However, the fact that many of the posters were posting whilst experiencing bottle refusal, meant that the data collected was to an extent 'real time'. Finally, due to the nature of online forums as a form of data collection, there is an inability to 'follow up' posts and ascertain meaning, which could have impacted upon the data collected. However, the overall mixed methods design of

this research, and the triangulation of data from the qualitative phase, should to an extent, offset this issue.

6.10 Conclusion

The study findings present bottle refusal by breastfed babies as a complex and challenging scenario for most of the mothers, one that is not easily – if at all – resolvable. Reasons why mothers wanted to bottle feed their breastfed baby were in addition complex, spanning physical, psychological and socio-cultural factors. The scenario was found to impact negatively upon most mothers, with few responding pragmatically to it and working around it. This study provides a rationale for recognition and understanding of bottle refusal, in order to provide mothers experiencing it with effective support and advice. This in turn could lead to mothers having a more realistic view of bottle refusal, leading them to experience it pragmatically and positively. Recommendations for practice and future research in relation to this study will be discussed in chapter 8.

The following chapter will present the integrated findings of all three studies of this programme of research.

Chapter 7 - Integrated findings

7.1 Introduction

This chapter will present the integrated findings from the three studies in relation to mothers' experiences of bottle refusal by their breastfed baby. It will discuss how the integration of the studies was undertaken, by using a narrative approach of weaving. The overall research findings using overarching themes will also be presented. Interpretation of the findings will be discussed with particular reference to infant feeding literature. This chapter also contains a series of reflective and reflexive stop offs taken from a reflective diary, used to put thoughts and actions during this stage of the research into 'real time' context.

Reflective stop off

I had undertaken all of my data collection and analysis but was yet to integrate my studies. I hadn't really considered what my overall findings would look like or how I would present them to the wider world. Other than choosing an approach to integrate them, I had not yet taken the final step of 'solidifying' my research. A conversation with a midwife and then a health visitor friend, and attendance at a thesis writing day changed all that however. Independently of each other, the midwife and health visitor friends asked me 'What had I found out?', ' What should I be telling mums about bottle refusal?' and *'What should I be telling my colleagues?' In addition, at the writing day, an initial exercise was to write down the 'take home messages' from my research: I didn't have any. This is why I couldn't really answer my midwife and health visitor friends' questions. This was the first time I had truly thought about my findings as a whole, and how I would transmit them. I knew bottle refusal was complex but I needed to go beyond that and ensure that my overall integration and findings did justice to the studies and to the mothers who had taken part.*

7.2 Integration of findings

7.2.1 The approach

The practice of integrating findings in a mixed methods project can be complex. Sandelowski *et al.* (2013), in their discussion of extracting findings from mixed-methods reports, describe various challenges which are applicable to this research. They include deciding which research findings to use; which can be testing due to the findings usually being located, conceived, and presented, in separate qualitative and quantitative reports (Sandelowski *et al.* 2013). In addition, they describe the extraction of findings as being a '*highly interpretive process'* (Sandelowski *et al.* 2013, p.1429), which could potentially jeopardise a study remaining true to its original findings. When undertaking the integration of both quantitative and qualitative findings, Stange *et al.* (2006) describe the need for '*considerable parsimony'* (p. 293), whilst Curry *et al.* (2013) describe linking studies to ensure '*output is synergistic'* (p.5). Thus, it is evident when integrating MMR data, that the researcher's judicious selection of the findings and their approach to assimilating them is crucial. This was taken into consideration when undertaking the integration of findings within this programme of research.

Fetters *et al.* (2013) describe how integration at the interpretation and reporting stage of MMR can assume three approaches; narrative, data transformation and joint displays. Due to the qualitative emphasis of the programme of research, a final integration of the three studies was undertaken using the narrative approach. Within narrative integration, Fetters *et al.* (2013) discuss three further approaches. The 'contiguous approach' separates qualitative and quantitative findings within one report. The 'staged approach' reports findings separately in separate reports. The 'weaving approach' - which was selected as the integration method for the current research - is described by Fetters *et al.* (2013) as *'writing both qualitative and quantitative findings together on a theme-by-theme or concept-by-concept basis'* in a single report (p.2142). It entails going between the quantitative and qualitative findings (weaving), whilst comparing and integrating them (Classen *et al.* 2007). This approach was selected as it enabled a complete and in-depth integration of the three studies, which would

strengthen the overall findings, and in turn provide a greater understanding of mothers' experiences of bottle refusal.

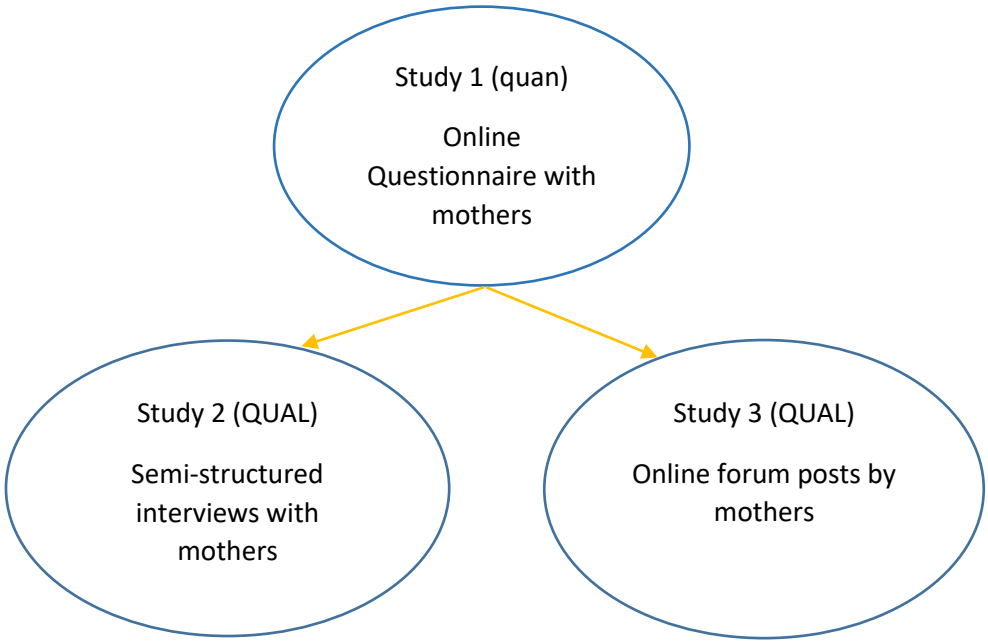
7.2.2 The process

Fetters *et al.* (2013) do not provide a 'step by step' guide in relation to the process of merging the findings of studies. However, it was felt that a systematic approach to the integration would be conducive to strengthening the overall findings. With this in mind, and in order to commence the process of integration, the overall research design, overall aim and research questions, and the findings from each study were revisited.

Research design

The research was undertaken using a mixed methods sequential design undertaken in two stages. Three individual studies were undertaken, with priority being given to the qualitative stages (see figure 26).

Figure 26 Sequential mixed methods design



Research aim and research questions

The aim of this programme of research was to gain an understanding of mothers' experiences of bottle refusal by their breastfed baby. In order to achieve this a series of research questions were developed across the three studies.

1. What is the context surrounding why mothers want their breastfed baby to feed from a bottle?
2. How do mothers manage bottle refusal?
3. What support do mothers receive when experiencing bottle refusal?
4. What is the potential impact of bottle refusal?
5. Why do mothers think their breastfed baby refuses to feed from a bottle?

Research findings

Each study's findings were reported separately, and re-read. The key findings and themes were then brought together in tabular form in order to begin a preliminary visual integration across the studies (see table 19).

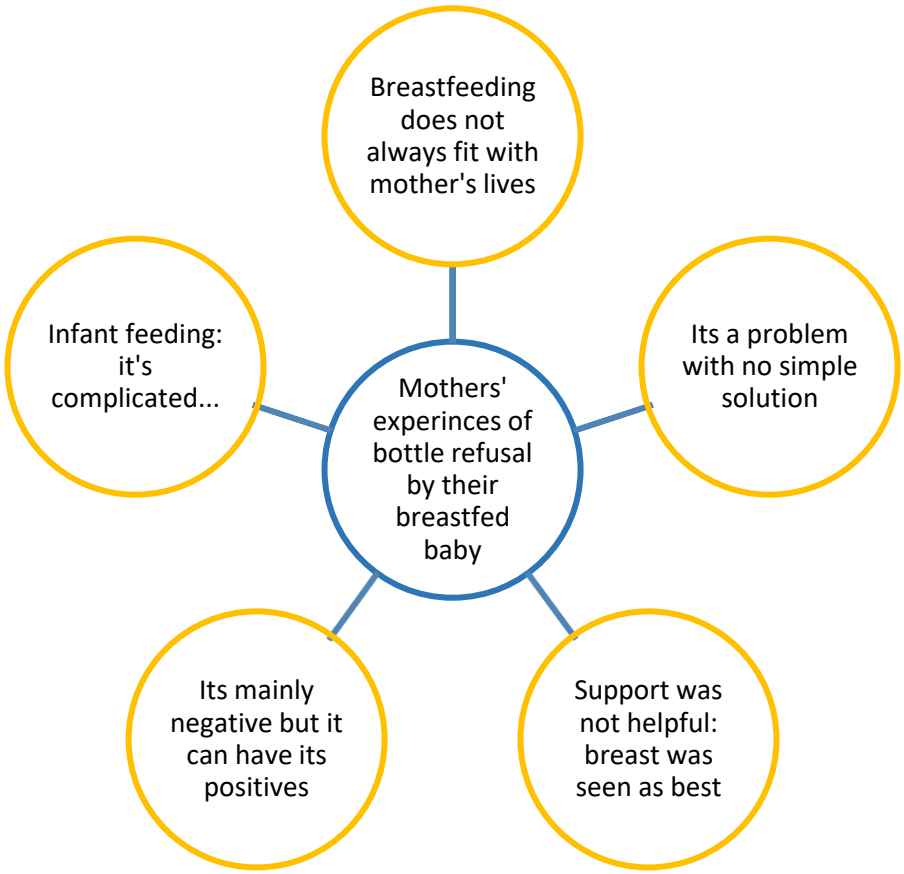
The research questions were used as the 'concepts' around which the quantitative and qualitative data were woven. This provided a framework for the selection of findings, which, as previously discussed, can be challenging in the case of MMR. It also allowed for exploration of findings that may have contradicted each other across the three studies. Furthermore, it recognised the mixed methods design of the research, where differences were apparent in the quantity and focus of data.

During the process of weaving, five overarching themes were developed which captured the quantitative and qualitative findings related to the five research questions (see figure 27). Their development was undertaken by using each research question as a central concept. The qualitative themes and quantitative data were then woven around them. In addition, the conceptual and theoretical frameworks were referred to, in order to give further focus to the process of weaving. New overarching themes emerged which were subsequently named. This process was not unlike the steps undertaken previously with thematic analysis during studies two and three (Braun and Clarke 2013).

Table 19 Key findings from the three studies

Study 1 – Findings (quan)	Study 2 – Findings (QUAL)	Study 3 – Findings (QUAL)
• Main reasons to introduce: 59% family/partner could feed, 36% social life/independence •<22% methods used worked •Cold turkey 42% acceptance •75% wanted baby to have bottle occasionally/one off •More often wanted baby to feed from bottle shorter length of time to eventual acceptance. •More often wanted baby to feed from bottle (every feed) more likely to accept •Median length of time to acceptance: 9 weeks •Older the baby at introduction shorter length of time to eventual acceptance •Older the baby at introduction more likely to accept •Refusal - odds 1.53 times higher if had previous refusal compared to if not had previous refusal •36%: no advice helped •26% BR had negative impact on BF, 7% positive, 49% no impact •More mothers than expected reported negative impact with acceptance •Less mothers than expected reported positive impact with acceptance •Hindsight: 47% would have given bottle earlier, 14% considered it, 33% not done anything different, 6% not given a bottle at all	**Needing a breastfeeding balance** • It's all down to me • Give me a break • Returning to work **Finding a solution** • We tried everything • No one could help us • It needs to be talked about **Using bottles: it's a taboo subject** **The consequences** • Stress, guilt and resentment • Feeling trapped • It has its positives **Why do they refuse?** • Bottle refusal or breast preference? • Babies are individuals • Nipple confusion: myth or reality?	**I want my baby to have a bottle because…** • I've got no choice • I'm a working mum • I need some 'me time' • I've done enough bf now **There's no magic answer but try this…** • Please help I'm desperate • I'll try anything • It's all about finding the right bottle • I had to do cold turkey • You need to persevere • Nothing worked **You can work round bottle refusal – they don't need one**

Figure 27 Overarching themes – programme of research



Reflective stop off (part one)

The 'weaving' of the findings was not an easy process and it exposed 'tensions' between the types of data collected. Although the research had an emphasis on qualitative data, the quantitative data appeared to try to 'dominate' at times. In addition, the initial structure used to present the themes and sub-themes in studies two and three needed to be 'disrupted' to represent the new themes aligned to the research questions, something I was resistant to. I began to recognise that I was being too prescriptive in relation to the integration and needed to take a more flexible approach, which although time consuming, would stay true to the data.

(part two)

I was integrating my research findings, and was concerned that some of the findings from the individual studies were becoming lost. I spent a large amount of time reading and re-reading the studies, looking to where I could incorporate what I believed to be important findings into the final integration. However this was leading me to 'go off

piste' in relation to the research questions. It also resonated with a comment by Braun and Clarke, in relation to being prepared to let go of data, something I realised I wasn't actually practising. It confirmed Sandelowski's discussion concerning the difficulties in selecting findings for MMR. I refocused on the research questions and on the process of weaving. I removed the findings that were actually on reflection 'interesting' rather than important to the integration. This was a difficult and time consuming process, however I knew it would result in a more focused and meaningful integration of findings; which in turn would represent the mothers' experiences of bottle refusal.

7.3 Ensuring rigour during the process of interpretation of the findings

Tashakkori and Teddlie's quality criteria for interpretative rigour were used as a framework to ensure a rigorous approach was taken to interpretation of the integrated findings (Tashakkori and Teddlie 2009). How these criteria were applied to the research findings is detailed in table 20.

Table 20 Application of criteria for interpretive rigour

Interpretive Criteria	Application to research
Interpretive consistency: conclusions made closely follow findings	Overarching themes developed which represented findings across all three studies. Conclusions made in relation to the overarching themes and their integrated findings.
Theoretical consistency: inferences are consistent with the theory and field surrounding the study topic	Overarching themes interpreted in relation to infant feeding/relevant literature. Reference made to conceptual and theoretical frameworks.
Interpretive agreement: other scholars reach the same conclusions in relation to the findings	Findings and conclusions were peer reviewed by a colleague who is an infant feeding expert. Findings presented at national infant feeding conference to peers and experts in infant feeding.
Interpretive distinctiveness: conclusions are distinctly different from other plausible conclusions using the same findings	Possible alternative explanations explored by: cross-referencing undertaken across all three studies, peer review of findings and conclusions by

	an infant feeding expert, literature appraised in relation to conclusions.
Integrative efficacy: inconsistencies between inferences are explained by the researcher	Cross-referencing undertaken across all three studies for explanations of any inconsistencies, theoretical explanations considered.
Interpretive correspondence: inferences correspond to the research study aim	Research questions were developed from the overall research aim, and used as the central concepts around which weaving took place. Conceptual framework and SEM referred to. Overarching themes developed in relation to the research questions. Conclusions closely aligned to the overarching themes. Using a MMR design and integrating findings across all three studies provided a wider understanding of mothers' experiences of bottle refusal by their breastfed baby.

7.4 Discussion

The aim of this programme of research was to gain an understanding of mothers' experiences of bottle refusal by their breastfed baby. The following section will interpret the integrated findings of this programme of research. The overarching themes will be explored in relation to relevant literature and theory, and conclusions will be drawn.

Sample demographics

It is evident from the demographic data collected from studies one and two, that the research sample was fairly representative of UK breastfeeding mothers. The majority of mothers were >30 years, employed in managerial and professional occupations, left education at over 18 years. These demographics were associated with those mothers most likely to breastfeed in the UK in the IFS (2010) and Scottish IFS (2017) (McAndrew *et al.* 2012; GOV.SCOT.UK 2018). Mothers from ethnic minorities, a further demographic associated with breastfeeding in the UK (McAndrew *et al.* 2012), were underrepresented in this research.

However, although the majority of research participants appear to fit with the profile of a UK breastfeeding mother, this research is unable to determine a profile for those who typically experience bottle refusal. This is due to a non-representative sample being used (studies one and two) and it not being possible to capture demographic data from online posters (see chapter 8 for discussion of limitations of research sample). However, it can be inferred from this sample, that bottle refusal is a significant and legitimate concern amongst breastfeeding mothers.

Theme 1: Breastfeeding does not always fit with mother's lives

The research findings across all three studies show that mothers sought to introduce a bottle to their breastfed baby due to breastfeeding not always being a 'fit' with their lives. Their experiences resonate with findings by Lavender *et al.* (2006), in which mothers found it difficult to integrate breastfeeding into daily activities. In addition, they are comparable to conclusions by Hoddinott *et al.* (2012, p.5), who described breastfeeding as only one of a number of *'competing activities, agendas and values in mothers' lives'.*

Although their commitment to breastfeeding was evident, the mothers in the current research were not 'averse' to bottle feeding, and framed it positively. This is similar to studies were breastfeeding mothers described being able to feed by bottle as '*liberating*' (Shakespeare *et al.* 2004, p.258), being the '*best of both worlds*' (Johnson *et al.* 2009, p.905), and providing them with a *'door to freedom'* (Johnson *et al.* 2013, p.596). It also resonates with a liberal feminist perspective, where due to gender differences being minimised, breastfeeding can be seen to '*stand in the way of liberating women'* (McCarter-Spaulding 2008 p.207), whilst bottle feeding can be viewed as an emancipatory feeding practice. In addition, feeding via bottle has been credited by mothers as enabling them to carry on breastfeeding due to allowing them a break (Spencer *et al.* 2014), and has been viewed as restoring normality to mothers' lives (Lee and Furedi 2005). The latter finding is akin to the mothers in the current research, who discussed wanting to resume mundane activities such as having a bath or going food shopping. It is evident for the mothers in the current research, that a disparity exists –

either temporarily or permanently - between the 'fit' of breastfeeding and their ongoing lives, and that their use of a bottle can reduce this disparity.

It is, perhaps, unsurprising that this research finds 'return to work' as a key reason for mothers to introduce a bottle to their breastfed baby, since it is a finding discussed in previous studies (Gatrell 2007; McCarter-Spaulding 2008; McAndrew *et al*. 2012; Skafida *et al.* 2012; Johns *et al*. 2013; Crossland *et al*. 2016; Cripe 2017; Felice *et al*. 2017; GOV.SCOT.UK 2018). Employment amongst the mothers in studies one and two was high (over 79%), with the mothers' employment profile being similar to those mothers most likely to return to work early and full time (Gatrell 2007; McAndrew *et al.* 2012). It was evident from the current research findings that the combination of breastfeeding and working was not viewed as 'realistic' for the mothers. This is not a new concept. Breastfeeding and working is not seen as a socio-cultural norm in the UK (Andrew and Harvey 2011; Dykes 2005; Gatrell 2007). This is further compounded by employment and motherhood *per se* being acknowledged as an area of conflict for mothers (Skafida 2012), with Payne and Nicholls (2010) describing how working and breastfeeding requires mothers to negotiate the positions of being a '*good mother*' and being a '*good worker'* (p.1810). In recognition of the challenges mothers face whilst breastfeeding and working, UK employers are now encouraged to adopt 'best practice' by providing time for mothers to express, and somewhere to be able to store their milk (ACAS 2014). However, this does not help the mother whose baby wants to feed 'at source' only, as depicted by mothers in the current research.

A small number of mothers in the current research delayed their return to work due to their baby's bottle refusal. This is comparable to a mother in Egan's study, who initially delayed her return to work, and then did not return to work at all due to her baby's bottle refusal (Egan 1988). In both of these instances, it is conceivable that financial and career implications may have been incurred by the mothers. In answer to this, Skafida's call for more work-based crèches, and flexible working hours to enable breastfeeding mothers to maintain proximity to their baby (Skafida 2012), would certainly have benefitted some of the mothers experiencing bottle refusal. However, it should be

acknowledged that even if such facilities are available for mothers, they can face challenges time wise when navigating breastfeeding at work (Gilmour *et al.* 2013).

The research findings illustrate that for some mothers, the decision to introduce a bottle was to an extent 'taken out of their hands'. This was due to the acute scenarios they faced, where they 'had no choice'. Hauck and Irurita (2003) describe several similar situations where impromptu or undesirable weaning was required, including work commitments, maternal illness and medications contraindicated in breastfeeding. McInnes *et al.* (2013) frame such scenarios as being due to 'tangible situations' that are beyond parental or maternal control. The current research highlights the extra challenges mothers faced when hospitalised, being called for jury service, or attending a drivers awareness course; due to breastfeeding not being 'accommodated' and bottle refusal not being considered. Due to the 'formula feeding culture' that pervades the UK, and breastfeeding not being the 'norm' (Dykes 2005; Renfrew *et al.* 2007; Brown 2015), policies, rules and regulations that prevent mothers and their breastfeeding babies from remaining together continue to exist. It is evident that such policies and rules only served to exacerbate the already challenging situations some of the mothers in the current research faced. Whilst it is not within the remit of this programme of research to determine the cultural changes required to 'normalise breastfeeding', it demonstrates a need for recognition of the scenario of bottle refusal, particularly when maternal - infant separation is imminent.

The current research depicts mothers wanting to introduce a bottle to give themselves a break, to catch up on sleep, spend quality time with family/siblings and to resume a social life. These reasons echo findings from previous studies (Lavender *et al.* 2006; Hoddinott *et al.* 2012; Ryan *et al.* 2013; Spencer *et al.* 2014; Felice *et al.* 2017), and are comparable to reasons for expressing breastmilk (Johnson *et al.* 2009; Johnson *et al.* 2013; Ryan *et al.* 2013; McInnes *et al.* 2015; Crossland *et al.* 2016). By citing these reasons, the mothers in this research were, in effect, indicating that breastfeeding prevents such activities, or at the very least can impact negatively upon them. One could argue that the mothers in this research exhibited unrealistic expectations in relation to breastfeeding, a theory which has been highlighted in previous studies (Lavender *et al.*

2005; Marshall *et al.* 2007; Burns *et al.* 2010; Hoddinott *et al.* 2012; Afoakwah *et al.* 2013). This, in turn, could have led to a disparity regarding the mothers' breastfeeding experiences and led to their decision to introduce a bottle. Conversely, however, one could also argue that exclusive breastfeeding in the UK is in itself an unrealistic undertaking for mothers, a suggestion that has been voiced by both mothers (Lavender *et al.* 2006) and researchers (Hoddinott *et al*. 2012).

Some mothers in this research described not wanting to breastfeed in public as a reason to introduce a bottle to their baby. This is not an isolated finding. Studies have found that due to breastfeeding not being the UK cultural norm, and breasts being viewed as sexual objects, refraining from breastfeeding in public continues to prevail (Wall 2001 ; Boyer 2011; Boyer 2012; Scott *et al.* 2015; Grant 2016; Morris *et al.* 2016). For a mother whose baby is breastfeeding and refusing a bottle, this can lead to them spending large amounts of time at home, as described by some mothers in this research. This was also the experience of a mother in a study by Leurer and Misskey (2015), who, due to her babies refusing bottles described how she could *'…never go out or leave them with anyone'* (p.5). One could argue that due to breastfeeding in public being protected by UK law, and many UK shops and public places signing up to being breastfeeding friendly, mothers experiencing bottle refusal do not 'need' to remain at home to feed their baby. However, as discussed by Brown (2015), public reactions to breastfeeding in public in the UK remain a barrier for mothers.

Some of the reasons mothers gave for bottle introduction may be deemed more acceptable (maternal hospitalisation) than others (needing 'me time'). A comparison can be made with studies in which distinctions between 'wanting to' and 'needing to' introduce formula were made (Williams *et al.* 2013b). This is similar to mothers' rationales to express breastmilk (and consequently feed by bottle), which were presented interchangeably between being 'essential' or as a 'choice' for mothers in a study by McInnes *et al.* (2015). It also resonates with findings from a study by Ryan *et al.* (2013), who described mothers' reasons for expressing breastmilk as a way of 'connecting' with their baby (when returning to work) and 'disconnecting' (when wanting a break or an evening out). However, to instigate a 'hierarchy' of reasons for

bottle introduction would be to dismiss the negative impact that breastfeeding and bottle refusal has for some mothers. In addition, this would be viewing breastfeeding through a moral and biomedical lens, where 'breast is breast' is the dominant discourse. This not only discounts the needs of mothers in favour of prioritising their baby, it also acts as a precursor to mothers feeling guilty when they deviate from it, as exhibited in previous studies (Shakespeare *et al.* 2004; Crossley 2009; Burns *et al.* 2010; Williams *et al.* 2013a; Williams *et al.* 2013b), and all three studies in the current research. On a wider level, this relates to Maher's criticism of the medical discourse surrounding care giving by the mother, which she describes as *'almost involuntary, a passive affair'* (Maher 1995, p.156), and to Inch's description of breastfeeding being viewed as a '*biologically imperative function*' (Inch 1987, p.57).

From a socio-cultural perspective, societal expectations of twenty first century mothers, who are obliged to work, to socialise, to be a wife/partner, and a breastfeeding mother simultaneously; challenge the commitment required to breastfeed (MacKean and Spragins ND). These expectations made of mothers lead Van Esterilk (2015) to question whether the sharp transition from *'modern day mother to breastfeeding mother'* is too great an expectation (p.xii). This is comparable to UK mothers' views of breastfeeding in a study by Earle (2002), where '*Breastfeeding was generally perceived as an activity which is 'out of place' within modern western society* (p. 212). It is clear for the mothers in this research, whose breastfed baby continues to refuse a bottle, that they meet the public health and moral message of 'breast is best'. They also want to attain the 'good mothering' ideal of putting their baby's needs first by breastfeeding (Carter 1995; Maher 1995; Murphy 1999; Murphy 2000; Dykes 2005; Faircloth 2010; Hoddinott *et al.* 2012; Williams *et al.* 2013b; Spencer *et al.* 2014; Fox *et al.* 2015). However, as seen in this research, this is not without cost to themselves.

The research findings show some mothers alluding to the socio-cultural pressures they faced to spend time away from their baby, and consequently for someone else to feed it. This resonates with discussions surrounding societal pressure for mothers to resume their pre-pregnancy lives (Maher 1995; Dykes 2005; Brown 2015). Ryan *et al.* (2013, p.475) describe how '*breastfeeding and public life appear to have been framed as*

mutually exclusive', an observation that can only lead to increased pressure on mothers to be able to leave their baby with a bottle. Further pressure is also apparent in the UK with a move to a bottle (and formula feeding) being seen as 'progress' (Dykes 2005; Fox *et al* 2015), a potential outcome of the UK bottle feeding culture. It is certainly conceivable that such pressures currently visible as socio-cultural norms in the UK, will have had implicit, if not explicit, influences on the context surrounding mothers' decisions to introduce a bottle in the current research. From a theoretical perspective, this aligns with Bourdieu's theories of disposition and habitus, where feeding decisions are influenced consciously and unconsciously by socio-cultural and environmental factors (Amir 2011).

An inconclusive picture regarding 'role' and infant feeding is depicted in the research findings. Although some mothers believed infant feeding to be their exclusive role, others wished family, and particularly partners, to be involved, which is consistent with current literature (Stewart- Knox *et al.* 2003; Johnson *et al.* 2009; Hoddinott *et al*. 2012; Leeming *et al*. 2013; Ryan *et al*. 2013; McInnes *et al*. 2015; Crossland *et al*. 2016) and the feminist concept of gender-neutral parenting (McCarter-Spaulding 2008). The move to sharing of parental leave, and the increased number of 'stay at home fathers' (ONS 2018), means they will be required to feed their baby in the mothers absence. Lavender *et al*. (2006, p.151) found the adoption of a primary caregiving role by fathers *'hindered'* breastfeeding. However, in the case of bottle refusal, the opposite is conceivable. This was indicated by one of the mothers in the current research whose partner had to abandon shared parental leave due to their baby's bottle refusal. Recognition and discussion of bottle refusal as a potential outcome of breastfeeding is important in cases of planned shared parental leave, so that an alternative plan of care can be considered if need be.

Theme two: It's a problem with no simple solution

The research findings show that the majority of mothers characterised bottle refusal as a 'problem' that needed solving, yet there was no simple solution, which was evident across all three studies. Rather than viewing bottle refusal as a natural response by their baby, it was to an extent 'pathologised' (Shildrick 1997), by the mothers in this study.

This pathologising of bottle refusal by mothers was also apparent in the study by Egan (1988). However, a mother's view of bottle refusal as a problem, may be symptomatic of the medicalisation of infant feeding (Qureshi and Rahman 2017), which exhibits a technological discourse and problem-based approach (Dykes 2005; Burns *et al.* 2010). It can also be reasoned that the mothers in the current research were more likely to view their baby's bottle refusal as a 'problem' or something 'abnormal' due to the cultural norm of formula/bottle feeding in the UK. In addition, the view that bottle refusal is outside the realms of normality is possibly exacerbated by mothers being surrounded by babies bottle feeding 'successfully', a picture which is prevalent in the marketing of formula, bottles and teats. This is also reinforced by exclusive breastfeeding being a rare occurrence in the UK, with only 23% of babies exclusively breastfeeding at six weeks and <1% at six months of age (McAndrew *et al*. 2012). Thus, it can be postulated that bottle refusal being framed as a 'problem', is actually a product of the socio-cultural context that surrounds infant feeding in the UK at present. This, in turn, can make it difficult for mothers to 're-frame' bottle refusal as a normal reaction by their breastfeeding baby. Consequently, a scenario of needing to 'manage' the problem of bottle refusal is created, a burden that almost exclusively falls to the mother, rather than the fostering of a supportive environment within which she can continue to breastfeed exclusively. In line with greater recognition being given to bottle refusal, this study calls for it to be framed as a positive response to breastfeeding by well, healthy babies. In effect, by 'normalising' the scenario of bottle refusal, much of the negativity surrounding it could be removed.

It is evident from the research findings that in addition to bottle refusal being perceived as a problem, there was also an expectation for it to be solved. This again aligns to the problem solving narrative that surrounds breastfeeding. It could be hypothesised that the mothers in the current research were trying to replicate this problem solving approach in relation to bottle refusal. In addition, it resonates with the 'quick fix' habit of contemporary society noted in a study by Dykes, where parents expected to readily rectify often quite normal developmental features of their infant e.g. colic or their baby not sleeping (Dykes *et al*. 2012).

It is clear from this research that the many methods mothers used in order to solve their baby's bottle refusal were often ineffective. In addition, when eventual acceptance did occur, it was often a lengthy process. Due to the dearth of literature concerning bottle refusal and the ensuing perceived need to solve it, mothers in this research were potentially 'vulnerable' to responding to non-professional advice, evidenced in their online forum use. The research also found that some mothers employed methods with potentially adverse effects on their own and their baby's health, e.g. cold turkey, using sugar in a bottle, weak tea, using blood purification liquid. This again echoes findings from Dykes *et al*. (2012), where parents' desire to employ 'quick fix options' to infant feeding challenges encouraged potentially harmful infant feeding practices. This study calls for recognition of bottle refusal. It also calls for an open dialogue between health professionals and mothers concerning the potential challenges of 'solving' it. Without this, mothers who employ the use of unsuccessful, anecdotal and sometimes harmful practices do so 'uninformed'. In addition, a focus on mothers being able to 'work around' bottle refusal is required. At present, this does not always appear to be an option considered by mothers or those supporting them.

It is evident from the research findings that mothers concentrated on solving bottle refusal by 'finding the right bottle'. This is a logical assumption perhaps, given that UK mothers are mostly surrounded by babies 'successfully' feeding by bottle. One can also surmise that the substantial amount of marketing of bottles/teats for breastfed babies will have contributed to the mothers' reported continual purchases, in the expectation that one would solve their baby's refusal. Bottle manufacturer's websites often carry testimonials by parents and lactation consultants to increase credibility (mimijumi.com; tommeetippee.co.uk), and market bottles exhibiting a breastfeeding mechanism (Geddes *et al*. 2012; Segami *et al*. 2012). In addition they offer tips on moving from breast to bottle (medela.com, mimijumi.com, tommeetippee.co.uk), and some brands market a designated 'back to work' bottle (mimijumi.com). Furthermore, this research found that mothers would suggest bottles/teats to solve refusal, which other mothers would act upon in purchasing decisions. Thus, mothers themselves appeared to be providing free advertising for bottle manufacturers. This is comparable to mothers in the study by Dykes *et al*. (2012), who made purchases *'…because they had been told by*

everybody that it works' (p.768). In essence, the mothers in this research will have been facing implicit and explicit advertising of bottles/teats for breastfeeding babies, which can be difficult to ignore. Yet the study findings show success in solving bottle refusal by finding the right bottle was poor. Furthermore, as noted in the literature review, the evidence to support manufacturers' claims of easing the transition from breast to bottle, reducing nipple confusion and preventing or solving bottle refusal are either unfounded or based upon studies that cannot prove these claims (Geddes et *al.* 2012; Segami *et al*. 2012). Mothers need to be informed of the inconclusive evidence surrounding bottle refusal being 'solved' by trying different bottles/teats. In addition, the evidence to support manufacturer's claims of preventing, solving or easing bottle refusal should be made transparent. This would enable mothers to make informed purchases.

The research findings demonstrated a certain level of success in achieving eventual bottle acceptance with the method of 'cold turkey'. However, this appeared to be a method that was not acceptable to all mothers, and could be associated with stress and anxiety. In addition, it has the potential for adverse health effects in the form of dehydration for the baby (Staub and Wilkins 2012), and engorgement, mastitis and breast abscess for the mother, due to acute cessation of breastfeeding (Noonan 2010). Due to the present situation of bottle refusal having little official recognition in infant feeding literature, cold turkey could be undertaken with a deficit of knowledge surrounding its potential adverse impact. Although this study does not recommend the method of cold turkey, it endorses information pertaining to its potential side effects being made available for mothers who are experiencing bottle refusal.

Eventual bottle acceptance was not just linked to cold turkey, however. Study findings show that mothers who wanted to cease breastfeeding, or give their baby a daily bottle alongside breastfeeding, had higher levels of eventual bottle acceptance. This could indicate that a level of maternal influence is present in the solving of bottle refusal. Mothers who wished to cease breastfeeding may have exhibited more determination or perseverance, the latter being explicitly discussed by mothers in this study as an 'accessory' to gaining eventual bottle acceptance. This is similar to mothers in a study by Hauck and Irurita (2003), who were able to dismiss their baby's resistance to being

weaned from the breast in order to achieve the desired outcome of weaning. It also compares with previous studies indicating determination, perseverance, self-efficacy and resilience, were shown by mothers when overcoming breastfeeding challenges, and increasing breastfeeding duration (Hegney *et al.* 2008; Burns *et al.* 2010; Williamson *et al.* 2012; Brown 2014). Conversely, for those mothers whose baby did not eventually accept a bottle it can be construed that they did not exhibit such personality traits, or to the same extent. However, it would be remiss to associate eventual bottle acceptance or refusal solely with maternal influence, with the scenario appearing to be more complex. This is illustrated when applying Ryan and Deci's self-determination theory (Ryan and Deci 2000), which finds extrinsic motivations (external factors such as returning to work), to be negatively correlated with self-efficacy, which one would assume to be an essential factor in mothers' solving of bottle refusal.

It is apparent from the research findings that mothers viewed a bottle as the most acceptable alternative feeding method to breastfeeding, although this is unsurprising considering it is the socio-cultural norm in the UK. A cup is the commonly suggested alternative to breastfeeding due to the belief that it is less inclined to disrupt breastfeeding (NHS and UNICEF 2015a). However, a Cochrane review found that there were too few studies to reliably recommend a cup as opposed to a bottle in term infants who were breastfeeding (Flint *et al.* 2016). In addition, a cup was not always positively received by the mothers in this research, echoing the findings of other studies (Malhotra *et al*. 1999, Hargreaves and Harris 2009, Yilmaz *et al*. 2014, Flint *et al*. 2016). Furthermore, some mothers in the current research also reported 'cup refusal', or their baby's refusal to drink milk in a cup. Other receptacles such as a straw, finger, paladia, syringe or spoon were rarely, if at all, discussed by the mothers, despite the fact that they could have been employed as a temporary solution to 'tide a baby over'. As in the case of bottle refusal, there is a dearth of evidence concerning alternative methods of feeding for healthy 'older' babies, which could account for their limited use. Along with bottle refusal, this study calls for greater recognition of cup refusal. It also demonstrates the need for research to be undertaken on alternative methods to breast, bottle and cup in feeding healthy, older babies.

It is clear from the current research findings that not all mothers viewed bottle refusal as a problem to be solved, or indeed that bottles were required at all. These mothers viewed bottle refusal more pragmatically, like the mothers in a study by Jardine *et al*. (2017), whose pragmatic approach enabled them to accept barriers and instigate solutions to overcome breastfeeding challenges. Mothers who approach bottle refusal pragmatically could be an important source of experiential support to other mothers. They could provide the realistic portrayals of infant feeding that have been requested by mothers in previous studies (Lavendar *et al*. 2005, Hoddinott *et al*. 2012). In addition, these mothers may be more inclined to frame bottle refusal positively, a potentially important attribute, with positive framing of breastfeeding being seen as helpful by mothers in a study by Leurer and Misskey (2015). Thus, the possible influence of these mothers cannot be discounted in enabling other mothers experiencing bottle refusal to do so more positively.

Theme three: Support was not helpful: breast was seen as best

It is clear from the research findings across all three studies that the support mothers sought and received was not always helpful. This can be compared to the experiences of mothers in Egan's study (Egan 1988). What mothers deem to be 'helpful' however is difficult to define. It is certainly conceivable that some mothers would have defined support to be helpful only if it had solved their baby's bottle refusal. However, findings show that this was not the case for all mothers, as some whose baby had eventually accepted still found support unhelpful. Breastfeeding mothers in previous studies denote support as being helpful when it is 'realistic', 'positive', 'reassuring', and 'genuine' (Lavender *et al*. 2006; Hoddinott *et al*. 2012; Luerer and Misskey 2015). However, due to the lack of information surrounding bottle refusal, to breastfeeding being perceived to be the priority, and to information being potentially withheld concerning the scenario, it can be argued that the aforementioned characteristics of helpfulness were in short supply. It is therefore unsurprising that support was viewed negatively by most of the mothers in the current research.

The research findings portray health professional support as not being helpful to mothers. This is a finding that is not exclusive to bottle refusal however, with mothers

in previous studies depicting health professional support negatively in relation to infant feeding (Dykes 2006; Burns *et al.* 2012; Hoddinott *et al.* 2012; Hinsliff-Smith *et al.* 2014; Burns *et al.* 2016). Yet, it could be argued that bottle refusal presents a dilemma for health professionals. This is due to both the lack of evidence and knowledge surrounding the scenario and to the potential negative impact bottle feeding may have upon breastfeeding, although the latter remains inconclusive. In order to support mothers experiencing bottle refusal, health professionals require an evidence base to work from; which this study aims to contribute to. Furthermore, it is anticipated that future research concerning health professionals' knowledge and experiences of bottle refusal, will provide a better foundation for the support they give to mothers.

The perceived dilemma health professionals may face concerning bottle refusal, echoes previous reports of difficulties in maintaining infant feeding best practice, whilst deviating from it in order to meet mothers' needs (Lee and Furedi 2005; Furber and Thomson 2006; Hargreaves and Harris 2009; Dykes *et al.* 2012; Williamson *et al.* 2012; Lagan *et al.* 2014; Biggs *et al.* 2018). However, it is also apparent from the current research, that support was often focused on the moral, health, and bio-medical discourse of 'breast is best'; a concept which is unhelpful for mothers, irrespective of feeding choice. In essence, there was a perceived bias towards breastfeeding, which meant the mother's individual circumstances were overlooked. Although there appears to be more awareness that the moral and biomedical discourse does not take into account the individual circumstances and cultural influences surrounding breastfeeding (Hoddinott *et al.* 2012; McInnes *et al*. 2013), the prevailing narrative continues to prioritise breastfeeding, and the baby's needs ahead of the mothers. When applying this concept of 'prioritisation' to the mothers in this research, the fact that they were breastfeeding successfully appeared to outweigh their negative experiences of bottle refusal. This is perhaps unsurprising given that breastfeeding has been described as a '*moralistic imperative'* for mothers to undertake (Crossley *et al*. 2009, p.71). In addition, Dykes (2005) describes how due to the westernised conception of breastfeeding as a bio-medical practice, breastfeeding is viewed as a 'one-*way non-reciprocal transmission of health'* (p.2286).

By focusing on breastfeeding rather than mothers' individual circumstances the health professionals could be seen to be taking a breastfeeding-centred rather than woman-centred approach (McInnes *et al.* 2013). In addition, when applying the theory of agency, the health professionals were assuming the role of agent for the baby, which denied the mother her own sense of 'agency' (Ryan et al 2017). Health professionals require greater understanding of mothers' individual circumstances surrounding introduction of a bottle, and the impact it has on them when their baby refuses it.

The research findings depict support for mothers being further affected by the 'disapproval' and social stigma associated with feeding by bottle, which is portrayed as a 'taboo' practice. This is comparable to mothers being associated with 'bad mothering' due to wanting to introduce a bottle, and exhibiting 'deviant' behaviour, due to knowingly wanting to break the rules associated with the 'good mothering' of exclusive breastfeeding (Murphy 1999). Disapproval of the mothers in the current research was not only propagated by health professionals, but at times, by breastfeeding support groups and other mothers. This recalls previous studies, where mothers judged others by their ability to breastfeed (Lee and Furedi 2005; Williams *et al*. 2012), and where mothers viewed an 'ideal mother' as one who breastfed exclusively (Shloim *et al*. 2015). Faircloth (2010) argues that '*the widespread 'moralisation of infant feeding practices has amplified tensions between tribes of mothers'* (p.357). This disapproval is of course at odds with the reality of infant feeding in the UK, where bottle feeding is the most prevalent method of feeding (McAndrew *et al*. 2012; WTBi 2016; PHE 2018). In addition, this has recently led to the Royal College of Midwives releasing a position statement in relation to infant feeding, which discusses the need to support mothers who are formula feeding, as well as those who are breastfeeding (Ewers 2018).

Interestingly, although many of the mothers in the current research were using EBM in their bottles, they continued to feel 'judged'. This may have been due to bottle feeding being associated with formula milk, rather than breastmilk. Some mothers in the current research wanted it known that their bottle contained EBM, rather than formula, when they were feeding in public. This might indicate the mothers' awareness of the perceived social stigma associated with bottle feeding, and it could be argued that the mothers

were themselves unintentionally perpetuating the stigma of bottle feeding. However, one could also postulate that the mothers were trying to disassociate themselves from the 'bad formula feeding mother' label.

It is evident from the research findings, that mothers believed there was some 'withholding' of information concerning bottle refusal by health professionals and breastfeeding support groups. This is comparable to previous studies, where information concerning formula feeding was found to be restricted in favour of breastfeeding information (Crossley 2009; Lee and Furedi 2005; Lagan *et al*. 2014; Leurer and Misskey 2015). This 'suppression' of information can also be extended to 'breast with bottle feeding', apparent in a study by Hoddinott *et al*. (2012), who found health professionals followed an 'all or nothing' approach to infant feeding advice and support. However, this is unhelpful for the majority of mothers in the current research who wished to breast and bottle feed, and for many mothers in the UK who partially breastfeed (McAndrew *et al*. 2012; GOV.SCOT.UK 2018). The impact of the ten steps to successful breastfeeding (UNICEF 2010), although now replaced by less stringent UK BFI standards (UNICEF 2012), may have played a part in the rationalisation of information, particularly concerning the introduction of a bottle. This theory is supported by findings from previous studies, which have found restriction of information concerning bottle and formula feeding to be linked to the BFI (Furber and Thompson 2006; Dykes *et al*. 2012; Lagan *et al*. 2014). This also illustrates a somewhat 'paternalistic' approach to information giving by health professionals, rather than a woman-centred approach which respects the autonomy of the mother in her decision-making (Leap 2009). It is clear that there is a need for evidence-based and unbiased information for mothers who wish to combine breast and with bottle feeding. However, it is also recognised that such information needs to be developed sensitively, to ensure that mothers do not unintentionally compromise breastfeeding.

Mothers in this research rationalised that the withholding of information regarding bottle refusal was in an effort to preserve breastfeeding rates, and to prevent mothers from being 'put off' breastfeeding due to bottle refusal. This is not wholly borne out within the findings however, with many mothers reporting they were already aware of

bottle refusal. In addition, mothers had experienced it previously, yet still went on to breastfed their subsequent infant. Previous negative breastfeeding experience has been suggested as a reason behind the decision to formula feed a subsequent baby (Bentley *et al* 2016), which could be aligned to some mothers' experiences of bottle refusal. However, influences on subsequent feeding choices are more strongly associated with maternal demographics (Phillips *et al.* 2011; Sutherland *et al.* 2012; Bentley *et al.* 2016) and replication of infant feeding practice *per se* (McAndrew *at el*. 2012). This research does not show a link between mothers' awareness of or previous experience of bottle refusal and the subsequent prevention of breastfeeding. Therefore, the theory of information being withheld in an effort to protect breastfeeding rates could be unfounded.

By withholding or not including bottle refusal in discussions surrounding infant feeding, health professionals and those supporting breastfeeding mothers run the risk of impeding informed choice, with the latter being noted by mothers during the course of this research. In addition, it can lead to an unrealistic portrayal of the challenges of breastfeeding, which has been observed in previous studies (Lavender *et al*. 2005, Hoddinott *et al*. 2012; Lagan *et al*. 2014), and can be counterproductive. Furthermore, as seen in the large number of mothers in this research who accessed online support, it can lead mothers to seek advice and information elsewhere. This programme of research indicates a need for the scenario of bottle refusal to be included in infant feeding literature and to be discussed by those supporting pregnant women and mothers in relation to infant feeding.

The research findings demonstrate that mothers accessed non-professional avenues of support in relation to bottle refusal, and particularly those found online. This may have been due to necessity rather than choice, owing to the aforementioned disapproval of bottles by health professionals, their possible withholding of information concerning bottle refusal, and also a pro-breastfeeding message being dominant. However, online support is now a 'norm' of parenting, with high numbers of mothers accessing it in relation to breastfeeding (Angell *et al.* 2015; Fox *et al.* 2015; Newby *et al.* 2015; Yamada *et al.* 2016; Haslam *et al.* 2017; Bridges *et al.* 2018). Interestingly however, this research

shows that mothers did not always deem online support to be helpful. This may have been due to some online websites not providing a realistic picture of bottle refusal. Many do not carry the caveat that bottle acceptance may never occur, whilst others appear to paint a picture of refusal being transient and easy to solve. In addition, mothers tend to provide candid views of their experiences of bottle refusal during online discussions, probably due to their anonymity (Suler 2004), which was apparent in some of the online forum posts in the current research. Previous studies have found online forum discussions to provide emotional support for mothers (Bridges 2016, Gray 2013), and although this may have been the case with bottle refusal, it is difficult to ascertain from the online posts alone. It is clear that information pertaining to bottle refusal needs to reflect the complexity of the scenario, with a view to ensuring that mothers have a realistic understanding of it.

Theme four: It's mainly negative – but it can have its positives

The findings of this research depict bottle refusal as having a negative impact upon mothers, which is evident across all three studies. Bottle feeding was seen as being key to gaining some independence, enabling someone to feed their baby whilst they were at work, acquiring a social life, increasing sleep, and being able to spend time with other children, which compares to previous studies (Lavender *et al*. 2006; Gatrell 2007; Burns *et al*. 2010; Hoddinott *et al*. 2012; Johnson *et al*. 2013; McInnes *et al*. 2015; Crossland *et al*. 2016; Felice *et al*. 2017). With so much assigned to the acceptance of a bottle, the negative impact bottle refusal had upon the mothers in this research is understandable, and particularly if acceptance never occurs.

It could also be suggested that the negative impact mothers apportioned to bottle refusal was as much a consequence of breastfeeding, and of being a mother, as it was of bottle refusal. Indeed, it could be questioned as to whether mothers used bottle refusal as a possible 'scapegoat' for the challenges breastfeeding and motherhood presented. However, bottle refusal is a scenario which poses its own unique challenges, as illustrated by the mothers in this research. The stress of returning to work was further complicated by a baby potentially not feeding all day. Sleep deprivation was compounded by not having the 'option' of someone else to feed the baby. Acquiring

some independence was restricted by the requirement of a mother's physical presence. In addition, acute situations such as maternal hospitalisation presented an almost impossible scenario for mothers. The impact of bottle refusal was clear, with mothers describing feeling stressed, restricted, trapped and having little or no social life. In addition, it is of concern that one mother attributed her post natal depression to her baby's bottle refusal, and an understanding that bottle refusal can impact upon mothers psychologically is needed.

A continued lack of professional recognition of the impact of bottle refusal means mothers face it without professional support. Although it is acknowledged this research does not provide answers to 'solve' bottle refusal, it provides an understanding of the scenario, which could prompt a more empathetic response to mothers by those supporting them. In addition, it can potentially prepare mothers for the scenario which in turn could lessen any negative impact.

The research findings depict mothers feeling guilty that they had 'failed' in relation to their baby accepting a bottle, apportioning blame to themselves. This is a unique finding in infant feeding literature, where such feelings are usually reserved for mothers who 'fail' to breastfeed (Burns *et al*. 2009; Crossley 2009; Hinsliff-Smith *et al*. 2014), rather than 'failing' to bottle feed. The findings also show that those surrounding mothers can depict them as 'selfish' for putting their own needs ahead of their baby. This resonates with the ideology of 'good mothering' and with a mother not fulfilling her 'duty' to breastfeed (Woollard and Porter 2017). However, it also dismisses a mothers own sense of 'agency' (Ryan et al 2017), where the right to initiate and instigate her own decisions and actions is acknowledged.

By deeming mothers selfish for wanting to bottle feed, this illustrates a lack of understanding of the demands breastfeeding can make upon mothers' lives, especially if they are breastfeeding for many months or years, as some were in this research. It was clear from this research that such lack of understanding, coupled with being judged for wanting to feed by bottle, led some mothers to cease breastfeeding altogether. One could argue however, that due to the low numbers of mothers breastfeeding in the UK

it is perhaps unsurprising that there is limited understanding of the impact of 'long term' breastfeeding upon mothers. Few UK studies have been undertaken in relation to 'extended breastfeeding' i.e beyond that of six months. Of those that have, challenges such as breastfeeding in public (Dowling and Pontin 2017; Newman and Williamson 2018) and mothers facing a '*cultural unease'* (Dowling and Pontin 2017, p.1) have been cited. This study calls for a greater understanding of the needs of 'long term' breastfeeding mothers in the UK, and further research into their experiences. At present there is a bias in research towards why mothers choose not to breastfeed, or cease to breastfeed, rather than enabling mothers who are 'successful' to navigate their journey with support.

Interestingly, the research found bottle refusal to have a negative impact upon some mothers' breastfeeding experience *per se*. This was not wholly attributed to whether their baby continued to refuse a bottle however, with mothers reporting a negative impact even if their baby eventually accepted. This indicates that the 'experience' of bottle refusal, rather than solely the outcome, can influence the impact. This is an important finding for practice, in that those supporting mothers with bottle refusal do not necessarily have to be driven to help them 'solve' it, for mothers to have a positive experience.

If one were to view bottle refusal purely from a public health and bio-medical perspective, then its impact would be a positive one. Breastfeeding duration is potentially extended, infants receive exclusive breastmilk rather than formula, and there is potential for increased bonding between mother and infant. All can provide long lasting benefits for mothers and their babies (Victora *et al*. 2016). Indeed the current research depicted some mothers extolling such benefits. The mothers' ability to frame the impact of bottle refusal positively echoes findings from a study by Jardine *et al.* (2016), where mothers positively faced the breastfeeding challenges they experienced. This may also indicate the possibility of differences in maternal personality having an influence on how mothers experience their baby's bottle refusal, which is supported by previous literature (Bottorff 1995; Hauck and Irurita 2003; Hegney *et al*. 2008; Brown 2014; Jardine *et al.* 2015; Ricotti *et al.* 2015). However, it should also be acknowledged

that the mothers who discussed bottle refusal positively often did so retrospectively, indicating a certain amount of 'rosy retrospective' may also have been apparent.

Theme five: Infant feeding: it's complicated….

A clear picture of why mothers believed their breastfed baby refused to feed from a bottle is difficult to ascertain from this research. The research findings indicated some mothers placing the emphasis on their baby's 'physical' rejection of a bottle. Others attributed it to their baby's strong preference for the breast. In addition, the distinctiveness of the baby's individual character was suggested, as was the delaying of the introduction of a bottle.

Bottle feeding was portrayed by mothers in the current research as being 'alien like' and unnatural for their baby, thus leading to rejection. This is, to an extent, consistent with studies that have found the mechanics of bottle feeding to be different from breastfeeding (Franca 2008; Aizawa *et al.* 2010; Moral *et al.* 2010), and a bottle teat being unable to resemble a nipple (Nowak *et al*. 1994; Nowak *et al*. 1995). However, mothers in the current research also described other babies they knew being able to feed indiscriminately from both breast and bottle. In addition, there is evidence that babies are flexible enough to be able to adapt their sucking pattern to match different feeding mechanisms (Sameroff 1968; Wolff 1968; Moral *et al.* 2010). Thus, it appears that bottle refusal is conceivably more complex than pertaining exclusively to physical or mechanical differences. In line with this, the notion that it may be unrealistic for mothers to want their baby to feed by both breast and bottle is also challenged.

In addition, the research findings depicted babies not being able to 'work' a bottle, with mothers believing their babies needed to 'master the skill' of bottle feeding in order to be able to accept one. This is consistent with breastfeeding mothers who sought to 'train' their baby to bottle feed (Andrew and Harvey 2011) or who felt the need to 'prepare' them for it (Gilmour *et al.* 2013). This is of course deeply ironic, given that the majority of babies bottle feed in the UK seemingly problem free. Further irony is evident within the UK where the focus is on breastfeeding being the skill to be mastered, rather than bottle feeding. Thus, it can be concluded, that the babies in this research are the

antithesis of the socio-cultural norm, having 'mastered' breastfeeding, yet being unable to acquire the 'skill' of bottle feeding. This analogy may lead mothers to believe their baby is exhibiting abnormal behaviour, something this study seeks to redress.

The research findings show some mothers believed bottle refusal to be about 'breast preference'. They depicted breastfeeding as being natural, instinctive and 'the answer to everything'. This could be seen to be supported by evidence that breastfeeding provides more than nutrition for a baby (Gribble 2006; Gribble 2009; Papp 2014; Reddy *et al.* 2015; Harrison *et al.* 2016), which has ultimately been confirmed by children themselves (Gribble 2009). Thus, one could speculate that when a breastfed baby refuses to bottle feed, it is in effect 'preserving' the many non-nutritional properties it receives from breastfeeding, ensuring a co-dependence remains between itself, the breast, and it's mother. This would also fit with theories of weaning, which suggest babies can objectify the breast (Klein 1952; Winnicott 1988), and that breastfeeding meets their need for oral satisfaction (Freud and Strachey 1969). However, although breastfeeding has been found to provide a secure base for babies in some studies (Gribble 2006; Tharner *et al.* 2012; Gibbs *et al.* 2018) this theory has been disputed by others (Bowlby 1997; Britton *et al.* 2006; Jansen *et al.* 2008). Thus, the suggestion that bottle refusal could be due to a baby wanting to retain the non-nutritional properties of breastfeeding remains open to interpretation.

Mothers in the current research gave examples of their baby's 'strong characteristics' and unpredictable, and sometimes inexplicable, behaviour in relation to bottle refusal. Baby temperament has been highlighted previously as having an impact on infant feeding (Lothina 1995; Lauzon-Guillain *et al.* 2012; Kielbratowska *et al.* 2015), and it is not inconceivable that this may contribute to bottle refusal. Thus, although the influence of a baby's temperament/personality cannot be determined as contributing to bottle refusal from this research, it certainly opens up the debate concerning a potential influence.

The research found mothers associated their baby's botte refusal with delayed bottle introduction. This could be seen as being associated with the 'perceived wisdom'

amongst some mothers, that early introduction would lead to acceptance. However, these associations are fraught with complexity. What mothers constituted as 'early' and 'delayed' introduction is hard to define, although one might assume that to delay introduction was to wait until the advised, but un-evidenced, six weeks. In addition, the research findings show that babies who eventually accepted a bottle were older when first introduced to one, than those that refused. Furthermore, some mothers reported that their baby had refused a bottle at birth. Moreover, some mothers described their baby moving from initial acceptance to refusal. Not only does this illustrate the individual behaviour of babies, it also indicates bottle refusal as an unpredictable scenario. This research illustrates refusal being more complex than the 'timing' of introduction, and cannot advocate an age at which to begin introducing a bottle which will lead to bottle acceptance.

Closely linked to the timing of introduction of a bottle is the scenario of 'nipple confusion'. Although many mothers in this research appeared to adhere to advice that premature introduction of a bottle could lead to nipple confusion, they also voiced their scepticism as to its potential negative impact upon breastfeeding. This is, to an extent, consistent with the evidence surrounding the scenario, which is viewed as limited (Hargreaves and Harris 2009), inconclusive (Zimmerman and Thompson 2015), and not existing (Fischer and Inch 1996). In addition, McInnes *et al*. (2015), discuss the causal pathway between bottle feeding and reduced duration of breastfeeding as being uncertain. Hargreaves and Harris (2009) also add that of more concern than nipple confusion is the impact feeding with formula may have upon milk production. To compound this, as previously discussed, there is further evidence that babies are able to master both breast and bottle feeding mechanisms by adapting their sucking reflex (Sameroff *et al*. 1968; Wolff *et al*. 1968; Moral *et al*. 2010). However, health professionals have been described as 'fearing' nipple confusion (Renfrew *et al.* 2000) and can transfer this fear into information concerning its negative impact to breastfeeding mothers. Thus, mothers are presented with a confusing and questionable picture concerning timing and potential impact of bottle introduction, which they come to believe can result in their baby's reluctance to accept a bottle. The scenario of nipple confusion requires further exploration in relation to its negative impact upon

breastfeeding. Without this, mothers – as seen in this research – continue to be given information that lacks supporting evidence, that validity of which they will inevitably question.

7.5 Conclusion

This chapter has presented the integrated findings from the three studies exploring mothers' experiences of bottle refusal by their breastfed baby. This research has illustrated the challenges and competing demands mothers faced when breastfeeding and how mothers wished to introduce a bottle to help alleviate these demands. In addition, it has shown how bottle refusal was viewed as a problem by most of the mothers, and one which they often went to great lengths to 'solve'. However, bottle refusal was not always readily solvable, with many babies exhibiting a permanent refusal to feed by bottle. Support for mothers experiencing bottle refusal was often 'unhelpful', with a bias towards breastfeeding being apparent. The impact of bottle refusal was a negative one for the majority of mothers in this research, although some mothers were able to frame it more pragmatically and positively. Why mothers believed their baby refused a bottle was complex, and included the physical differences between breast and bottle feeding, the non-nutritional properties of breastfeeding, a baby's temperament, and delaying the introduction of a bottle.

7.6 Key messages

Five key messages were developed from the overall research findings and subsequent overarching themes (see table 21 below). They are discussed further in chapter 8 in relation to recommendations from this programme of research.

Table 21 Key messages

Key messages
➢ Breastfeeding does not always 'fit' with mother's lives, feeding by bottle can be used as an alternative ➢ There is no simple solution to bottle refusal and some babies may never accept a bottle ➢ Bottle refusal can have negative consequences for breastfeeding mothers which needs to be recognised by those supporting them ➢ Support for mothers experiencing bottle refusal is at present poor, with a perceived bias towards breastfeeding ➢ Physical differences between bottle and breastfeeding, a baby's individual behaviour and preference for breastfeeding are reasons why mothers think their baby refuses a bottle

Reflective stop off

I presented my findings for the first time (Royal Society of Medicine). I had only 15 minutes to do this so chose to display the new overarching themes and underpin them with a synopsis of the evidence I had to support them. I was concerned the subject would not be 'palatable' to those attending the conference – it was extremely pro-breastfeeding. However feedback was actually very positive – tweets described the research as 'very important' and 'fascinating', however I also recognised that attendees had been selective on what they tweeted about my study. There was an emphasis on bottle acceptance not being associated with early introduction and how trying different bottles and teats is the not the answer to solving bottle refusal. By the attendees focusing on these two aspects of my presentation the issue of 'solving bottle refusal' was taking priority potentially at the expense of the mothers' experiences. Their voices were becoming lost. In addition, although these were valid findings I had also made it clear during the presentation that my findings were not generalizable due to the nature of the sample (although they did reflect a national context, and were likely to be applicable to a wider audience). However I realised I had little control over

how people reported my research to others – and worryingly to mothers. This was a learning curve for me and I realised that although there was little I could do prevent people's subjective interpretations of my research, I perhaps needed to be more authoritative in the way I presented my findings and to express caution as to how the findings would be transferred to practice.

The following chapter will conclude this thesis. It will discuss the overall conclusions of this programme of research and the implications for practice and future research. It will also outline the strengths and limitations of the research, and present a reflection upon my PhD journey.

Chapter 8 – Conclusions and recommendations

8.1 Introduction

This final chapter will present the overall conclusions of this programme of research. How the conceptual and theoretical frameworks enhanced understanding of mothers' experiences will be illustrated, and the overall strengths and limitations of the research discussed. Recommendations for practice and future research will be identified and how the research contributes to the existing body of knowledge will be presented. The chapter will close with a reflection upon the undertaking of the research and concluding remarks.

8.2 Enhancing understanding through the conceptual and theoretical frameworks

This aim of this research was to explore mothers' experiences of bottle refusal by their breastfed baby. By applying the conceptual and socio-ecological frameworks to this programme of research, mothers' experiences of bottle refusal by their breastfed baby were explored holistically, and within the wider UK context. The frameworks facilitated a multi-level approach to the research, accounting for the complexity of infant feeding in the UK. In addition, the application of the frameworks ensured mothers' experiences were viewed through a broad, rather than narrow lens, with the latter leading to infant feeding being viewed as a bio-medical activity, or one that a mother alone is responsible for. In essence, by using the frameworks, understanding of mothers' experiences of bottle refusal by their breastfed baby has moved '*beyond that of the mother and infant dyad*' (Tiedge *et al.* 2002 p.155).

Conceptual framework

By utilising the conceptual framework (see figure 4, section 2.13), physiological, psychological, socio-cultural and health factors were explored as determinates of mothers' experiences of bottle refusal. How understanding of mothers' experiences was enhanced, is presented below.

Physiological factors

This led to an understanding of how the advice and support for mothers from health professionals was often built upon knowledge of the physiology of breastfeeding.

Psychological factors

This led to an understanding that bottle refusal was not just a physical matter, and that the complex activity of breastfeeding was likely to provide non-nutritional benefits for a baby that he/she is unwilling to give up. In addition, an understanding of the impact of bottle refusal for mothers from a psychological perspective was provided, this included mothers experiencing stress, guilty, anxiety and in some cases depression.

Socio-cultural factors

Mothers' experiences of bottle refusal were recognised as being influenced by the UK infant feeding context (discussed in more detail in the application of the SEM below), with 'good' and 'bad' mothering being aligned to breast and bottle feeding respectively.

Health factors

An understanding was gained of how the superiority of breastfeeding, when framed from a bio-medical and scientific perspective, affected mothers' experiences when they wished to introduce a bottle to their breastfed baby.

Theoretical framework using a Socio-ecological model

By utilising the SEM as a framework (see figure 5, section 2.14), mothers' experiences of bottle refusal were explored at intrapersonal, interpersonal, institutional, community and policy levels. How understanding of mothers' experiences was enhanced, is presented below.

Intrapersonal level

An understanding was provided of the potential impact a mother's character/personality can have in relation to bottle refusal. This was observed in some mothers being able to approach the scenario more pragmatically than others. In addition, a mother's individual circumstances were considered, and how they contributed to her experiencing of bottle refusal. Furthermore, by using a SEM, the baby was considered at an individual level, rather than solely as part of the mother-infant dyad. This enabled an understanding of the baby's role in bottle refusal in addition to that of the mother.

Interpersonal level

From an interpersonal level, an understanding of the support mechanisms immediate to the mother was gained. In particular, mothers used informal support from online communities, 'mother to mother', and were willing to be guided by other mothers in their management of bottle refusal. However, the role of others in infant feeding, particularly fathers, was not always clear, and it was evident that the problem of solving bottle refusal was almost exclusively the mother's domain.

Institutional level

An understanding was provided of how health professionals in particular supported mothers, both in their intention to introduce a bottle, and their attempt to solve it. This illustrated health professionals favouring breastfeeding, which was governed by their role as advocates for breastfeeding and at times their adherence to policies such as BFI.

Community level

An understanding of how the 'UK bottle feeding culture' influenced and impacted upon mothers' experiences was obtained. This included the implicit effect it had on mothers' wanting to introduce a bottle and how bottle refusal was constructed as a 'problem' by mothers. In addition, an understanding of the conflicts breastfeeding mothers experienced in a contemporary UK society was provided, from resuming a social life, to returning to work.

Policy level
An understanding of the potential impact of BFI on health professionals' advice and support, and in turn mothers' experiences, was gained. In addition, laws that protect breastfeeding, and rules that exclude the practice, were considered in relation to the mothers' circumstances and their ensuing experiences. Furthermore, the role of bottle and teat manufacturers in relation to the solving of bottle refusal was appraised.

8.3 Conclusions

Conclusions developed from the overall findings are presented below in relation to the five research questions.

What is the context surrounding why mothers want their breastfed baby to feed from a bottle?

Breastfeeding did not always appear to 'fit' with the mothers' lives. Mothers cited reasons which included their return to work, the need for a break, wanting to spend time with family and acute scenarios such as being unwell, as situations where breastfeeding was challenging. Mothers' decisions to introduce a bottle to their breastfed baby may have been influenced by the UK bottle feeding culture, where breastfeeding is not the norm. Furthermore, an apparent disparity existed between the demands of breastfeeding, and the demands and expectations placed on the mothers whilst living in a contemporary UK society. The mothers in this research viewed bottle feeding as a way of circumnavigating the challenges they faced when breastfeeding and conducting their ongoing lives.

How do mothers manage bottle refusal?

Most mothers managed bottle refusal from a problem solving perspective, with an expectation for it to be 'solvable'. Few mothers aimed to 'work around' bottle refusal, and to accept it as a natural or normal response by their baby. These findings are likely to have been influenced by the UK bottle feeding culture the mothers reside in, where feeding by bottle is deemed to be the norm and apparently 'problem free'. The solving of bottle refusal was not an easy process however, with the methods used by mothers

being anecdotal, un-evidenced and in some cases posing risks to the health of the mother and baby. In addition, this study found no single definitive method to be both effective and acceptable to mothers, and for some, their baby's bottle refusal was permanent. Thus, this research demonstrates that bottle refusal was a scenario that was not readily resolved, which posed challenges for mothers whilst managing it. In addition, how mothers' managed bottle refusal was largely driven by their need to solve it, rather than it being 'normalised'.

What support do mothers receive when experiencing bottle refusal?

Support for mothers whilst experiencing bottle refusal was limited, leading many to consult online parenting forums for advice. Furthermore, the support mothers did receive, was not deemed to be helpful by the majority of mothers. There appeared to be a lack of recognition of the potential impact of the scenario upon mothers and their families, and an apparent bias towards breastfeeding from health professionals. In addition, support in relation to mothers continuing to breastfeed alongside bottle refusal was limited. This research illustrates that those supporting mothers experiencing bottle refusal, were often doing so with limited understanding and knowledge of the scenario, due to a lack of evidence surrounding it. In addition, from a health professional perspective, the emphasis on the superiority of breastfeeding influenced their care and support. These factors combined, led to poor support for mothers, which often did not take into account their individual circumstances.

What is the potential impact of bottle refusal?

The impact of bottle refusal was mainly a negative one for the majority of mothers, affecting them physically, psychologically and socially. In addition, as discussed previously, there was an expectation – probably culturally driven – for bottle refusal to be solvable. The negative impact was not always necessarily attributed to refusal, as mothers also reported a negative experience even if their baby had eventually accepted. This indicates impact was not solely related to the positive outcome of eventual bottle acceptance. For some mothers bottle refusal could have its positives, including prolonged breastfeeding, bonding and increased self-esteem. These mothers were able to frame bottle refusal more positively, and appeared to adopt a more pragmatic

response to it. It is evident from this research that although the impact of bottle refusal on the majority of mothers was a negative one, it could to an extent, be influenced culturally and by the mothers' own expectations and individual circumstances.

Why do mothers think their breastfed baby refuses to feed from a bottle?

Mothers described various reasons as to why they thought their baby refused a bottle. Mothers discussed their baby's individual character, the differences between the mechanics of breast and bottle feeding, their baby's preference for breastfeeding, and the 'delaying' of bottle introduction to prevent nipple confusion, as influences upon why their baby refused. From these findings, it is evident that infant feeding is a complex practice, with multiple influences, which inevitably impact upon why breastfed babies refuse to bottle feed.

In conclusion, bottle refusal by breastfed babies – akin to infant feeding *per se* – is a complex scenario, exhibiting various dynamic influences that affect how mothers experience it. A greater recognition of the scenario and the challenges it poses for mothers, could enhance support and enable some of the mothers' experiences to be more positive. In addition, a 'normalising' of bottle refusal, with it being framed as a normal response by a healthy, well baby, could also contribute to mothers having a more positive experience. This in turn, could lead some mothers to breastfeed for longer, rather than continuing to try to solve bottle refusal.

8.4 Strengths and limitations of the overall programme of research

This programme of research is not without its limitations. They have been discussed during the three stages, however the following section will discuss them in relation to the study as a whole, rather than in isolation.

Due to the population of mothers experiencing bottle refusal being unknown, a convenience sample was used for the online questionnaire, limiting the extrapolation of findings to the wider UK breastfeeding population. In addition, due to the nature and culture of infant feeding in the UK, the research findings may not be applicable to non-

UK settings. However, this programme of research was predominantly qualitative, and was exploratory in nature. As such, it did not set out to produce findings that were generalisable. Furthermore, the use of maximal variation sampling in study two, ensured mothers were interviewed who had varying experiences of bottle refusal. Moreover, the large amount of data collected, using a UK wide sample, points to the research findings having the potential to be referred to in a national context.

The majority of mothers who participated in this research were white, older mothers, who were employed in professional and managerial occupations (the demographics from stage three are unknown). This in effect represents the majority of the breastfeeding population in the UK (McAndrew *et al*. 2012). However, mothers from ethnic minority groups - the mothers most likely to breastfeed in the UK (McAndrew *et al*. 2012) - were underrepresented. Although a separate attempt was made to try to recruit mothers from ethnic minority groups, this was not successful, thus this programme of research was not able to present a picture of these mothers' experiences, which could have been a useful addition to the findings.

It is possible that there was a bias towards a negative experience concerning bottle refusal within this research. Mothers were self-selecting in relation to the online questionnaire and interviews, and may have been more inclined to participate in order to 'tell their story'. This could also be true of the mothers who posted on the online forums. However, a strength of this programme of research is the large numbers recruited for the online questionnaire and interviews, and the posts captured. Thus although the programme of research does not claim to represent mothers who experience bottle refusal in the UK, it provides the experiences of a large group of mothers, whose experiences could be conceivably similar to mothers who did not participate.

A further limitation of this programme of research is the reliance on memory recall, a weakness of many other studies concerning infant feeding. In hindsight, it was not necessary to have such a wide inclusion criteria of five years for the questionnaire and subsequently the interviews. However, at the time of conducting the online

questionnaire, bottle refusal was an unknown entity, and being able to recruit to the research was a concern. It should be acknowledged however, that a number of mothers who participated in the research at all stages were experiencing bottle refusal at that time, thus memory recall would not have been affected to the same extent as those recalling their experiences from a number of years ago. Furthermore, the large data set created from the questionnaire enabled associations between variables to be tested, adding to the existing new and valuable knowledge it had generated concerning bottle refusal.

From a data collection perspective, the online questionnaire used a number of non-validated questions, although due to so little being known about bottle refusal this was necessary during development. In addition, flaws were noted for a small number of questions post-analysis. The use of online forum posts also presented limitations. Due to their anonymous nature, the posts from online forums meant that the authenticity of the posters and their demographics were difficult to ascertain. In addition, the posts were usually short, providing a snapshot of mothers' experiences, and there was no ability to follow up their meaning. However, limitations of these data collection methods were to an extent offset by their findings being cross-referenced between stages. This was a strength of the mixed methods design, adopted for this programme of research, which is viewed as the main strength of this programme of research. By using MMR, the stages of this research informed others sequentially, with the findings of the online questionnaire providing an important focus for data to be further explored and expanded upon in studies two and three. Furthermore the use of the MMR allowed data to be triangulated between stages two and three. The online questionnaire for Findings from the three stages were consolidated during the process of integration, which strengthened the overall key messages and conclusions. In addition, this provided a greater understanding of mothers' experiences of bottle refusal by their breastfed baby.

8.5 Research recommendations for practice

This programme of research presents various recommendations for practice, derived from the research findings. Ideally, mothers who are experiencing or have experienced

bottle refusal should participate in developing these recommendations. The recommendations, which are aligned to the levels of the SEM, are detailed below.

Infant feeding leads/policy makers (policy level)

- Information (on and offline) concerning the potential scenario of bottle refusal by breastfed babies should be embedded in national and local infant feeding literature and policy. This can then be cascaded to those supporting mothers such as midwives, health visitors and breastfeeding support groups. This would enable professional recognition of the scenario, raise an awareness of bottle refusal and potentially enable mothers to 'prepare' for bottle refusal. Information should include case studies from mothers who have 'worked around' bottle refusal, which can be embedded in infant feeding literature and training.
- In line with the above, information pertaining to bottle refusal should contain the potential adverse health effects of using methods such as cold turkey. This would ensure mothers are fully informed prior to their decision to use it.
- In addition, information regarding bottle refusal should reflect the reality that the length of time to eventual bottle acceptance can be variable, and that some babies will never accept a bottle. Information should also state that at present, there is no evidence to support methods that lead to acceptance.
- Furthermore, there is a need for information to be given to mothers who want to 'combine' breast and bottle feeding. This should include the caveat that not all babies accept a bottle, and that the introduction of a bottle – particularly of formula – has the potential to disrupt milk supply, although the evidence to support this is inconclusive.
- The online questionnaire provided an insight into the reality of the 24 hour lives of breastfeeding mothers and their use of online resources. This knowledge has the potential to be used in the development and promotion of public health interventions relevant to mothers, particularly using online platforms. Dissemination of the knowledge would be undertaken locally and nationally via presentations, and by publishing in journals related to health.

Bottle/teat manufacturers (policy level)

- Mothers require evidence based information in relation to teats and bottles that are marketed for bottle refusal. This will enable mothers to make informed choices regarding purchases.

Health professionals (institutional level)

- Education of health professionals and undergraduate students is required in relation to the scenario of bottle refusal, in order to enhance care for those mothers experiencing it. Ideally this would be undertaken locally using team meetings and nationally through conference presentations. Dissemination of the research findings would also be undertaken by publishing in professional journals. In addition, local lectures on relevant undergraduate health professional programmes have been commenced.
- An open and honest dialogue concerning bottle refusal by breastfed babies needs to be communicated to women/mothers. This could be introduced during the antenatal conversation about infant feeding which is advocated by BFI who state, 'A *meaningful conversation will help to prepare the woman for birth and the postnatal period, equipping her with the self-efficacy and problem-solving skills to overcome the challenges she may experience, or, empowering her with confidence to ask for help when she needs it* (UNICEF 2012, p. 12). It should also be presented via online sources of breastfeeding support.
- Mothers should be offered practical support by infant feeding teams, midwives and/or health visitors to undertake alternative feeding practices such as using a cup, spoon, finger or syringe when experiencing bottle refusal. In line with this 'cup refusal', experienced by some mothers in this research, should be communicated to mothers.
- At present, there is no strong evidence to support nipple confusion being caused by bottle feeding a breastfed baby. In addition, there is no evidence to suggest that nipple confusion has a negative impact upon breastfeeding. This needs to be communicated to mothers.

- In addition, there is no current evidence to support delaying bottle introduction until around six weeks to prevent an adverse impact upon breastfeeding, including nipple confusion. This again needs to be communicated to mothers so that they can make informed decisions concerning bottle introduction.

Normalising bottle refusal (community level)

- Recognition from a societal level, that bottle refusal in a healthy, well baby, is a normal rather than abnormal response is needed. Although it is acknowledged this would be challenging, this could form part of the 'normalising breastfeeding' messages (both off and online) that are currently promoted in the UK.

Health professionals (institutional level) and informal support for mothers (interpersonal level)

- The potential negative impact of bottle refusal, including psychological factors, needs to be recognised, by those informally supporting mothers who are experiencing bottle refusal by their breastfed baby. This would hopefully enable an empathetic response to the scenario, and lead to mothers feeling more supported.

Mothers (interpersonal level)

- Positive role models and case studies surrounding mothers who have 'worked around' bottle refusal are needed. Their experiences can be used as both an off and online resource, to support and advise mothers experiencing the scenario.

Mothers (intrapersonal level)

- A societal approach to normalising bottle refusal will enable mothers to recognise that bottle refusal in a healthy, well baby, is a normal rather than abnormal response by their breastfed baby. This can help them to frame and experience it more positively.

8.6 Recommendations for further research

This programme of research has highlighted gaps in knowledge which are represented below as further research.

- A study comparing breastfed babies who refused a bottle and those who did not would provide a further insight into bottle refusal and acceptance. This could be in the form of a large-scale survey taken from a sample of breastfeeding mothers who introduced a bottle. Significant variables (if any) in relation to refusal/acceptance could be investigated.
- Studies exploring alternatives to breast and bottle in healthy, older babies, (as opposed to preterm, unwell babies), would provide mothers experiencing bottle refusal with possible effective alternatives with which to manage the scenario. These could include: feeding by cup (different types), finger, syringe, spoon, paladai and straw, and could be undertaken in the form of intervention studies. In addition, qualitative studies would be useful to gain an understanding of mothers' experiences of using alternative feeding methods, as previous studies have shown mothers' compliance with other methods of feeding to be a factor in their effectiveness.
- Further research is required in relation to nipple confusion, particularly in relation to the link between causation and cessation of breastfeeding. At present this is not substantiated, yet appears to be at the forefront of advice concerning breast with bottle feeding. It is acknowledged that this would be challenging however, as a large scale study would be required in order to consider all confounding factors that could affect breastfeeding negatively.
- Studies are needed in relation to different bottles brands and teats, and their impact upon bottle refusal. This would enable mothers to make evidence based decisions regarding bottle and teat purchases to 'solve' bottle refusal. At present, few studies have been undertaken, and all have used samples too small to extrapolate findings. In addition, some bottle and teat brands have no evidence underpinning their advertising claims.
- Further research is needed in relation to the timing, and impact, of introduction of a bottle to a breastfed baby. At present, studies concentrate on the impact of early supplementation of a bottle on breastfeeding, as opposed to bottle introduction weeks/months after birth. This could be in the form of a large scale survey taken from a sample of breastfeeding mothers who introduced a bottle.

- A qualitative study in relation to health professional/breastfeeding support teams' knowledge/experiences of supporting mothers experiencing bottle refusal is needed. This would provide a picture of potential challenges they experience, and explore their underpinning knowledge of the scenario. Findings, could in turn, be used to underpin how future support for mothers is undertaken.
- More qualitative research is needed in relation to mothers' experiences of breastfeeding 'long term' in the UK. This could provide knowledge and understanding that could be transferred to those supporting mothers to enhance their care.

8.7 Reflection

This thesis has been punctuated with reflective and reflexive 'stop offs', depicting my thoughts and actions at each stage. The following discussion will reflect upon my own personal journey whilst undertaking this research.

During the early days of this PhD, a colleague told me that it would be as much about endurance and perseverance, as it would be about academic ability. This is something I have reflected upon at numerous points throughout the study, particularly during the writing up stage. Writing up tested my ability to read and write, and make sense of what I was reading and writing, to the limit. At first I was frustrated at the way I seemed to approach each chapter, which never seemed to be systematic or ordered. After watching the programme 'National Portrait Artist of the Year' however, I began to feel more positive about my seemingly haphazard way of writing and synthesising information. During the programme, some of the artists began with a grid, then an outline of a person and filled it in systematically. Others, however, would start with an eye, a hand, or a feature of clothing, developing the whole portrait from this. I saw myself in the latter category. This was how I seemed to write best, and my attempts to change this to a more systematic technique were actually preventing me from writing effectively. I accepted this was my way of writing and of composing a chapter. This does not mean however, that my future work will follow this method, as I still crave a more systematic way of writing, which I believe would be more efficient in the long run.

My learning curve during this PhD has been steep, particularly in relation to mixed methods research, which I had not undertaken previously. In addition, using NVivo, online forum analysis, developing an online survey, and using various modes to interview, were all new to me. During the last three years I have more than once wished I had undertaken a purely qualitative study using interviews, something I had undertaken during my MSc, and was familiar with. However, I now recognise that by employing the 'safer' option, this would have limited my learning curve and would not have done justice to understanding the mothers' experiences. Further to this, I have often considered whether undertaking the interviews first, would have ironed out some of the flaws in the online questionnaire. On the flip side however, by undertaking the questionnaire first, I produced findings that were potentially freed from some of my pre-conceived ideas and possible biases concerning bottle refusal.

More than ever before, undertaking this PhD has taught me to prioritise, particularly with having a young family, being part time, and having teaching and assessing responsibilities. At times the workload has felt insurmountable. However, I took solace in a comment from someone presenting at a writing workshop I attended, who said the best way to get something done is to feel that you don't have enough time! In essence, I recognised that being time pressured, ensured that I became an expert at time management. This was challenged initially by having only two set deadlines in the three years. However, I learnt to set my own deadlines, which were pivotal in enabling me to stay motivated. The sense of achievement when I met or was very close to a deadline was extremely rewarding. I also recognised however, that there was a 'fine line' between allowing enough time to complete work to the upmost standard, and the pressure of time having a negative impact upon my quality of work. I hoped I had followed the former, rather than the latter.

8.8 Concluding remarks

By undertaking this thesis, an understanding of UK mothers' experiences of bottle refusal by their breastfed baby has emerged. Prior to this research, information concerning the scenario was almost wholly anecdotal, with much of the dialogue from

UK mothers being informal, via online sources. From a research perspective, only one study had been undertaken previously, nearly three decades ago in the US, of which no papers were published. The findings of this programme research have the potential to contribute to many current infant feeding debates. They have illustrated the challenges mothers face when combining breastfeeding with their everyday busy lives, particularly when living in a contemporary UK bottle feeding society. They have highlighted how mothers try to circumnavigate these demands with the aid of a bottle. They have also depicted the challenges mothers face when wanting to combine breast and bottle feeding. In addition, they have illustrated gaps in the evidence concerning nipple confusion, and timing of introduction of a bottle to a breastfed baby. Most importantly however, the findings have created new knowledge in relation to the scenario of bottle refusal.

This programme of research is the first of its kind to explore bottle refusal using a mixed methods design, with such a large sample and large amount of data. It provides a unique insight into the methods UK mothers use to manage their baby's bottle refusal, which focus on it being a problem that needs to be solved. The research is the first of its kind to investigate associations between variables and bottle refusal/eventual acceptance, finding significant associations with baby's age at introduction, mothers' intended frequency to feed, previous experience of bottle refusal and the impact of bottle refusal. The research has shown that current support for mothers experiencing bottle refusal by their breastfed baby is not helpful, particularly in relation to health professionals. Furthermore, it shows that support for mothers experiencing bottle refusal is probably affected by a bias towards breastfeeding, a disapproval of bottle feeding and a perceived withholding of information concerning the scenario. These findings are unique within the context of bottle refusal, and are important with respect to how mothers' experience the scenario. The research findings depict the majority of mothers experiencing bottle refusal negatively, which is similar to findings from Egan's study (Egan 1988). However, it also finds that bottle refusal, whether solved or not, can have a negative impact upon mothers. This is a finding that has not been described previously, and one which can contribute to a better understanding of how to support mothers empathetically. In addition, the research findings show that bottle refusal can have its

positives for some mothers; an important and unique finding, that was not described by mothers in Egan's study (Egan 1988).

This programme of research explored why mothers believed their baby refused a bottle, which has not been undertaken previously. The findings provide a unique picture of mothers' thoughts concerning why bottle refusal may occur, which include their individual baby's behaviour and the non-nutritional properties of breastfeeding. This thesis has generated a number of new findings that make an important contribution to infant feeding literature. Significantly however, by undertaking this research, mothers have been given a voice in relation to their experiences of bottle refusal by their breastfed baby, a scenario that has been largely ignored professionally, yet poses many challenges to those experiencing it.

Reflective stop off

I was on holiday on a campsite in Sardinia. My son was playing with another boy and I was talking to his mum from England. We talked about work and she asked what I did, I told her about my PhD. She replied, 'so it really is a thing? bottle refusal? I'm so glad. Both mine had it (she pointed to her two sons), I thought there was something wrong with them….and me!' (she laughed). I reflected upon this conversation. I hoped that my research would enable mothers to know that they were not alone in experiencing bottle refusal, that it was a real scenario, and that there was no one to 'blame' for their baby's refusal. My study felt worthwhile.

References

ACAS (2014) 'Accommodating breastfeeding employees in the workplace', available: http://www.acas.org.uk/media/pdf/j/k/Acas_guide_on_accommodating_breastfeeding_in_the_workplace_(JANUARY2014).pdf [accessed 13/10/18].

Adler, P.A. and Adler, P. (2012) 'The Epistemology of Numbers' in Baker, S. and Edwards, R., eds., *How many qualitative interviews is enough? Expert voices and early career reflections on sampling and cases in qualitative research* National Centre for Research Methods, 8-11, available: http://eprints.ncrm.ac.uk/2273/4/how_many_interviews.pdf [accessed 15/3/15].

Afoakwah, G., Smith, R. and Lavender, T. (2013) 'Women's experinces of breastfeeding : A narrative review of qualitative studies', *African Journal of Midwifery and Women's Health*, 7(2), 71-77.

Agampodi, S.B., Fernando, S., Dharmaratne, S.D. and Agampodi, T.C. (2011) 'Duration of exclusive breastfeeding; validity of retrospective assessment at nine months of age', *BMC Pediatrics*, 11(1), 1-5, available: http://dx.doi.org/10.1186/1471-2431-11-80.

Aizawa, M., Mizuno, K. and Tamura, M. (2010) 'Neonatal sucking behaviour: Comparison of perioral movement during breast-feeding and bottle feeding ', *Pediatrics International*, 52(1), 104–108, available: http://dx.doi.org/10.1111/j.1442-200X.2009.02914.x.

Al-Sahab, B., Feldman, M., Macpherson, A., Ohlsson, A., Tamim. H. (2010) 'Which method of brestfeeding supplementation is best? The beliefs and practices of paediatricians and nurses', *Pediatric Child Health*, 15(7), 427-431.

Alexa.com *Find Website Traffic, Statistics, and Analytics*, available: https://www.alexa.com/siteinfo [accessed 10/10/17].

Amir, L.H. (2011) 'Social theory and infant feeding', *International Breastfeeding Journal*, 6(7), 1-3, available: http://dx.doi.org/10.1186/1746-4358-6-7.

Andrew, N. and Harvey, K. (2011) 'Infant feeding choices: experience, self-identity and lifestyle', *Maternal & Child Nutrition*, 7(1), 48-60, available: http://dx.doi.org/10.1111/j.1740-8709.2009.00222.x.

Angell, C., van Teijlingen, E., Hundley, V. and Ryan, K. (2015) 'Users of the healthtalk.org breastfeeding webpages; their characteristics and views', *Evidence Based Midwifery*, 13(2), 54-58.

Auta, A., Strickland-Hodge, B. and Maz, J. (2017) 'There is still a case for a generic qualitative approach in some pharmacy practice research', *Research in Social and Administrative Pharmacy*, 13(1), 226-228, available: http://dx.doi.org/dx.doi.org/10.1016/j.sapharm.2016.06.005.

Babycenter.com *How can I teach my breastfed baby to take a bottle*, available: http://www.babycenter.com/404_how-can-i-teach-my-breastfed-baby-to-take-a-bottle_3177.bc [accessed 6/3/15].

Babycentre.co.uk *Bottle refusal*, available: https://community.babycentre.co.uk/post/a26329747 [accessed 15/3/15].

Bailey, C., Pain, R.H. and Aarvold, J.E. (2004) 'A 'give it a go' breast-feeding culture and early cessation among low-income mothers', *Midwifery*, 20(3), 240-250, available: http://dx.doi.org/https://doi.org/10.1016/j.midw.2003.12.003.

Balsamo, F., de Mari, G., Maher, V. and Serini, R. (1992) 'Production and pleasure: research on breast-feeding in Turin' in Maher, V., ed., *The Anthropology of Breast-feeding: Natural Law or Social Construct*, Rhode Island: Providence, 59-90.

Bartington, S., Griffiths, L.J., Tate, A.R. and Dezateux, C. (2006) 'Are breastfeeding rates higher among mothers delivering in Baby Friendly accredited maternity units in the UK?', *International Journal of Epidemiology*, 35(5), 1178-1186, available: http://dx.doi.org/10.1093/ije/dyl155.

Bartlett, A. (2003) 'Breastfeeding bodies and choice in late capitalism', *Hecate*, 29, 153-165.

Battersby, S. (2014) 'The role of the midwife in breastfeeding: Dichotomies and dissonance', *British Journal of Midwifery*, 22(8), 551-556, available: http://dx.doi.org/150.204.084.237.

BBC.CO.UK (2017) *Breastfeeding mum 'shocked' over course baby feeding ban*, available: http://www.bbc.co.uk/news/uk-england-nottinghamshire-41815888 [accessed 20/10/17].

Beitin, B.K. (2012) 'Interview and Sampling: How Many and Whom ' in Gubrium, J. F., Holstein, J. A., Marvasti, A. B. and McKinney, K. D., eds., *The SAGE Handbook of Interview Research: The Complexity of the Craft* 2nd ed., London: Sage, 243-252.

Bellamy, K., Ostini, R., Martini, N. and Kairuz, T. (2016) 'Seeking to understand: using generic qualitative research to explore access to medicines and pharmacy services among resettled refugees', *International Journal of Clinical Pharmacy*, 38, 671-675, available: http://dx.doi.org/10.1007/s11096-016-0261-1.

Benoit, B., Goldberg, L. and Campbell-Yeo, M. (2016) 'Infant feeding and maternal guilt: The application of a feminist phenomenological framework to guide clinician practices in breast feeding promotion', *Midwifery*, 34, 58-65, available: http://dx.doi.org/10.1016/j.midw.2015.10.011.

Bentley, J.P., Bond, D., de Vroome, M., Yip, E. and Nassar, N. (2016) 'Factors Associated with Recurrent Infant Feeding Practices in Subsequent Births', *Journal of Human Lactation*, 32(4), 721-729, available: http://dx.doi.org/10.1177/0890334416663188.

Biesta, G. (2010) 'Pragmatism and the Philosophical Foundations of Mixed Methods Research' in Tashakkori, A. and Teddlie, C., eds., *SAGE Handbook of Mixed Methods in Social & Behavioral Research* 2nd ed., Thousand Oaks: Sage, 95-118.

Biggs, K., Hurrell, K., Matthews, E., Khaleva, E., Munblit, D. and Boyle, R. (2018) 'Formula Milk Supplementation on the Postnatal Ward: A Cross-Sectional Analytical Study', *Nutrients*, 10(5), 1-19, available: http://dx.doi.org/10.3390/nu10050608.

Bishop, F.L. (2015) 'Using mixed methods research designs in health psychology: an illustrated discussion from a pragmatist perspective', *British Journal Health Psychology*, 20(1), 5-20, available: http://dx.doi.org/10.1111/bjhp.12122.

Bloomberg, L.D. and Volpe, M. (2016) *Completing Your Qualitative Dissertation*, London: SAGE.

Bøhler, E. and Ingstad, B. (1997) 'The struggle of weaning: Factors determining breastfeeding duration in East Bhutan', *Social Science & Medicine*, 43(12), 1805-15, available: http://dx.doi.org/10.1016/S0277-9536(96)00086-X.

Bottorff, J. (1995) 'Persistence in breastfeeding: a phenomenological investigation', *Joumal of Advanced Nursing*, 15, 201-209.

Bourdieu, P. (1984) *Distinction: A Social Critique of the Judgement of Taste*, London: Routledge.

Bowlby, J. (1997) *Attachment and loss: volume 1*, London: Random House.

Boyer, K. (2011) '"The way to break the taboo is to do the taboo thing" breastfeeding in public and citizen-activism in the UK', *Health & Place*, 17(2), 430-437, available: http://dx.doi.org/https://doi.org/10.1016/j.healthplace.2010.06.013.

Boyer, K. (2012) 'Affect, corporeality and the limits of belonging: breastfeeding in public in the contemporary UK', *Health & Place*, 18(3), 552-60, available: http://dx.doi.org/10.1016/j.healthplace.2012.01.010.

Boyer, K. (2018) 'The emotional resonances of breastfeeding in public: The role of strangers in breastfeeding practice', *Emotion, Space and Society*, 26, 33-40, available: http://dx.doi.org/https://doi.org/10.1016/j.emospa.2016.09.002.

BPS (2014) *Code of Human Research Ethics*, The British Psychological Society, available: www.bps.org.uk/publications/policy-andguidelines/ [accessed 2/2/18].

BPS (2017) *Ethics Guidelines for Internet-mediated Research*, The British Psychological Society, available: www.bps.org.uk/publications/policy-and-guidelines/ [accessed 02/02/18].

Braun, V. and Clark, M. (N.D) *Questions about thematic analysis*, available: https://www.psych.auckland.ac.nz/en/about/our-research/research-groups/thematic-analysis/ [accessed 3/11/15].

Braun, V. and Clark, V. (2013) *Successful qualitative research: A practical guide for beginners.*, London: Sage.

Braun, V. and Clarke, V. (2014) 'What can "thematic analysis" offer health and wellbeing researchers?', *International Journal of Qualitative Studies on Health and Well-being*, 9, 1-2, available: https://www.ncbi.nlm.nih.gov/pubmed/25326092 [accessed 1/7/18].

Bridges, L. (2016) 'The faces of breastfeeding support: Experiences of mothers seeking breastfeeding support online', *Breastfeeding Review*, 24(1), 11-20.

Bridges, N., Howell, G. and Schmied, V. (2018) 'Exploring breastfeeding support on social media', *International Breastfeeding Journal*, 13(22), 1-9, available: http://dx.doi.org/10.1186/s13006-018-0166-9.

Brinkmann, S. (2018) 'The Interview' in Denzin, N., K and Lincoln, Y., S, eds., *The SAGE Handbook of Qualitative Research*, Thousand Oaks: Sage, 576-599.

Britton, J.R., Britton, H.L. and Gronwaldt, V. (2006) 'Breastfeeding, sensitivity, and attachment', *PEDIATRICS*, 118(5), 1436-43, available: http://dx.doi.org/10.1542/peds.2005-2916.

Broadfoot, M., Britten, J., Tappin, D.M. and MacKenzie, J.M. (2005) 'The Baby Friendly Hospital Initiative and breast feeding rates in Scotland', *Archives of Disease in Childhood - Fetal and Neonatal Edition*, 90(2), 114-116, available: http://dx.doi.org/10.1136/adc.2003.041558.

Bronfenbrenner, U. (1989) 'Ecological systems theory', *Annals of child development*, 6, 187-249.

Brown, A. (2014) 'Maternal trait personality and breastfeeding duration: the importance of confidence and social support', *JOURNAL OF ADVANCED NURSING*, 70(3), 587-598, available: http://dx.doi.org/10.1111/jan.12219.

Brown, A. (2015) 'Breast is best, but not in my back-yard', *Trends in Molecular Medicine*, 21(2), 57-9, available: http://dx.doi.org/10.1016/j.molmed.2014.11.006.

Brown, A. (2017) 'Breastfeeding as a public health responsibility: a review of the evidence', *Journal of Human Nutrition & Dietetics*, 30, 759-770, available: http://dx.doi.org/10.1111/jhn.12496.

Brown, A. and Davies, R. (2014) 'Fathers' experiences of supporting breastfeeding: challenges for breastfeeding promotion and education', *Maternal & Child Nutrition*, 10(4), 510-26, available: http://dx.doi.org/10.1111/mcn.12129.

Brown, A. and Lee, M. (2013) 'Breastfeeding Is Associated with a Maternal Feeding Style Low in Control from Birth', *PLoS One*, 8(1), 7, available: http://dx.doi.org/10.1371/journal.pone.0054229.

Brown, A., Rance, J. and Bennett, P. (2016) 'Understanding the relationship between breastfeeding and postnatal depression: the role of pain and physical difficulties', *JOURNAL OF ADVANCED NURSING*, 72(2), 273-282.

Brown, A., Raynor, P. and Lee, M. (2011) 'Maternal control of child-feeding during breast and formula feeding in the first 6 months post-partum', *Journal of Human Nutrition and Dietetics*, 24(2), 177-86, available: http://dx.doi.org/10.1111/j.1365-277X.2010.01145.x.

Bryman, A. (2007) 'Barriers to Integrating Quantitative and Qualitative Research', *Journal of Mixed Methods Research*, 1(1), 8-22, available: http://dx.doi.org/10.1177/2345678906290531

Bryman, A. (2016) *Social Research Methods*, 5th ed., Oxford: Oxford University Press.

Buck, M.L., Amir, L., Cullinane, M. and Donath, S.M. (2014) 'Nipple Pain, Damage, and Vasospasm in the First 8 Weeks Postpartum', *Breastfeeding Medicine*, 9(2), 56-62, available: http://dx.doi.org/10.1089/bfm.2013.0106.

Burgess-Allen, J. and Owen-Smith, V. (2010) 'Using mind mapping techniques for rapid qualitative data analysis in public participation processes', *Health Expectations*, 13(4), 406-15, available: http://dx.doi.org/10.1111/j.1369-7625.2010.00594.x.

Burns, E., Fenwick, J., Sheehan, A. and Schmied, V. (2016) ''This little piranha': a qualitative analysis of the language used by health professionals and mothers to describe infant behaviour during breastfeeding', *Maternal & Child Nutrition*, 12(1), 111-24, available: http://dx.doi.org/10.1111/mcn.12179.

Burns, E., Schmied, V., Fenwick, J. and Sheehan, A. (2012) 'Liquid gold from the milk bar: Constructions of breastmilk and breastfeeding women in the language and practices of midwives', *Social Science & Medicine*, 75(10), 1737-1745, available: http://dx.doi.org/https://doi.org/10.1016/j.socscimed.2012.07.035.

Burns, E., Schmied, V., Sheehan, A. and Fenwick, J. (2010) 'A meta-ethnographic synthesis of women's experience of breastfeeding', *Maternal & Child Nutrition*, 6(3), 201-219, available: http://dx.doi.org/10.1111/j.1740-8709.2009.00209.x.

Caelli, K., Ray, L. and Mill, J. (2003) 'Clear as Mud': Toward Greater Clarity in Generic Qualitative Research', *International Journal of Qualitative Methods*, 2(2), 1-24, available: http://www.ualberta.ca/~iiqm/backissues/pdf/caellietal.pdf [accessed 14/1/18].

Callaghan, J.E. and Lazard, L. (2012) ''Please don't put the whole dang thing out there!': a discursive analysis of internet discussions around infant feeding', *Psychology and Health*, 27(8), 938-55, available: http://dx.doi.org/10.1080/08870446.2011.634294.

Carter, P. (1995) *Feminism, Breasts and Breast-Feeding*, London: Macmillan.

casp-uk.net *CASP Checklists*, available: https://casp-uk.net/casp-tools-checklists/ [accessed 4/11/15].

Caton, S.J., Blundell, P., Ahern, S.M., Nekitsing, C., Olsen, A., Moller, P., Hausner, H., Remy, E., Nicklaus, S., Chabanet, C., Issanchou, S. and Hetherington, M.M. (2014) 'Learning to eat vegetables in early life: the role of timing, age and individual eating traits', *PLoS One*, 9(5), 1-10, available: http://dx.doi.org/10.1371/journal.pone.0097609.

Charlton, C. (2015) *New mother says she was told to leave her seven-month-old baby at home with a bottle because breastfeeding is no excuse to skip jury duty*, available: http://www.dailymail.co.uk/news/article-2961615/New-mother-says-told-leave-seven-month-old-baby-home-bottle-breastfeeding-no-excuse-skip-jury-duty.html [accessed 28/11/17].

Cheung, R. (2018) *International comparisons of health and wellbeing in early childhood*, Nuffield Trust in association with Royal College of Paediatricains and Child Health, available: https://www.nuffieldtrust.org.uk/research/international-comparisons-of-health-and-wellbeing-in-early-childhood [accessed 1/6/18].

Chretien, K.C., Tuck, M.G., Simon, M., Singh, L.O. and Kind, T. (2015) 'A Digital Ethnography of Medical Students who Use Twitter for Professional Development', *Journal of General International Medicine*, 30(11), 1673-80, available: http://dx.doi.org/10.1007/s11606-015-3345-z.

Christ, T. (2013) 'The worldview matrix as a strategy when designing mixed methods research', *International Journal of Multiple Research Approaches*, 7(1), 110–118.

Classen, S., Lopez, E.D.S., Winter, S., Awadzi, K.D., Ferree, N. and Garvan, C.W. (2007) 'Population-based health promotion perspective for older driver safety: Conceptual framework to intervention plan', *Clinical Interventions in Aging*, 2(4), 677-693.

Cloherty, M., Alexander, J. and Holloway, I. (2004) 'Supplementing breast-fed babies in the UK to protect their mothers from tiredness or distress', *Midwifery*, 20(2), 194-204, available: http://dx.doi.org/10.1016/j.midw.2003.09.002.

Cloherty, M., Alexander, J., Holloway, I., Galvin, K. and Inch, S. (2005) 'The Cup-Versus-Bottle Debate: A Theme From an Ethnographic Study of the Supplementation of Breastfed Infants in Hospital in the United Kingdom', *Journal of Human Lactation*, 21(2), 151-162, available: http://dx.doi.org/10.1177/0890334405275447.

Cooper, S. and Endacott, R. (2007) 'Generic qualitative research: a design for qualitative research in emergency care?', *Emergency Medicine Journal*, 24(12), 816-9, available: http://dx.doi.org/10.1136/emj.2007.050641.

Couper, M.P. (2008) *Designing Effective Web Based Surveys*, Cambridge: Cambridge University Press.

Creswell, J. (2015) *A concise introduction to mixed methods research*, London: SAGE.

Creswell, J. and Plano Clark, V. (2007) *Designing and Conducting Mixed Methods Research*, Thousand Oaks: Sage.

Creswell, J. and Plano Clark, V. (2011) *Designing and conducting Mixed Methods Research*, 2nd ed., London: SAGE.

Cripe, E.T. (2017) '"You Can't Bring Your Cat to Work": Challenges Mothers Face Combining Breastfeeding and Working', *Qualitative Research Reports in Communication*, 18(1), 36-44, available: http://dx.doi.org/10.1080/17459435.2017.1294615.

Crossland, N., Thomson, G., Morgan, H., Maclennan, G., M, C., Dykes, F. and Hoddinott, P. (2016) 'Breastpumps as an incentive for breastfeeding: a mixed methods study of acceptibility', *Maternal & Child Nutrition*, 1-14, available: http://dx.doi.org/10.1111/mcn.12346.

Crossley, M.L. (2009) 'Breastfeeding as a Moral Imperative: An Autoethnographic Study', *Feminism & Psychology*, 19(1), 71-87, available: http://dx.doi.org/10.1177/0959353508098620.

Curry, L.A., Krumholz, H.M., O'Cathain, A., Clark, V.L.P., Cherlin, E. and Bradley, E.H. (2013) 'Mixed Methods in Biomedical and Health Services Research. Circulation: Cardiovascular Quality and Outcomes', *White Rose University Consortium*, 6(1), 119-123, available: http://eprints.whiterose.ac.uk/ [accessed 02/02/18].

Daniels, L.A., Wilson, J.L., Mallan, K.M., S, M., Perry, R., Nicholson, J. and Magarey, A. (2012) 'Recruiting and engaging new mothers in nutrition research studies: lessons from the Australian NOURISH randomised controlled trial', *Journal of Behavioral Nutrition and Physical Activity*, 9, 1-11, available: http://www.ijbnpa.org/content/9/1/129 [accessed 15/7/15].

Dattilio, F.M., Edwards, D.J. and Fishman, D.B. (2010) 'Case studies within a mixed methods paradigm: toward a resolution of the alienation between researcher and practitioner in psychotherapy research', *Psychotherapy Theory*, 47(4), 427-41, available: http://dx.doi.org/10.1037/a0021181.

Davie, P., Bick, D. and Chilcot, J. (2018) 'Measuring milk: A call for change in quantifying breastfeeding behaviour', *Midwifery*, 63, A6-A7, available: http://dx.doi.org/10.1016/j.midw.2018.04.015.

de Jager, E., Broadbent, J., Fuller-Tyszkiewicz, M. and Skouteris, H. (2014) 'The role of psychosocial factors in exclusive breastfeeding to six months postpartum', *Midwifery*, 30(6), 657-66, available: http://dx.doi.org/10.1016/j.midw.2013.07.008.

Deakin, H. and Wakefield, K. (2014) 'Skype interviewing: reflections of two PhD researchers', *Qualitative Research*, 14(5), 603-616, available: http://dx.doi.org/10.1177/1468794113488126.

Denzin, N., K and Lincoln, Y., S (2018) *The Sage Handbook of Qualitative Resaerch*, Thousand Oaks: Sage.

Denzin, N.K. (2012) 'Triangulation 2.0', *Journal of Mixed Methods Research*, 6(2), 80-88, available: http://dx.doi.org/10.1177/1558689812437186.

Desmond, D. and Meaney, S. (2016) 'A qualitative study investigating the barriers to returning to work for breastfeeding mothers in Ireland', *International Breastfeeding Journal*, 11, 1-16, available: http://dx.doi.org/10.1186/s13006-016-0075-8.

Dinsdale, S., Branch, K., Cook, L. and Shucksmith, J. (2016) '"As soon as you've had the baby that's it..." a qualitative study of 24 postnatal women on their experience of maternal obesity care pathways', *BMC Public Health*, 16, 1-13, available: http://dx.doi.org/10.1186/s12889-016-3289-1.

Dowling, D.A. and Thanattherakul, W. (2001) 'Nipple confusion, alternative feeding methods, and breast-feeding supplementation: State of the science', *Newborn and Infant Nursing Reviews*, 1(4), 217-223, available: http://dx.doi.org/10.1053/nbin.2001.28100.

Dowling, S. and Pontin, D. (2017) 'Using liminality to understand mothers' experiences of long-term breastfeeding: 'Betwixt and between', and 'matter out of place'', *Health*, 21(1), 57-75, available: http://dx.doi.org/10.1177/1363459315595846.

Drentea, P. and Moren-Cross, J.L. (2005) 'Social capital and social support on the web: the case of an internet mother site', *Sociology of Health and Illness*, 27(7), 920-43, available: http://dx.doi.org/10.1111/j.1467-9566.2005.00464.x.

Dunn, R.L., Kalich, K.A., Henning, M.J. and Fedrizzi, R. (2015) 'Engaging Field-Based Professionals in a Qualitative Assessment of Barriers and Positive Contributors to Breastfeeding Using the Social Ecological Model', *Maternal and Child Health Journal*, 19, 6-16, available: http://dx.doi.org/10.1007/s10995-014-1488-x.

Dykes, F. (2005) ''Supply' and 'demand': breastfeeding as labour', *Social Science and Medicine*, 60(10), 2283-93, available: http://dx.doi.org/10.1016/j.socscimed.2004.10.002.

Dykes, F. (2006) 'The education of health practitioners supporting breastfeeding women: time for critical reflection', *Maternal & Child Nutrition*, 2(4), 204-216, available: http://dx.doi.org/10.1111/j.1740-8709.2006.00071.x.

Dykes, F., Richardson-Foster, H., Crossland, N. and Thomson, G. (2012) ''Dancing on a thin line': evaluation of an infant feeding information team to implement the WHO code of marketing of breast-milk substitutes', *Midwifery*, 28(6), 765-71, available: http://dx.doi.org/10.1016/j.midw.2011.08.012.

Earle, S. (2002) 'Factors affecting the initiation of breastfeeding: implications for breastfeeding promotion', *Health Promotion International*, 17(3), 205-214, available: http://dx.doi.org/10.1093/heapro/17.3.205.

Eccleson, M. (2005) 'Ending breastfeeding: How does psychodynamic thinking inform breastfeeding services in helping women wean their babies from the breast?', *Infant Observation*, 8(2), 139-155, available: http://dx.doi.org/10.1080/13698030500171563.

Edmunds, J.E., Fulbrook, P. and Miles, S. (2013) 'Understanding the experiences of mothers who are breastfeeding an infant with tongue-tie: a phenomenological study', *Journal of Human Lactation*, 29(2), 190-5, available: http://dx.doi.org/10.1177/0890334413479174.

Edwards, A. and Elwyn, G. (2009) *Shared decision-making in health care: Achieving evidencebased patient choice*, 2nd ed., New York: Oxford University Press.

Edwards, R.C., Thullen, M.J., Henson, L.J., Lee, H. and Hans, S.L. (2015) 'The association of breastfeeding initiation with sensitivity, cognitive stimulation, and efficacy among young mothers: A propensity score matching approach', *Breastfeeding Medicine*, 10, 13-19, available: http://dx.doi.org/10.1089/bfm.2014.0123.

Egan, A.M. (1988) *Mothers' experiences with nipple confusion in their breast-fed infants who were introduced to bottles: A phenomenological study. PhD Thesis*, Texas Woman's University: ProQuest.com.

Ellis-Barton, C. (2016) 'Ethical Considerations in Research Participation Virality', *Journal of Empirical Research on Human Research Ethics*, 11(3), 281– 285, available: http://dx.doi.org/10.1177/1556264616661632.

Entwistle, F. (2013) *The evidence and rationale for the UNICEF UK Baby Friendly Initiative standards*, UNICEF, available: https://www.unicef.org.uk/wp-content/uploads/sites/2/2013/09/baby_friendly_evidence_rationale.pdf [accessed 10/11/17].

Entwistle, F. (2014) 'Breastfeeding improves mother and baby emotional wellbeing', *Nursing Children & Young People*, 26(9), 8-9, available: http://dx.doi.org/10.7748/ncyp.26.9.8.s8.

Ewers, H. (2018) *RCM position statement. Breastfeeding. Infant feeding*, available: https://www.rcm.org.uk/news-views-and-analysis/news/rcm-publishes-new-position-statement-on-infant-feeding [accessed 18/10/18].

Fahlquist, J.N. (2016) 'Experience of non-breastfeeding mothers: Norms and ethically responsible risk communication', *Nursing Ethics*, 23(2), 231-241, available: http://dx.doi.org/10.1177/0969733014561913.

Faircloth, C.R. (2010) ''If they want to risk the health and well-being of their child, that's up to them': Long-term breastfeeding, risk and maternal identity', *Health, Risk & Society*, 12(4), 357-367, available: http://dx.doi.org/10.1080/13698571003789674.

Fallon, V., Komninou, S., Bennett, K.M., Halford, J.C.G. and Harrold, J.A. (2017) 'The emotional and practical experiences of formula-feeding mothers', *Maternal & Child Nutrition*, 13, 1-14, available: http://dx.doi.org///doi.org/10.1111.

Feilzer, M.A. (2010) 'Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm', *Journal of Mixed Methods Research*, 4(1), 6-16, available: http://dx.doi.org/10.1177/1558689809349691.

Felice, J.P., Geraghty, S., R., Quaglieri, C.W., Yamada, R., Wong, A. and Rasmussen, K.M. (2017) '"Breastfeeding" but not at the breast: Mothers' descriptions of providing pumped human milk to their infants via other containers and caregivers', *Maternal & Child Nutrition*, 13(3), 1-18, available: http://dx.doi.org/10.1111/mcn.12425.

Fetters, M., D., Curry, L., A. and Creswell, J., W. (2013) 'Achieving Integration in Mixed Methods Designs-Principles and Practices', *Health Services Research*, 48(6 part 2), 2134-2156, available: http://dx.doi.org/10.1111/1475-6773.12117.

Field, A. (2013) *Discovering statistics using IBM SPSS statistics*, 4th ed., London: Sage.

Fielding, N.G., Lee, R.M. and Blank, G. (2017) *The SAGE Handbook of Online Research Methods*, 2nd ed., London: Sage.

Fischer, C. and Inch, S. (1996) 'Nipple confusion--who is confused?', *The Journal of Pediatrics*, 129(1), 174-175.

Flaherman, V.J. and Fuentes-Afflick, E. (2014) 'Social and public health perspectives of promotion of breastfeeding', *JAMA pediatrics*, 168(10), 877-878, available: http://dx.doi.org/10.1001/jamapediatrics.2014.907.

Flick, U. (2017) 'Mantras and Myths', *Qualitative Inquiry*, 23(1), 46-57, available: http://dx.doi.org/10.1177/1077800416655827.

Flint, A., New, K. and Davies, M.W. (2016) 'Cup feeding versus other forms of supplemental enteral feeding for newborn infants unable to fully breastfeed', *Cochrane Database of Systematic Reviews*, (8), available: http://dx.doi.org/10.1002/14651858.CD005092.pub3.

Forster, D.A., Johns, H.M., McLachlan, H.L., Moorhead, A.M., McEgan, K.M. and Amir, L.H. (2015) 'Feeding infants directly at the breast during the postpartum hospital stay is associated with increased breastfeeding at 6 months postpartum: a prospective cohort study', *BMJ Open*, 5(5), available: http://dx.doi.org/10.1136/bmjopen-2014-007512.

Foster, J., Spence, K., Badawi, N., Schmied, V., Dahlen, H., Psaila, K., Morris, S., Peters, K. and Coles, R. (2017) 'Feeding experiences of infants in the NICU and SCN and following hospital discharge: an online survey', *Journal of Paediatrics & Child Health*, 53(Suppl. 2), 33-33, available: http://dx.doi.org/10.1002/14651858.CD001071.pub3.

Fouts, H.N., Hewlett, B.S. and Lamb, M.E. (2000) 'Weaning and the nature of early childhood interactions among bofi foragers in central africa', *Human Nature*, 12(1), 27-46.

Fox, R., McMullen, S. and Newburn, M. (2015) 'UK women's experiences of breastfeeding and additional breastfeeding support: a qualitative study of Baby Café services', *BMC Pregnancy and Childbirth*, 15(1), 1-12, available: http://dx.doi.org/10.1186/s12884-015-0581-5.

França, E.C., Sousa, C.B., Aragão, L.C. and Costa, L.R. (2014) 'Electromyographic analysis of masseter muscle in newborns during suction in breast, bottle or cup feeding', *BMC Pregnancy and Childbirth*, 14, 1-7, available: http://dx.doi.org/doi:10.1186/1471-2393-14-154.

Franca, M. (2008) 'Bottle feeding during the first month of life: determinants and effect on breastfeeding technique', *Revista De Saúde Pública*, 42(4), 607-614, available: http://dx.doi.org/10.1590/S0034-89102008005000028.

Freud, S. and Strachey, J. (1969) *An outline of psycho-analysis*, London: Hogarth Press.

Fricker, R.D. (2017) 'Sampling Methods for Online Surveys' in Fielding, N. G., Lee, E. and Blank, G., eds., *The SAGE Handbook of Online Research Methods* 2nd ed., London: Sage, 162-182.

Furber, C.M. and Thomson, A.M. (2006) ''Breaking the rules' in baby-feeding practice in the UK: deviance and good practice?', *Midwifery*, 22(4), 365-76, available: http://dx.doi.org/10.1016/j.midw.2005.12.005.

Gardner, H., Kent, J.C., Lai, C.T., Mitoulas, L.R., Cregan, M.D., Hartmann, P.E. and Geddes, D.T. (2015) 'Milk ejection patterns: an intra- individual comparison of breastfeeding and pumping', *BMC Pregnancy and Childbirth*, 15(1), 156, available: http://dx.doi.org/10.1186/s12884-015-0583-3.

Gatrell, C.J. (2007) 'Secrets and lies: Breastfeeding and professional paid work', *Social Science and Medicine*, 65(2), 393-404, available: http://dx.doi.org/10.1016/j.socscimed.2007.03.017.

Geddes, D.T. and Sakalidis, V.S. (2016) 'Ultrasound Imaging of Breastfeeding—A Window to the Inside:Methodology, Normal Appearances, and Application', *Journal of Human Lactation*, 32(2), 340-349, available: http://dx.doi.org/10.1177/0890334415626152.

Geddes, D.T., Sakalidis, V.S., Hepworth, A.R., McClellan, H.L., Kent, J.C., Lai, C.T. and Hartmann, P.E. (2012) 'Tongue movement and intra-oral vacuum of term infants during breastfeeding and feeding from an experimental teat that released milk under vacuum only', *Early Human Development*, 88(6), 443-449, available: http://dx.doi.org/https://doi.org/10.1016/j.earlhumdev.2011.10.012.

Germain, J., Harris, J., Mackay, S. and Maxwell, C. (2017) 'Why Should We Use Online Research Methods? Four Doctoral Health Student Perspectives ', *Qualitative Health Research*, 28(10), 1650-1657, available: http://dx.doi.org/10.1177/1049732317721698.

Gibbs, B.G., Forste, R. and Lybbert, E. (2018) 'Breastfeeding, Parenting, and Infant Attachment Behaviors', *Maternal and Child Health Journal*, 22(4), 579-588, available: http://dx.doi.org/http://dx.doi.org/10.1007/s10995-018-2427-z.

Gillespie, B., d'Arcy, H., Schwartz, K., Bobo, J.K. and Foxman, B. (2006) 'Recall of age of weaning and other breastfeeding variables', *International Breastfeeding Journal*, 1(1), 4, available: http://dx.doi.org/10.1186/1746-4358-1-4.

Gilmour, Monk, H. and Hall, H. (2013) 'Breastfeeding mothers returning to work: experiences of women at one university in Victoria, Australia', *Breastfeeding Review*, 21(2), 22-30.

Goh, D. and Chi, J. (2017) 'Central or peripheral? Information elaboration cues on childhood vaccination in an online parenting forum', *Computers in Human Behavior*, 69(Supplement C), 181-188, available: http://dx.doi.org/10.1016/j.chb.2016.11.066.

Golden, S.D. and Earp, J.L. (2012) 'Social Ecological Approaches to Individuals and Their Contexts: Twenty Years of Health Education & Behavior Health Promotion Interventions', *Health Education & Behavior*, 39(3), 364-372, available: http://dx.doi.org/10.1177/1090198111418634

GOV.SCOT.UK (2018) 'Scottish Maternal and Infant Nutrition Survey', available: http://www.gov.scot/Publications/2018/02/7135/0 [accessed 23/5/18].

Grant, A. (2016) '"I…don't want to see you flashing your bits around": Exhibitionism, mothering and good motherhood in perceptions of public breastfeeding', *Geoforum*, 71(Supplement C), 52-61, available: http://www.sciencedirect.com/science/article/pii/S0016718515301627 [accessed 1/6/2015].

Gray, D.E. (2014) *Doing Research in the Real World*, London: Sage.

Gray, J. (2013) 'Feeding On the Web: Online Social Support in the Breastfeeding Context', *Communication Research Reports*, 30(1), 1-11, available: http://dx.doi.org/10.1080/08824096.2012.746219.

Greene, E., Pack, A., Stanton, J., Shelus, V., Tolley, E.E., Taylor, J., El Sadr, W.M., Branson, B.M., Leider, J., Rakhmanina, N. and Gamble, T. (2017) '"It Makes You Feel Like Someone Cares" acceptability of a financial incentive intervention for HIV viral suppression in the HPTN 065 (TLC-Plus) study', *PLoS One*, 12(2), 1-18, available: http://dx.doi.org/10.1371/journal.pone.0170686.

Greene, J.C. (2007) *Mixed methods in social inquiry*, San Francisco: Jossey-Bass.

Gregg, G., MacQueen, K.M. and Namey, E.E. (2012) *Applied Thematic Analysis*, Thousand Oaks: Sage.

Gribble, K.D. (2006) 'Mental health, attachment and breastfeeding: implications for adopted children and their mothers', *International Breastfeeding Journal*, 1(1), 1-15, available: https://www.ncbi.nlm.nih.gov/pubmed/16722597 [accessed 9/3/18].

Gribble, K.D. (2009) ''As good as chocolate' and 'better than ice cream': how toddler, and older, breastfeeders experience breastfeeding', *Early Child Development and Care*, 179(8), 1067-1082, available: http://dx.doi.org/10.1080/03004430701764176.

Groleau, D., Pizarro, K.W., Molino, L., Gray-Donald, K. and Semenic, S. (2017) 'Empowering women to breastfeed: Does the Baby Friendly Initiative make a difference?', *Maternal & Child Nutrition*, 13(4), 1-8, available: http://dx.doi.org/10.1111/mcn.12370.

Guba, E. and Lincoln, Y., S (1989) *Fourth generation evaluation*, Newbury Park: Sage.

Gustafsson, I., Nyström, M. and Palmér, L. (2017) 'Midwives' lived experience of caring for new mothers with initial breastfeeding difficulties: A phenomenological study', *Sexual & Reproductive Healthcare*, 12, 9-15, available: http://dx.doi.org/https://doi.org/10.1016/j.srhc.2016.12.003.

Hagaman, A.K. and Wutich, A. (2017) 'How Many Interviews Are Enough to Identify Metathemes in Multisited and Cross-cultural Research? Another Perspective on Guest, Bunce, and Johnson's (2006) Landmark Study', *Field Methods*, 29(1), 23-41, available: http://dx.doi.org/10.1177/1525822x16640447.

Hall, J.N. (2013) 'Pragmatism, Evidence, and Mixed Methods Evaluation', *New Directions for Evaluation*, 138, 15-26, available: http://dx.doi.org/10.1002/ev.20054.

Hanna, P. (2012) 'Using internet technologies (such as Skype) as a research medium: a research note', *Qualitative Research*, 12(2), 239-242, available: http://dx.doi.org/10.1177/1468794111426607.

Hargreaves, K. and Harris, A. (2009) 'Nipple confusion in neonates', *British Journal of Midwifery*, 17(2), 97-103, available: http://dx.doi.org/10.12968/bjom.2009.17.2.39378.

Harrison, D., Reszel, J., Bueno, M., Sampson, M., Shah, V., Taddio, A., Larocque, C. and Turner, L. (2016) 'Does breastfeeding reduce vaccination pain in babies aged 1 to 12 months?', *Cochrane Database of Systematic Reviews*, (10), available: http://dx.doi.org/10.1002/14651858.CD011248.pub2/full.

Haslam, D.M., Tee, A. and Baker, S. (2017) 'The Use of Social Media as a Mechanism of Social Support in Parents', *Journal of Child and Family Studies*, 26(7), 2026-2037, available: http://dx.doi.org/10.1007/s10826-017-0716-6.

Hassain, S. (2017) *A qualitative study exploring British Muslim women's experiences of motherhood while engaging with NHS maternity services*, unpublished thesis (PhD), Liverpool John Moores, available: http://researchonline.ljmu.ac.uk/id/eprint/7412.

Hauck, Y.L. and Irurita, V.F. (2003) 'Incompatible expectations: The dilemma of breastfeeding mothers', *Health Care for Women International*, 24(1), 62-78.

Hawkins, J. (2017) 'Thematic Analysis' in Allen, M., ed., *The SAGE Encyclopedia of Communication Research Methods*, Thousand Oaks: Sage, 1757-1760.

Hector, D.J. (2011) 'Complexities and subtleties in the measurement and reporting of breastfeeding practices', *International Breastfeeding Journal*, 6, 5-11, available: http://dx.doi.org/10.1186/1746-4358-6-5.

Hegney, D., Fallon, T. and O'Brien, M.L. (2008) 'Against all odds: a retrospective case-controlled study of women who experienced extraordinary breastfeeding problems', *Journal of Clinical Nursing*, 17(9), 1182-1192, available: http://dx.doi.org/10.1111/j.1365-2702.2008.02300.x.

Herron, M.A. (2013) *A conceptual analysis and interpretation of women's experience of online breastfeeding support. PhD thesis*, Ethos, available: https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.603568 [accessed 15/12/16].

Hesse-Biber, S. (2015) 'Mixed Methods Research: The "Thing-ness" Problem', *Qualitative Health Research*, 25(6), 775-88, available: http://dx.doi.org/10.1177/1049732315580558.

Hesse-Biber, S. and Griffin, A.J. (2013) 'Internet-Mediated Technologies and Mixed Methods Research: Problems and Prospects', *Journal of Mixed Methods Research*, 7(1), 43-61, available: http://dx.doi.org/10.1177/1558689812451791.

Hinsliff-Smith, K., Spencer, R. and Walsh, D. (2014) 'Realities, difficulties, and outcomes for mothers choosing to breastfeed: primigravid mothers experiences in the early postpartum period (6-8 weeks)', *Midwifery*, 30(1), 14-19, available: http://dx.doi.org/10.1016/j.midw.2013.10.001.

Hittner, J.M. and Myles, S.F. (2011) 'Typology of emergent eating patterns in earlychildhood', *Eating Behaviors*, 12, 242-248.

Hoddinott, P., Craig LCA, Britten J and McInnes, R. (2012) 'A serial qualitative interview study of infant feeding experiences: idealism meets realism', *BMJ Open*, available: http://dx.doi.org/10.1136/bmjopen-2011-000504.

Hoddinott, P., Seyara, R. and Marais, D. (2011) 'Global evidence synthesis and UK idiosyncrasy: why have recent UK trials had no significant effects on breastfeeding rates?', *Maternal & Child Nutrition*, 7(3), 221-227, available: http://dx.doi.org/10.1111/j.1740-8709.2011.00336.x.

Holmes, S. (2009) 'Methodological and ethical considerations in designing an Internet study of quality of life: a discussion paper', *International Journal of Nursing Studies*, 46(3), 394-405, available: http://dx.doi.org/10.1016/j.ijnurstu.2008.08.004.

Holt, A. (2010) 'Using the telephone for narrative interviewing: a research note', *Qualitative Research*, 10(1), 113-121, available: http://dx.doi.org/10.1177/1468794109348686.

Howard, C., Howard, F., Lanphear, S., Eberly, S., deBlieck, E., Oakes, D. and Lawrence, R. (2003) 'Randomized Clinical Trial of Pacifier Use and Bottle-Feeding or Cupfeeding and Their Effect on Breastfeeding ', *PEDIATRICS*, 111(3), available: http://dx.doi.org/10.1542/peds.111.3.511.

Howe, D. (2011) *Attachment across the lifecourse. A brief introduction*, London: Palgrave Macmillan.

Inch, S. (1987) ''Difficulties in breast-feeding:midwives in disarray', Report on Meeting of Forum on Maternity and the Newborn, 2nd Dec 1985', *Journal of the Royal Society of Medicine*, 80, 53-8.

Isaia, M., Theodorou, M., Galanis, P., Nikolentzos, A. and Polyzos, N. (2017) 'Breastfeeding determinants in Cyprus: A cross-sectional study', *Journal of Neonatal Nursing*, 23(6), 267-274, available: http://dx.doi.org/https://doi.org/10.1016/j.jnn.2017.05.004.

Ivankova, N.V. (2006) 'Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice', *Field Methods*, 18(1), 3-20, available: http://dx.doi.org/10.1177/1525822x05282260.

Ivankova, N.V. and Stick, S.L. (2007) 'Students' Persistence in a Distributed Doctoral Program in Educational Leadership in Higher Education: A Mixed Methods Study', *Research in Higher Education*, 48(1), 93-135, available: http://dx.doi.org/10.1007/s11162-006-9025-4.

Jaafar, S.H., Ho, J.J., Jahanfar, S. and Angolkar, M. (2016) 'Effect of restricted pacifier use in breastfeeding term infants for increasing duration of breastfeeding', *Cochrane Database of Systematic Reviews*, (8), available: http://dx.doi.org/10.1002/14651858.CD007202.pub4.

Jacobson, M. (ND) *How Far Down the Search Engine Results Page Will Most People Go?* , available: https://www.theleverageway.com/blog/how-far-down-the-search-engine-results-page-will-most-people-go/ [accessed 11/4/16].

Jansen, J., Weerth, C.d. and Riksen-Walraven, J.M. (2008) 'Breastfeeding and the mother–infant relationship—A review', *Developmental Review*, 28(4), 503-521, available: http://dx.doi.org/10.1016/j.dr.2008.07.001.

Jardine, E.E., McLellan, J. and Dombrowski, S.U. (2017) 'Is being resolute better than being pragmatic when it comes to breastfeeding? Longitudinal qualitative study investigating experiences of women intending to breastfeed using the Theoretical Domains Framework', *Journal of Public Health*, 39(3), 88-94, available: http://dx.doi.org/10.1093/pubmed/fdw073.

Johns, H.M., Forster, D.A., Amir, L.H. and McLachlan, H.L. (2013) 'Prevalence and outcomes of breast milk expressing in women with healthy term infants: a systematic review', *BMC Pregnancy & Childbirth*, 13(1), 1-27, available: http://dx.doi.org/10.1186/1471-2393-13-212.

Johnson, R.B. and Onwuegbuzie, A.J. (2004) 'Mixed methods research: a research paradigm whose time has come', *Educational Researcher*, 13(7), 14-26, available: http://dx.doi.org/10.3102/0013189X033007014

Johnson, S., Leeming, D., Williamson, I. and Lyttle, S. (2013) 'Maintaining the 'good maternal body': expressing milk as a way of negotiating the demands and dilemmas of early infant feeding', *JOURNAL OF ADVANCED NURSING*, 69(3), 590-599, available: http://dx.doi.org/10.1111/j.1365-2648.2012.06035.x.

Johnson, S., Williamson, I., Lyttle, S. and Leeming, D. (2009) 'Expressing yourself: A feminist analysis of talk around expressing breast milk', *Social Science & Medicine*, 69(6), 900-907, available: http://dx.doi.org/https://doi.org/10.1016/j.socscimed.2009.07.001.

Jonas, W. and Woodside, B. (2016) 'Physiological mechanisms, behavioral and psychological factors influencing the transfer of milk from mothers to their young', *Hormones and Behaviour*, 77, 167-181, available: http://dx.doi.org/10.1016/j.yhbeh.2015.07.018.

Jones, E. (2011) 'The impact of exhaustion on Step 6 of the Baby Friendly Initiative', *British Journal of Midwifery*, 19(8), 484-488, available: http://dx.doi.org/10.12968/bjom.2011.19.8.483.

Kable, A.A., Pich, J. and Maslin-Prothero, S.A. (2012) 'A structured approach to documenting a search strategy for publication: A 12 step guideline for authors', *Nurse Education Today*, 32, 878-886, available: http://dx.doi.org/10.1016/j.nedt.2012.02.022.

Kahlke, R.M. (2014) 'Generic Qualitative Approaches: Pitfalls and Benefits of Methodological Mixology ', *International Journal of Qualitative Methods*, 13(1), 37-52, available: http://dx.doi.org/10.1177/160940691401300119

Kelly.Mom (2018) *How to bottle feed the breastfed baby*, available: https://kellymom.com/bf/pumpingmoms/feeding-tools/bottle-feeding/ [accessed 25/2/18].

Kielbratowska, B., Kazmierczak, M., Michalek, J. and Preis, K. (2015) 'Temperament and the mother-infant dyad: associations with breastfeeding and formula feeding with a bottle', *Infant Mental Health Journal*, 36(3), 243-50, available: http://dx.doi.org/10.1002/imhj.21508.

Kim, P., Feldman, R., Mayes, L.M., Eicher, V., Thompson, N., Leckman, J.F. and Swain, J.E. (2011) 'Breastfeeding, brain activation to own infant cry, and maternal sensitivity ', *Journal of Child Psychology and Psychiatry*, 52(8), 907-915, available: http://dx.doi.org/10.1111/j.1469-7610.2011.02406.x.

Klein, M. (1952) *On 'Observing the Behaviour of Young Infants' in Envy and Gratitude and Other Works 1946-1963*, London: Vintage.

Knowles, R. and Wilkinson, C. (2017) 'The worries of weaning: Newspaper reporting of infant weaning and its impact on dialogue in online discussion forums', *Journalism*, 18(3), 350-367, available: http://dx.doi.org/10.1177/1464884915620230.

Komninou, S., Fallon, V., Grovenor Halford, J. and Harrold, J. (2016) 'Differences in the emotional and practical experiences of exclusively breastfeeding and combination feeding mothers', *Maternal & Child Nutrition*, 1-11, available: http://dx.doi.org/10.1111/mcn.12364.

Kozinets, R.V. (2015) *Netnography: Redefined*, London: Sage.

Kvale, S. and Brinkmann, S. (2014) *InterViews: Learning the Craft of Qualitative Research Interviewing*, 3rd ed., London: Sage.

Labbok, M. and Krasovec, K. (1990) 'Toward Consistency in Breastfeeding Definitions', *Studies in Family Planning*, 21(4), 226-230, available: http://dx.doi.org/10.2307/1966617.

Lagan, B.M., Sinclair, M. and Kernohan, G. (2011) 'What Is the Impact of the Internet on Decision-Making in Pregnancy? A Global Study', *Birth*, 38(4), 336-345.

Lagan, B.M., Symon, A., Dalzell, J. and Whitford, H. (2014) ''The midwives aren't allowed to tell you': Perceived infant feeding policy restrictions in a formula feeding culture – The Feeding Your Baby Study', *Midwifery*, 30(3), 49-55, available: http://dx.doi.org/10.1016/j.midw.2013.10.017.

Lakshman, R., Ogilvie, D. and Ong, K.K. (2009) 'Mothers' experiences of bottle-feeding: a systematic review of qualitative and quantitative studies', *Archives of Disease in Childhood*, 94(8), 596-601, available: http://dx.doi.org/10.1136/adc.2008.151910.

Launer, L.J., Forman, M.R., Hundt, G.L., Sarov, B., Chang, D., Berendes, H.W. and Naggan, L. (1992) 'Maternal recall of infant feeding events is accurate', *Journal of Epidemiology and Community Health*, 46, 203-206.

Lauzon-Guillain, B., Wijndaele, K., Clark, M., Acerini, C.L., Hughes, I.A., Dunger, D.B., Wells, J.C. and Ong, K.K. (2012) 'Breastfeeding and infant temperament at age three months', *PLoS One*, 7(1), 1-7, available: https://www.ncbi.nlm.nih.gov/pubmed/22253712 [accessed 29/11/17].

Lavender, T., Baker, L., Smyth, R., Collins, S., Spofforth, A. and Dey, P. (2005) 'Breastfeeding expectations versus reality: a cluster randomised controlled trial', *British Journal of Obstetrics and Gynaecology*, 112, 1047-1053, available: http://dx.doi.org/10.1111/j.1471-0528.2005.00644.x.

Lavender, T., McFadden, C. and Baker, L. (2006) 'Breastfeeding and Family Life', *Maternal & Child Nutrition*, 2, 145-155.

Law, J. (2000) 'The politics of breastfeeding: assessing risk, dividing labor', *Journal of Women in Culture and Society*, 25(2), 407-450, available: http://dx.doi.org/10.1086/495446.

Leahy-Warren, P., Creedon, M., O'Mahony, A. and Mulcahy, H. (2017) 'Normalising breastfeeding within a formula feeding culture: An Irish qualitative study', *Women Birth*, 30(2), 103-110, available: http://dx.doi.org/10.1016/j.wombi.2016.10.002.

Leap, N. (2009) 'Woman-centred or women-centred care: does it matter?', *British Journal of Midwifery*, 17(1), 12-16.

Lechuga, V.M. (2012) 'Exploring culture from a distance: the utility of telephone interviews in qualitative research', *International Journal of Qualitative Studies in Education*, 25(3), 251-268, available: http://dx.doi.org/10.1080/09518398.2010.529853.

Lee, E.J. and Furedi, F. (2005) *Mothers' experience of, and attitudes to, the use of infant formula for feeding babies* University of Kent.

Leeming, D., Williamson, I., Lyttle, S. and Johnson, S. (2013) 'Socially sensitive lactation: Exploring the social context of breastfeeding', *Psychology & Health*, 28(4), 450-468, available: http://dx.doi.org/10.1080/08870446.2012.737465.

Lennox, A., Sommerville, J., Henderson, H. and Allen, R. (2011) *Diet and Nutrition Survey of Infants and Young Children, 2011*, available: https://www.gov.uk/government/publications/diet-and-nutrition-survey-of-infants-and-young-children-2011 [accessed 22/6/18].

Leurer, M. and Misskey, E. (2015) 'The Psychosocial and Emotional Experience of Breastfeeding:Reflections of Mothers', *Global Qualitative Nursing Research*, 2, 23-33, available: http://dx.doi.org/10.1177/2333393615611654.

Lichtman, M. (2014) *Qualitative Research for the Social Sciences*, London: SAGE.

Lipscomb, M. (2008) 'Mixed method nursing studies: a critical realist critique', *Nursing Philosophy*, 9(1), 32-45, available: http://dx.doi.org/10.1111/j.1466-769X.2007.00325.x

Lo Iacono, V., Symonds, P. and Brown, D.H.K. (2016) 'Skype as a Tool for Qualitative Research Interviews', *Sociological Research Online*, 21(2), 12, available: http://www.socresonline.org.uk/21/2/12.html [accessed 18/1/18].

Loewenberg Weisband, Y., Keim, S.A., Keder, L.M., Geraghty, S.R. and Gallo, M.F. (2017) 'Early Breast Milk Pumping Intentions Among Postpartum Women', *Breastfeeding Medicine*, 12(1), 28-32, available: http://dx.doi.org/10.1089/bfm.2016.0142.

Lothina, J.A. (1995) 'It takes two to breastfeed: the baby's role in successful breastfeeding', *Journal of Nurse Midwifery*, 40(4), 328-334.

Loudon, K., Buchanan, S. and Ruthven, I. (2016) 'The everyday life information seeking behaviours of first-time mothers', *Journal of Documentation*, 72(1), 24-46, available: http://dx.doi.org/10.1108/jd-06-2014-0080.

Lubbe, W. and Ham-Baloyi, W. (2017) 'When is the use of pacifiers justifiable in the baby-friendly hospital initiative context? A clinician's guide', *BMC Pregnancy and Birth*, 17(130), available: http://dx.doi.org/10.1186/s12884-017-1306-8.

Lupton, D. (2011) 'The best thing for the baby': Mothers' concepts and experiences related to promoting their infants' health and development', *Health, Risk & Society*, 13(7-8), 637-51, available: http://dx.doi.org/10.1080/13698575.2011.624179.

MacKean, G. and Spragins, W. (ND) *The Challenges of Breastfeeding in a Complex World: A critical review of the qualitative literature on women and their partners'/supporters' perceptions about breastfeeding* Alberta, USA.

Maher, V. (1995) *The Anthropolgy of Breast-Feeding. Natural Law or Social Construct*, 2nd ed., Oxford: BERG.

Malhotra, N., Vishwambaran, L., Sundaram, K.R. and Narayanan, I. (1999) 'A controlled trial of alternative methods of oral feeding in neonates', *Early Human Development*, 54, 29-38.

mambaby.com *Bottles and cups*, available: https://www.mambaby.com/shop/us_uk/info-bottles-cups.html [accessed 12/12/17].

Marquis, G.S., Doazz, J., Bartolini, R., Creed De Kanashiro, H. and Ramussen, K.M. (1998) 'Recognizing the reversible nature of child feeding decisions: Breastfeeding, weaning, and relactation patterns in a shanty town community of Lima, Peru', *Sociology, Science and Medicine*, 47(5), 645-656.

Marshall, J.L., Godfrey, M. and Renfrew, M.J. (2007) 'Being a 'good mother': managing breastfeeding and merging identities', *Social Science and Medicine*, 65(10), 2147-59, available: http://dx.doi.org/10.1016/j.socscimed.2007.06.015.

Mason, J. (2013) *Qualitative Researching*, 2nd ed., London: Sage.

Maxwell, J. (2013) *Qualitative Research Design. An interactive approach*, Thousand Oaks: Sage.

McAndrew, F., Thompson, J., Fellows, L., Speed, M. and Renfrew, M. (2012) 'Infant Feeding Survey 2010', available: http://www.hscic.gov.uk/ [accessed 15/3/15].

McCarter-Spaulding, D. (2008) 'Is Breastfeeding Fair? Tensions in Feminist Perspectives on Breastfeeding and the Family', *Journal of Human Lactation*, 24(2), 206-212, available: http://dx.doi.org/10.1177/0890334408316076.

McInnes, R., Hoddinott, P., Britten, J., Darwent, K. and Craig, L. (2013) 'Significant others, situations and infant feeding behaviour change processes: a serial qualitative interview study', *BMC Pregnancy and Childbirth*, 13(114), 1-13, available: http://www.biomedcentral.com/1471-2393/13/114 [accessed 4/11/15].

McInnes, R.J., Arbuckle, A. and Hoddinott, P. (2015) 'How UK internet websites portray breast milk expression and breast pumps: a qualitative study of content', *BMC Pregnancy & Childbirth*, 15(1), 1-11, available: http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=103002993&site=ehost-live [accessed 3/3/15].

McKeever, R. and Mckeever, B.W. (2017) 'Moms and Media: Exploring the Effects of Online Communication on Infant Feeding Practices', *Health Communication*, 32(9), available: http://dx.doi.org/10.1080/10410236.2016.1196638.

McKinney, C., Glass, R., Coffey, P., Rue, T., Vaughn, M. and Cunningham, M. (2016) 'Feeding Neonates by Cup: A Systematic Review of the Literature', *Maternal & Child Health Journal*, 20(8), 1620-1633, available: http://dx.doi.org/10.1007/s10995-016-1961-9.

McLeroy, K.R., Bibeau, D., Steckler, A. and Glanz, K. (1988) 'An Ecological Perspective on Health Promotion Programs', *Health Education Quarterly*, 15(4), 351-377, available: http://dx.doi.org/10.1177/109019818801500401.

Mealer, M. and Jones, J. (2014) 'Methodological and ethical issues related to qualitative telephone interviews on sensitive topics', *Nurse Researcher*, 21(4), 32-37, available: http://dx.doi.org/10.7748/nr2014.03.21.4.32.e1229.

medela.com *Calma - close to breastfeeding*, available: https://www.medela.com/breastfeeding/products/feeding/calma [accessed 1/12/17].

Merriam, S.B. (1998) *Qualitative research and case study applications in education*, San Francisco: Jossey-Bass.

mimijumi.com *The world's breast bottle*, available: https://www.mimijumi.com/ [accessed 15/12/17].

minibe.co.uk *Baby refusing a bottle?*, available: https://minbie.co.uk// [accessed 1/12/17].

Moral, A., Bolibar, I., Seguranyes, G., Ustrell, J.M., Sebastiá, G., Martínez-Barba, C. and Ríos, J. (2010) 'Mechanics of sucking: comparison between bottle feeding and breastfeeding', *BMC Pediatrics*, 10(6), 2-8, available: http://www.biomedcentral.com/1471-2431/10/6 [accessed 26/6/18].

Morgan, D.L. (2014) 'Pragmatism as a Paradigm for Social Research', *Qualitative Inquiry*, 20(8), 1045-1053, available: http://dx.doi.org/10.1177/1077800413513733.

Morris, C., Zaraté de la Fuente, G.A., Williams, C.E. and Hirst, C. (2016) 'UK Views toward Breastfeeding in Public:An Analysis of the Public's Response to the Claridge's Incident', *Journal of Human Lactation*, 32(3), 472-480, available: http://dx.doi.org/10.1177/0890334416648934.

Morse, J. (2018) 'Reframing rigour in qualitative inquiry' in Denzin, N., K and Lincoln, Y., S, eds., *The SAGE book of Qualitative Research*, 5th ed., Thousand Oaks: Sage, 797-817.

Morton Robinson, K. (2001) 'Unsolicited Narratives From the Internet: A Rich Source of Qualitative Data', *Qualitative Health Research*, 11(5), 706-71.

Mumsnet.com, available: https://www.mumsnet.com/Talk/parenting/2124809-Bottle-refusal [accessed 15/3/15].

Murphy, E. (1999) ''Breast is best': Infant feeding decisions and maternal deviance', *Sociology of Health & Illness*, 21(2), 187-208, available: http://dx.doi.org/10.1111/1467-9566.00149.

Murphy, E. (2000) 'Risk, Responsibility and Rhetoric of infant feeding ', *Journal of Contemporary Ethnography*, 29(3), 291-325.

Natland, S.T., Andersen, L.F., Nilsen, T.I.L., Forsmo, S. and Jacobsen, G.W. (2012) 'Maternal recall of breastfeeding duration twenty years after delivery', *BMC Medical Research Methodology*, 12(1), 179, available: http://dx.doi.org/10.1186/1471-2288-12-179.

Neergaard, M.A., Olesen, F., Andersen, R.S. and Sondergaard, J. (2009) 'Qualitative description – the poor cousin of health research?', *BMC Medical Research Methodology*, 9(1), 52, available: http://dx.doi.org/10.1186/1471-2288-9-52.

Neifert, N., Lawrence, R. and Seacat, J. (1995) 'Nipple confusion: Toward a formal definition', *Journal of Pediatrics*, 126, 5125-9.

Neighbors, K.A., Gillespie, B., Schwartz, K. and Foxman, B. (2003) 'Weaning Practices among Breastfeeding Women who Weaned Prior to Six Months Postpartum', *Journal of Human Lactation*, 19(4), 374-380, available: http://dx.doi.org/10.1177/0890334403257803.

Nekitsing, C., Madrelle, J., Barends, C., de Graaf, C., Parrott, H., Morgan, S., Weenen, H. and Hetherington, M.M. (2016) 'Application and validation of the Feeding Infants: Behaviour and Facial Expression Coding System (FIBFECS) to assess liking and wanting in infants at the time of complementary feeding', *Food Quality and Preference*, 48, 228-237, available: http://dx.doi.org/10.1016/j.foodqual.2015.09.012.

Netmums.com *My BF baby won't take a bottle*, available: http://www.netmums.com/coffeehouse/baby-794/breastfeeding-expressing-558/797964-my-bf-baby-won-t-take-bottle-all.html [accessed 29/7/15].

Newby, R., Brodribb, W., Ware, R.S. and Davies, P.S. (2015) 'Internet Use by First-Time Mothers for Infant Feeding Support', *Journal of Human Lactation*, 31(3), 416-24, available: http://dx.doi.org/10.1177/0890334415584319.

Newman, K.L. and Williamson, I.R. (2018) 'Why aren't you stopping now?!' Exploring accounts of white women breastfeeding beyond six months in the East of England', *Appetite*, 129(October), 228-235, available: http://dx.doi.org/10.1016/j.appet.2018.06.018.

NHS (2016) *How to combine breast and bottle feeding*, available: https://www.nhs.uk/conditions/pregnancy-and-baby/combining-breast-and-bottle/ [accessed 25/5/18].

NHS (2018) *Your baby's first solid foods*, available: https://www.nhs.uk/conditions/pregnancy-and-baby/solid-foods-weaning/ [accessed 25/5/18].

NHS and UNICEF (2015a) *Guide to bottle feeding* London: Williams Lea.

NHS and UNICEF (2015b) *Introducing Solid Foods: Giving your baby a better start in life*, London: Williams Lea.

NHS and UNICEF (2015c) *Off to the best start: Important information about feeding your baby*, London: Williams Lea.

NICE (2014) 'Maternal and child nutrition', *Public health guideline [PH11]*, available: https://www.nice.org.uk/Guidance/PH11 [accessed 12/7/18].

Noonan, M. (2010) 'Lactational mastitis: recognition and breastfeeding', *British Journal of Midwifery*, 18(8), 503-508, available: http://dx.doi.org/150.204.082.054.

Novick, G. (2008) 'Is there a bias against telephone interviews in qualitative research?', *Research in Nursing & Health*, 31(4), 391-398, available: http://dx.doi.org/10.1002/nur.20259.

Nowak, A.J., Smith, W.L. and Erenberg, A. (1994) 'Imaging evaluation of artificial nipples during bottle feeding', *Archives of Pediatric Adolescent Medicine*, 148(1), 40-2.

Nowak, A.J., Smith, W.L. and Erenberg, A. (1995) 'Imaging evaluation of breast-feeding and bottle-feeding systems', *The Journal of Pediatrics*, 126(6), 130-S134, available: http://dx.doi.org/https://doi.org/10.1016/S0022-3476(95)90253-8.

O'Caithain, A. (2010) 'Three techniques for integrating data in mixed methods studies', *British Medical Journal*, (341), 1-8, available: http://dx.doi.org/10.1136/bmj.c4587.

O'Brien, M.L., Buikstra, E., Fallon, T. and Hegney, D. (2009) 'Strategies for success: a toolbox of coping strategies used by breastfeeding women', *Journal of Clinical Nursing*, 18(11), 1574-1582, available: http://dx.doi.org/doi:10.1111/j.1365-2702.2008.02667.x.

O'Connor, M., Allen, J., Kelly, J., Gao, Y. and Kildea, S. (2018) 'Predictors of breastfeeding exclusivity and duration in a hospital without Baby Friendly Hospital Initiative accreditation: A prospective cohort study', *Women and Birth*, 31(4), 319-324, available: http://dx.doi.org/https://doi.org/10.1016/j.wombi.2017.10.013.

Oakley, A. (2016) 'Interviewing Women Again: Power, Time and the Gift', *Sociology*, 50(1), 195-213, available: http://dx.doi.org/10.1177/0038038515580253.

Onlinesurveys.ac.uk, available: https://www.onlinesurveys.ac.uk/ [accessed 30/9/15].

ONS (2011) *Ethnic background categories*, available: https://www.ons.gov.uk/search?q=ethnic+background+categories [accessed 30/10/15].

ONS (2015) *Internet access - households and individuals, Great Britain: 2015*, available: https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/ [accessed 13/12/15].

ONS (2016) *Occupation coding tool*, available: https://onsdigital.github.io/dp-classification-tools/standard-occupational-classification/ONS_SOC_occupation_coding_tool.html [accessed 15/2/16].

ONS (2018) *UK Labour market: March 2018*, available: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/march2018 [accessed 12/04/18].

Onwuegbuzie, A.J. and Corrigan, J.A. (2014) 'Improving the Quality of Mixed Research Reports in the Field of Human Resource Development and Beyond: A Call for Rigor as an Ethical Practice', *Human Resource Development Quarterly*, 25(3), 273-299, available: http://dx.doi.org/10.1002/hrdq.21197.

Pallant, J. (2016) *SPSS Survival Manual*, 6th ed., England: Open University Press.

Pang, W., Bernard, J., Thavamani, G., Chan, Y., Fok, D., Soh, S.-E., Chua, M., Lim, S., Shek, L., Yap, F., Tan, K., Gluckman, P., Godfrey, K., van Dam, R., Kramer, M. and Chong, Y.-S. (2017) 'Direct vs. Expressed Breast Milk Feeding: Relation to Duration of Breastfeeding', *Nutrients*, 9(6), 1-13, available: http://www.mdpi.com/2072-6643/9/6/547 [accessed 1/7/18].

Papp, L.M. (2014) 'Longitudinal associations between breastfeeding and observed mother-child interaction qualities in early childhood', *Childcare, Health & Development*, 40(5), 740-746, available: http://onlinelibrary.wiley.com/doi/10.1111/cch.12106/full [accessed 28/2/15].

Patterson, J.A., Keuler, N.S. and Olson, B.H. (2018) 'The effect of Baby-friendly status on exclusive breastfeeding in U.S. hospitals', *Maternal & Child Nutrition*, 1-6, available: http://dx.doi.org/doi:10.1111/mcn.12589.

Payne, D. and Nicholls, D.A. (2010) 'Managing breastfeeding and work: a Foucauldian secondary analysis', *JOURNAL OF ADVANCED NURSING*, 66(8), 1810–1818, available: http://dx.doi.org/10.1111/j.1365-2648.2009.05156.x.

Percy, W.H., Kostere, K. and Koletzko, B. (2015) 'Generic Qualitative Research in Psychology', *The Qualitative Report*, 20(2), available: http://nsuworks.nova.edu/tqr/vol20/iss2/7 [accessed 29/1/18].

Peregrino, A.B., Watt, R.G., Heilmann, A. and Jivraj, S. (2018) 'Breastfeeding practices in the United Kingdom: Is the neighbourhood context important?', *Maternal & Child Nutrition*, 14(4), 1-15, available: http://dx.doi.org/10.1111/mcn.12626.

Peterson, R.A. (2000) *Constructing Effective Questionnaires*, London: Sage.

PHE (2016) *Commissioning local infant feeding services: a summary*, London: Public Health England, available: www.gov.uk/phe [accessed 10/9/18].

PHE (2018) *Statistical release: breastfeeding at 6 to 8 weeks, 2016 to 2017 Annual Data*, available: https://www.gov.uk/government/statistics/breastfeeding-at-6-to-8-weeks-after-birth-annual-data [accessed 26/10/18].

Phillips, G., Brett, K. and Mendola, P. (2011) 'Previous breastfeeding practices and duration of exclusive breastfeeding in the United States', *Maternal and Child Health Journal*, 15(8), 1210-6, available: http://dx.doi.org/10.1007/s10995-010-0694-4.

Phillips.co.uk *How do Philips Avent bottles make switching from breast to bottle easier?*, available: https://www.philips.co.uk/c-p/SCF699_17/avent-baby-bottle/support [accessed 12/12/17].

Prime, D.K., Geddes, D.T., Spatz, D.L., Robert, M., Trengove, N.J. and Hartmann, P.E. (2009) 'Using milk flow rate to investigate milk ejection in the left and right breasts during simultaneous breast expression in women', *International Breastfeeding Journal*, 4(1), 1-10, available: http://dx.doi.org/10.1186/1746-4358-4-10.

QSR (2015) *NVivo qualitative data analysis Software; QSR International Version 11*, available: http://www.qsrinternational.com/nvivo/nvivo-products/nvivo-11-for-windows/nvivo-pro [accessed 10/12/15].

Qureshi, K. and Rahman, E. (2017) 'Infant feeding: Medicalization, the state and techniques of the body', *Women's Studies International Forum*, 60, 81-88, available: http://dx.doi.org/10.1016/j.wsif.2016.10.010.

Radzyminski, S. (2016) 'Mother's Beliefs, Attitudes, and Decision Making Related to Infant Feeding Choices', *Journal of Perinatal Education*, 25(1), 18.

Raisler, J. (2000) 'Against the odds: breastfeeding experiences of low income mothers', *Women's Health*, 45, 253-263, available: http://dx.doi.org/10.1016/S1526-9523.

Reason, P. (1988) *Human inquiry in action: Developments in new paradigm research*, Newbury Park: Sage.

Reddit.com (2015) *Wish i hadn't breastfed* available: http://www.reddit.com/r/breakingmom/comments/300trf/wish_i_hadnt_breastfedso_frustrated_baby_will_not/ [accessed 29/7/15].

Reddy, S., Patel, T., Tanderup, M. and Neilsen, B. (2015) 'Breasfeeding and bonding:Issues an dilemmas in surrogacy' in Cassidy, T. and Abdullahi, E. T., eds., *Ethnographies of Breastfeeding: cultural contexts and confrontations*, London: Bloomsbury, 157-171.

Regan, P. and Ball, E. (2013) 'Breastfeeding mothers' experiences: the ghost in the machine', *Qual Health Res*, 23(5), 679-88, available: http://dx.doi.org/10.1177/1049732313481641.

Renfrew, M., Woolridge, M. and Ross McGill, H. (2000) *Enabling women to breastfeed: a review of practices which promote or inhibit breastfeeding – with evidence-based guidance for practice*, London: The Stationery Office.

Renfrew, M.J., Spiby, H., D'Souza, L., Wallace, L.M., Dyson, L. and McCormick, F. (2007) 'Rethinking research in breast-feeding: a critique of the evidence base identified in a systematic review of interventions to promote and support breast-feeding', *Public Health Nutrition*, 10(7), 726-732, available: http://dx.doi.org/10.1017/S1368980007387405.

Ricotti, G., Apekey, T. and Gatenby, L. (2015) 'Factors that influence commitment to breastfeeding: A pilot study', *Journal of Health Visiting*, 3(4), 216-223, available: http://dx.doi.org/086.008.079.037.

Robson, C. and McCartan, K. (2016) *Real world research : a resource for users of social research methods in applied seetings*, 4th ed., United Kingdom: Wiley.

Rollins, N.C., Bhandari, N., Hajeebhoy, N., Horton, S., Lutter, C.K., Martines, J.C., Piwoz, E.G., Richter, L.M. and Victora, C.G. (2016) 'Why invest, and what it will take to improve breastfeeding practices?', *The Lancet*, 387(10017), 491-504, available: http://dx.doi.org/10.1016/s0140-6736(15)01044-2.

Roulston, K. and Choi, M. (2018) 'Qualitative Interviews' in Flick, U., ed., *The SAGE Handbook of Qualitative Data Collection*, London: Sage, 253-293.

Rowley, K., Doyle, J., Johnston, L., Reilly, R., McCarthy, L., Marika, M., Riley, T., Atkinson, P., Firebrace, B., Calleja, J. and Cargo, M. (2015) 'Strengths and limitations of a tool for monitoring and evaluating First Peoples' health promotion from an ecological perspective', *BMC Public Health*, 15(1), 1-9, available: http://dx.doi.org/10.1186/s12889-015-2550-3.

Ryan, K., Bissell, P. and Alexander, J. (2010) 'Moral work in women's narratives of breastfeeding', *Social Science and Medicine*, 70(6), 951-8, available: http://dx.doi.org/10.1016/j.socscimed.2009.11.023.

Ryan, K., Team, V. and Alexander, J. (2013) 'Expressionists of the Twenty-First Century: The Commodification and Commercialization of Expressed Breast Milk', *Medical Anthropology*, 32, 467-486, available: http://dx.doi.org/10.1080/01459740.2013.768620.

Ryan, K., Team, V. and Alexander, J. (2017) 'The theory of agency and breastfeeding', *Psychology & Health*, 32(3), 312-329, available: http://dx.doi.org/10.1080/08870446.2016.1262369.

Ryan, R.M. and Deci, E.L. (2000) 'Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions', *Contemporary Educational Psychology*, 25(1), 54-67, available: http://dx.doi.org/10.1006/ceps.1999.1020.

Sakalidis, V.S. and Geddes, D.T. (2015) 'Suck-Swallow-Breathe Dynamics in Breastfed Infants', *Journal of Human Lactation*, 32(2), 201-211, available: http://dx.doi.org/10.1177/0890334415601093.

Sameroff, A.J. (1968) 'The Components of Sucking in the Human Newborn', *JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY*, 6, 607-623.

Sandelowski, M. (2000) 'Focus on Research Methods Whatever Happened to Qualitative Description? ', *Research in Nursing & Health*, 23, 334-340.

Sandelowski, M. (2014) 'Unmixing Mixed-Methods Research', *Research in Nursing and Health*, 37, 3-8, available: http://dx.doi.org/10.1002/nur.21570.

Sandelowski, M., Leeman, J., Knafl, K. and Crandell, J.L. (2013) 'Text-in-context: a method for extracting findings in mixed-methods mixed research synthesis studies', *JOURNAL OF ADVANCED NURSING*, 69(6), 1428-1437.

Schmied, V. and Lupton, D. (2001) 'Blurring the boundaries: Breastfeeding and maternal subjectivity', *Sociology of Health & Illness*, 23(2), 234-250, available: http://dx.doi.org/10.1111/1467-9566.00249.

Scott, J.A., Kwok, Y.Y., Synnott, K., Bogue, J., Amarri, S., Norin, E., Gil, A. and Edwards, C.A. (2015) 'A Comparison of Maternal Attitudes to Breastfeeding in Public and the Association with Breastfeeding Duration in Four European Countries: Results of a Cohort Study', *Birth: Issues in Perinatal Care*, 42(1), 78-85, available: http://dx.doi.org/10.1111/birt.12138.

Segami, Y., Mizuno, K., Taki, M. and Itabashi, K. (2012) 'Perioral movements and sucking pattern during bottle feeding with a novel, experimental teat are similar to breastfeeding', *Journal of Perinatology*, 33, 319-323, available: http://dx.doi.org/10.1038/jp.2012.113.

Seitz, S. (2015) 'Pixilated partnerships, overcoming obstacles in qualitative interviews via Skype: a research note', *Qualitative Research*, 16(2), 229-235, available: http://dx.doi.org/10.1177/1468794115577011.

Shakespeare, J., Blake, F. and Garcia, J. (2004) 'Breast-feeding difficulties experienced by women taking part in a qualitative interview study of postnatal depression', *Midwifery*, 20(3), 251-60, available: http://dx.doi.org/10.1016/j.midw.2003.12.011.

Sherburne-Hawkins, S., Griffiths, L. and Dezateux, C. (2007) 'The impact of maternal employment on breast-feeding duration in the UK Millennium Cohort Study', *Public Health Nutrition*, 10(9), 891-896, available: http://dx.doi.org/10.1017/S1368980007226096.

Shildrick, M. (1997) *Leaky Bodies and Boundaries: Feminism, Postmodernism, and (Bio)ethics*, London: Routledge.

Shim, J.E., Kim, J. and Mathai, R.A. (2011) 'Associations of infant feeding practices and picky eating behaviors of preschool children', *Journal of the American Dietetic Association*, 111(9), 1363-8, available: http://dx.doi.org/10.1016/j.jada.2011.06.410.

Shloim, N., Hugh-Jones, S., Rudolf, M.C., Feltbower, R.G., Lans, O. and Hetherington, M.M. (2015) '"It's like giving him a piece of me.": Exploring UK and Israeli women's accounts of motherhood and feeding', *Appetite*, 95, 58-66, available: http://dx.doi.org/10.1016/j.appet.2015.06.004.

Shribman, S. and Billingham, K. (2009) *Healthy Child Programme Pregnancy and the first five years of life* available: www.dh.gov.uk/publications [accessed 11/04/18].

Silverman, D. (2013) *Qualitative Research*, 4th ed., London: Sage.

Similarweb.com, available: https://www.similarweb.com/ [accessed 18/10/18].

Simpson, C. (2013) 'The preterm baby and the small baby' in Henderson, C. and Macdonald, S., eds., *Mayes Midwifery: A textbook for Midwives*, 13 ed., London: Balliere Tindall, 628-648.

Skafida, V. (2012) 'Juggling work and motherhood: the impact of employment and maternity leave on breastfeeding duration: a survival analysis on growing up in Scotland data', *Maternal and Child Health Journal*, 16(2), 519-27, available: http://dx.doi.org/10.1007/s10995-011-0743-7.

Smith, H.A. and Becker, G.E. (2016) 'Early additional food and fluids for healthy breastfed full-term infants', *Cochrane Database of Systematic Reviews*, (8), available: http://dx.doi.org/10.1002/14651858.CD006462.pub4.

Smith, J.P. and Ellwood, M. (2011) 'Feeding Patterns and Emotional Care in Breastfed Infants', *Social Indicators Research*, 101, 227-231, available: http://dx.doi.org/10.1007/s11205-010-9657-9.

Smith, J.P. and Forrester, R. (2017) 'Maternal Time Use and Nurturing: Analysis of the Association Between Breastfeeding Practice and Time Spent Interacting with Baby', *Breastfeeding Medicine*, 12(5), 269-278, available: http://dx.doi.org/10.1089/bfm.2016.0118.

Smyth, J.D., Dillman, D.A., Christian, L.M. and McBride, M. (2009) 'Open-Ended Questions in Web Surveys: Can Increasing the Size of Answer Boxes and Providing Extra Verbal Instructions Improve Response Quality?', *Public Opinion Quarterly*, 73(2), 325-337, available: http://dx.doi.org/10.1093/poq/nfp029.

Snyder, C. (2012) 'A Case Study of a Case Study: Analysis of a Robust Qualitative Research Methodology', *The Qualitative Report*, 17(26), 1-21.

Spaeth, A., Zemp, E., Merten, S. and Dratva, J. (2018) 'Baby-Friendly Hospital designation has a sustained impact on continued breastfeeding', *Maternal & Child Nutrition*, 14(1), 1-12, available: http://dx.doi.org/doi:10.1111/mcn.12497.

Sparkes, A.C. (2015) 'Developing mixed methods research in sport and exercise psychology: Critical reflections on five points of controversy', *Psychology of Sport and Exercise*, 16, 49-59, available: http://dx.doi.org/10.1016/j.psychsport.2014.08.014.

Spencer, R.L., Greatrex-White, S. and Fraser, D.M. (2014) ''I thought it would keep them all quiet'. Women's experiences ofbreastfeeding as illusions of compliance: an interpretivephenomenological study', *JOURNAL OF ADVANCED NURSING*, 71(5), 1076-1086, available: http://dx.doi.org/10/1111/jan.12592.

Stange, K.C., Crabtree, B.F. and Miller, W.L. (2006) 'Publishing Multimethod Research', *Annals of Family Medicine*, 4(4), 292-294, available: http://dx.doi.org/10.1370/afm.615.

Stanway, P. and Stanway, A. (1983) *Breast is best: a common-sense approach to breastfeeding*, London: Pan.

Staub, E. and Wilkins, B. (2012) 'A fatal case of hypernatraemic dehydration in a neonate', *Journal of Paediatrics and Child Health*, 48(9), 859-62, available: http://dx.doi.org/10.1111/j.1440-1754.2012.02529.x.

Stearns, C.A. (2013) 'The Embodied Practices of Breastfeeding: Implications for Research and Policy', *Journal of Women, Politics & Policy*, 34, 359-370, available: http://dx.doi.org/10.1080/1554477X.2013.835680.

Stephens, N. (2007) 'Collecting data from elites and ultra elites:telephone and face-to-face interviews with macroeconomists', *Qualitative Research*, 7(2), 203-216, available: http://dx.doi.org/10.1177/146879410707602.

Stewart-Knox, B., Gardiner, K. and Wright, M. (2003) 'What is the problem with breast-feeding? A qualitative analysis of infant feeding perceptions', *Journal of Human Nutrition and Dietetics*, 16(4), 265-273, available: http://dx.doi.org/10.1046/j.1365-277X.2003.00446.x.

Stolzer, J. (2005) 'Breastfeeding in the 21st century: A theoretical perspective', *International Journal of Sociology of the Family*, 31(1), 39-55.

Sue, V.M. and Ritter, L.A. (2012) *Conducting Online Surveys*, London: Sage.

Suler, J. (2004) 'The online disinhibition effect', *Cyberpsychology and Behavior*, 7(3), 321-6, available: http://dx.doi.org/10.1089/1094931041291295.

Sutherland, T., Pierce, C.B., Blomquist, J.L. and Handa, V.L. (2012) 'Breastfeeding practices among first-time mothers and across multiple pregnancies', *Maternal and Child Health Journal*, 16(8), 1665-71, available: http://dx.doi.org/10.1007/s10995-011-0866-x.

Tabachnick, B.G. and Fidell, L.S. (2013) *Using Multivariate Statistics*, 6th ed., USA: Pearson.

Tashakkori, A. and Teddlie, C. (2009) *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*, London: Sage.

Tashakkori, A. and Teddlie, C. (2010) *SAGE Handbook of Mixed Methods in Social & Behavioral Research*, London: Sage.

Technavio.com (2018) 'Global Baby Bottles Market 2018-2022', available: www.technavio.com [accessed 13/10/18].

Telegraph.co.uk (2016) *Strangers rush to help breastfeed baby after ill mother makes Facebook appeal for wet nurses* available: https://www.telegraph.co.uk/news/2016/04/11/strangers-rush-to-help-breastfeed-baby-after-ill-mother-makes-fa/ [accessed 20/04/18].

Tharner, A., Luijk, M., Raat, H., van Ijzendoorn, M.H., Bakermans-Kranenburg, M.J., Moll, H.A., Jaddoe, V.W.V., Hofman, A. and Tiemeier, H. (2012) 'Breastfeeding and its relation to maternal sensitivity and infant attachment ', *Journal of Developmental & Behavioral Pediatrics*, 33(5), 1-9, available: http://dx.doi.org/10.1097/DBP.0b013e318257fac3.

Thomas, J. and Harden, A. (2008) 'Methods for the thematic synthesis of qualitative research in systematic reviews', *BMC Medical Research Methodology*, 8, 45, available: http://dx.doi.org/10.1186/1471-2288-8-45.

Thomson, G., Crossland, N. and Dykes, F. (2012) 'Giving me hope: women's reflections on a breastfeeding peer support service', *Maternal & Child Nutrition*, 8(3), 340-353, available: http://dx.doi.org/10.1111/j.1740-8709.2011.00358.x.

Thomson, G. and Dykes, F. (2011) 'Women's Sense of Coherence related to their infant feeding experiences', *Maternal & Child Nutrition*, 7(2), 160-174, available: http://dx.doi.org/10.1111/j.1740-8709.2010.00251.x.

Thomson, G., Ebisch-Burton, K. and Flacking, R. (2015) 'Shame if you do – shame if you don't: women's experiences of infant feeding', *Maternal & Child Nutrition*, 11, 33–46, available: http://dx.doi.org/10.1111/mcn.12148.

Thorley, V. (2011) 'The dilemma of breastmilk feeding', *Breastfeeding Review*, 19(1), 5-7.

Thulier, D. (2010) 'A Call for Clarity in Infant Breast and Bottle-Feeding Definitions for Research', *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 39(6), 627-634, available: http://dx.doi.org/10.1111/j.1552-6909.2010.01197.x.

Tiedje, L.B., Schiffman, R., Wright, J., Buzzita, R., A, M. and Metzger, S. (2002) 'An ecological approach to breastfeeding', *The American Journal of Maternal/Child Nursing*, 27(3), 154-161.

Tierney, S., Seers, K., Tutton, E. and Reeve, J. (2017) 'Enabling the flow of compassionate care: a grounded theory study', *BMC Health Services Research*, 17(1), 174, available: http://dx.doi.org/10.1186/s12913-017-2120-8.

tommeetippee.co.uk *The most breast-like bottle* available: https://www.tommeetippee.co.uk/product/bottle-feeding/bottles [accessed 10/12/17].

Trickey, H. and Newburn, M. (2014) 'Goals, dilemmas and assumptions in infant feeding education and support. Applying theory of constraints thinking tools to develop new priorities for action', *Maternal & Child Nutrition*, 10, 72-91, available: http://dx.doi.org/10.1111/j.1740-8709.2012.00417.x.

UNICEF (2010) *Ten Steps to Successful Breastfeeding*, available: http://www.unicef.org/newsline/tenstps.htm [accessed 20/2/15].

UNICEF (2012) *Guide to the Baby Friendly Standards*, available: http://www.unicef [accessed 20/2/15].

UNICEF (2017) *Removing the barriers to breastfeeding: A call to action*, available: https://www.unicef.org.uk/babyfriendly/ [accessed 12/7/18].

UNICEF (2018) *Accreditation statistics and awards table*, available: https://www.unicef.org.uk/babyfriendly/about/accreditation-statistics-and-awards-table/ [accessed 10/10/18].

Van Esterik, P. (1994) 'Breastfeeding and Feminism', *International Journal of Gynecology & Obstetrics*, 47 41-54.

Van Esterilk, P. (2015) 'What flows through us: rethinking breastfeeding as a product and process' in Cassidy, T. and Abdullahi, E. T., eds., *Ethnographies of breastfeeding: Cultural contexts and confrontations*, London: Bloomsbury, xv - xxiii.

VAS Goncalves, A. (2017) 'What influences women to bottle-feed from birth and to discontinue breastfeeding early?', *British Journal of Midwifery*, 25(7), 442-450.

Vehovar, V. and Manfreda, K.J. (2017) 'Overview Online Surveys' in Fielding, N. G., Lee, E. and Black, R. F., eds., *The SAGE Handbook of Online Research Methods*, London: Sage, 176-191.

Victora, C.G., Bahl, R., Barros, A.J.D., França, G.V.A., Horton, S., Krasevec, J., Murch, S., Sankar, M.J., Walker, N. and Rollins, N.C. (2016) 'Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect', *The Lancet*, 387(10017), 475-490, available: http://dx.doi.org/10.1016/s0140-6736(15)01024-7.

von Unger, H. (2016) 'Reflexivity Beyond Regulations:Teaching Research Ethics and Qualitative Methods in Germany', *Qualitative Inquiry*, 22(2), 87-98, available: http://dx.doi.org/10.1177/1077800415620220

Wagg, A.R., Kendall, S. and Bunn, F. (2017) 'Women's experiences, beliefs and knowledge of urinary symptoms in the postpartum period and the perceptions of health professionals: a grounded theory study', *Primary Health Care Research and Development*, 18(5), 448-462, available: http://dx.doi.org/10.1017/S1463423617000366.

Wall, G. (2001) 'Moral Constructions of Motherhood in Breastfeeding Discourse', *Gender and Society*, 15(4), 592-610.

Ward, K., Gott, M. and Hoare, K. (2015) 'Participants' views of telephone interviews within a grounded theory study', *JOURNAL OF ADVANCED NURSING*, 71(12), 2775-85, available: http://dx.doi.org/10.1111/jan.12748.

Warren, C.B. (2012) 'Interviewing as Social Interaction' in Gubrium, J., Holstein, J., Marvasti, A. and McKinney, K., eds., *The SAGE Handbook of Interview Research: The Complexity of the Craft*, 2 ed., Thousand Oaks: Sage, 129-141.

WBTi (2016) *World Breastfeeding Trends Initiative (WBTi) UK 2016*, available: ukbreastfeeding.org/wbtiuk2016 [accessed 1/7/18].

Weaver, J.M., Scoefiled, T.J. and Papp, L.M. (2018) 'Breastfeeding Duration Predicts Greater Maternal Sensitivity Over the Next Decade', *Developmental Psychology*, 54(2), 220-227, available: http://dx.doi.org/10.1037/dev0000425.

Weller, S. (2017) 'Using internet video calls in qualitative (longitudinal) interviews: some implications for rapport', *International Journal of Social Research Methodology*, 20(6), 613-625, available: https://doi.org/10.1080/13645579.2016.1269505 [accessed 2/11/17].

WHO (1981) *International code of marketing of breastmilk substitutes*, Geneva, Switzerland.

WHO (2001) *The optimal duration of exclusive breastfeeding: report of the expert consultation*, Geneva, Switzerland.

WHO (2002) *55th World Health Assembly Infant and young child nutrition.Global strategy on infant and young child feeding* Geneva, Switzerland.

WHO (2018a) *Ten steps to successful breastfeeding (revised 2018)*, available: www.who.int/nutrition/bfhi/ten-steps/en/ [accessed 10/7/18].

WHO (2018b) *Complementary feeding*, available: http://www.who.int/nutrition/topics/complementary_feeding/en/ [accessed 25/5/18].

WHO, UNICEF, USAID, AED, UCDAVIS and IFPRI. (2010) 'Indicators for assessing infant and young child feeding practices. Part II Measurement. ', available: http://apps.who.int/iris/bitstream/10665/44306/1/9789241599290_eng.pdf?ua=1 [accessed 1/7/18].

Widemalm, M. and Hjärthag, F. (2015) 'The forum as a friend: parental mental illness and communication on open Internet forums', *Social Psychiatry & Psychiatric Epidemiology*, 50(10), 1601-1607, available: http://dx.doi.org/10.1007/s00127-015-1036-z.

Williams, K., Donaghue, N. and Kurz, T. (2013a) '"Giving Guilt the Flick"?', *Psychology of Women Quarterly*, 37(1), 97-112, available: http://dx.doi.org/10.1177/0361684312463000.

Williams, K., Kurz, T., Summers, M. and Crabb, S. (2013b) 'Discursive constructions of infant feeding: The dilemma of mothers' 'guilt'', *Feminism & Psychology*, 23(3), 339-358, available: http://dx.doi.org/10.1177/0959353512444426.

Williams, K.M. and Morse, J.M. (1989) 'Weaning patterns of first-time mothers', *The American Journal of Maternal Nursing*, 14(3), 188-192.

Williamson, I., Leeming, D., Lyttle, S. and Johnson, S. (2012) 'It should be the most natural thing in the world':exploring first-time mothers' breastfeeding difficulties in the UK using audio-diaries and interviews', *Maternal & Child Health Journal*, 8, 434–447, available: http://dx.doi.org/10.1111/j.1740-8709.2011.00328.x.

Winnicott, D.W. (1988) *Babies and their Mothers*, London: Free Association Books.

Wolff, P.H. (1968) 'The serial organization of sucking in the young infant', *PEDIATRICS*, 42(6), 943-956.

Woollard, F. and Porter, L. (2017) 'Breastfeeding and defeasible duties to benefit', *Journal of Medical Ethics*, 43(8), 515-518, available: http://dx.doi.org/10.1136/medethics-2016-103833.

Woolridge, M.W. (1986) 'The anatomy of infant sucking', *Midwifery*, 2, 164-171.

Yamada, R., Rasmussen, K.M. and Felice, J.P. (2016) 'Mothers' Use of Social Media to Inform Their Practices for Pumping and Providing Pumped Human Milk to Their Infants', *Children*, 3(22), 1-12, available: http://dx.doi.org/10.3390/children3040022.

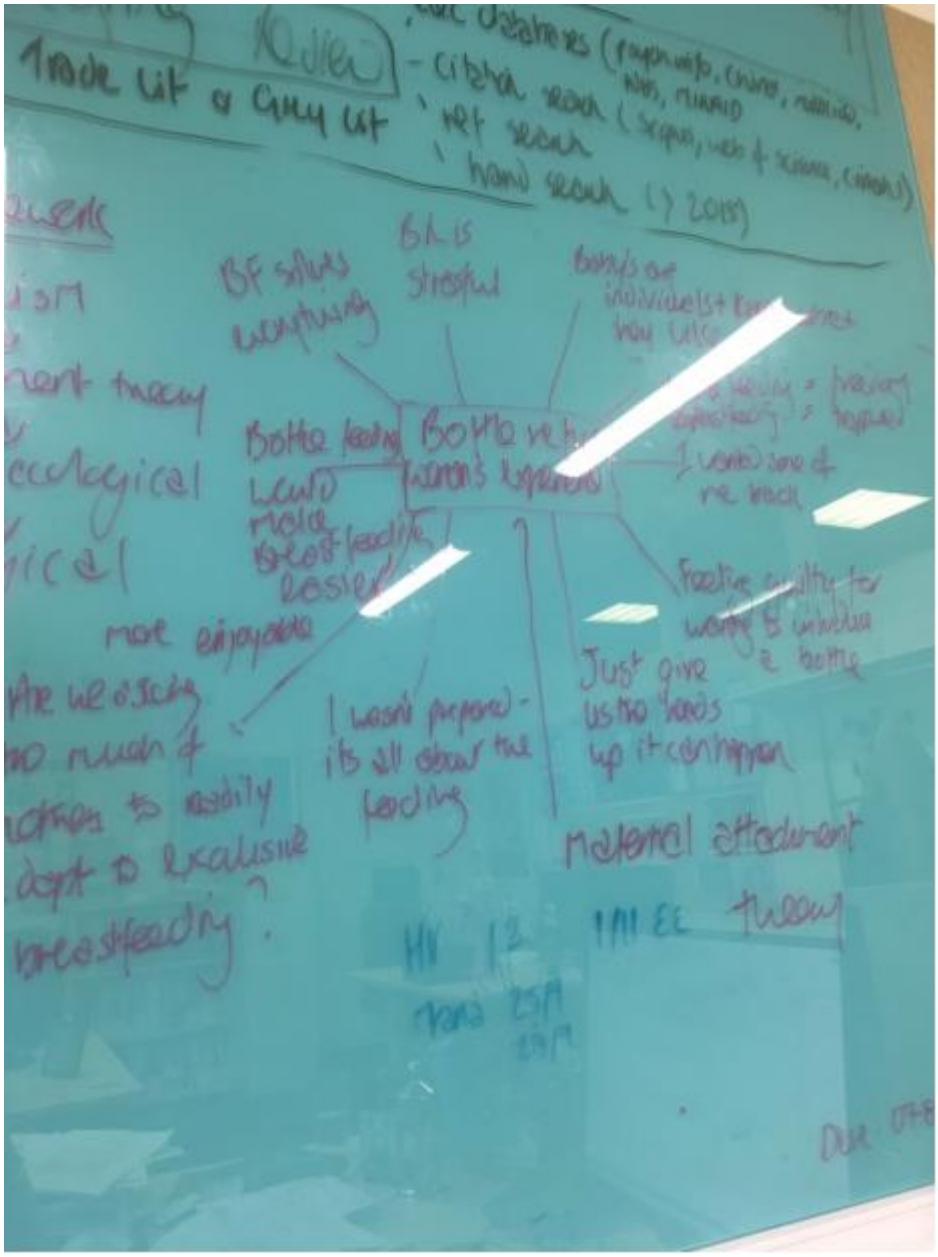
Yilmaz, G., Caylan, N., Karacan, C.D., Bodur, I. and Gokcay, G. (2014) 'Effect of cup feeding and bottle feeding on breastfeeding in late preterm infants: a randomized controlled study', *Journal of Human Lactation*, 30(2), 174-9, available: http://dx.doi.org/10.1177/0890334413517940.

YouTube.com *How to get a breastfed baby to take a bottle* available: https://www.youtube.com/watch?v=gIusa0o9mRE [accessed 20/3/16].

Zhang, X., C, Kuchinke, L., Woud, M., L, Velten, J. and Margraf, J. (2017) 'Survey method matters: Online/offline questionnaires and face-to-face or telephone interviews differ', *Computers in Human Behavior*, 71, 172-180, available: http://dx.doi.org/https://doi.org/10.1016/j.chb.2017.02.006.

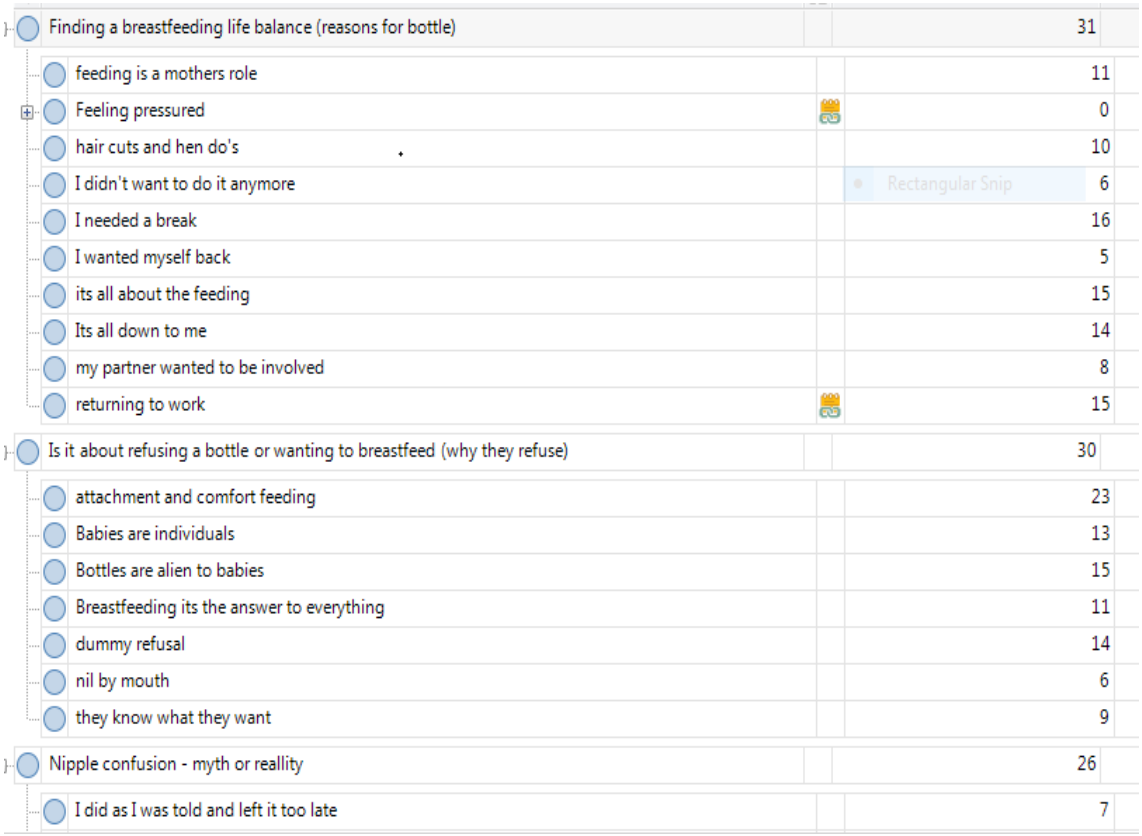
Zimmerman, E. and Thompson, K. (2015) 'Clarifying nipple confusion', *Journal of Perinatology*, 35(11), 895-9, available: https://www.ncbi.nlm.nih.gov/pubmed/26181720 [accessed 10/11/16].

Appendix A Glass notice board mind maps



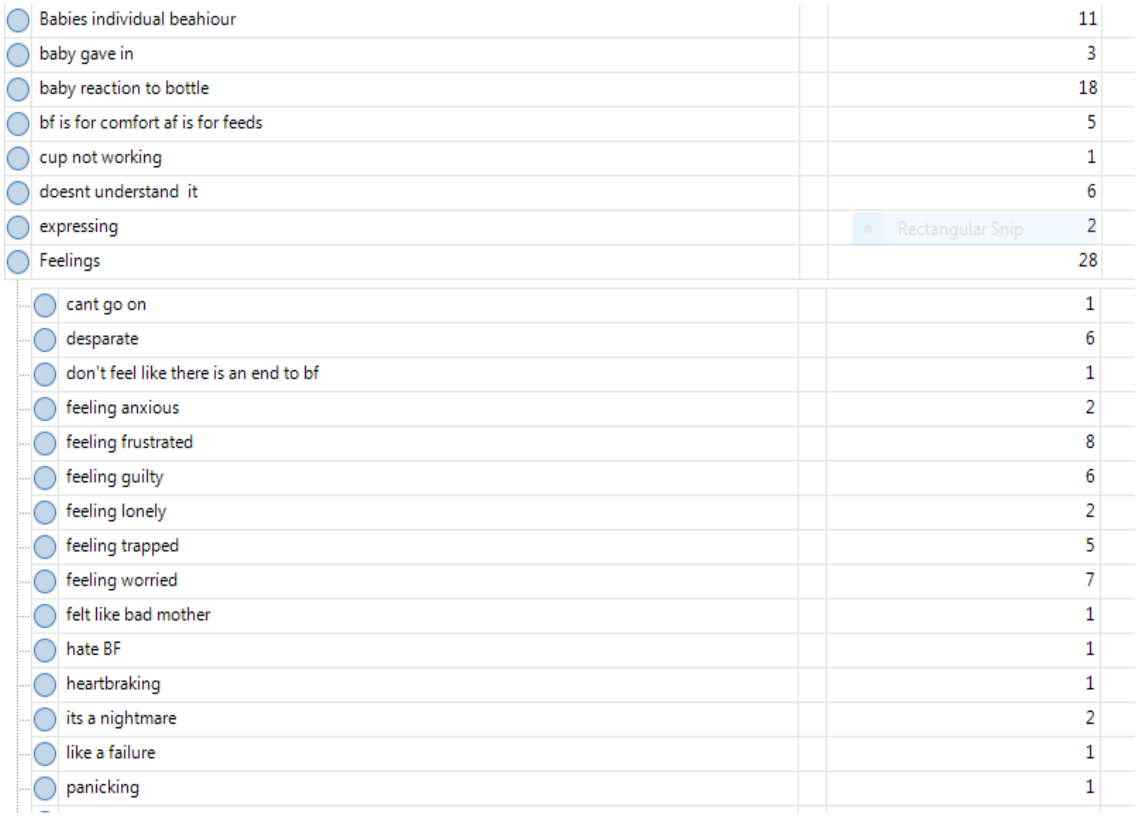
Appendix B Screenshot of examples of coding

Study two



Finding a breastfeeding life balance (reasons for bottle)	31
feeding is a mothers role	11
Feeling pressured	0
hair cuts and hen do's	10
I didn't want to do it anymore	6
I needed a break	16
I wanted myself back	5
its all about the feeding	15
Its all down to me	14
my partner wanted to be involved	8
returning to work	15
Is it about refusing a bottle or wanting to breastfeed (why they refuse)	30
attachment and comfort feeding	23
Babies are individuals	13
Bottles are alien to babies	15
Breastfeeding its the answer to everything	11
dummy refusal	14
nil by mouth	6
they know what they want	9
Nipple confusion - myth or reallity	26
I did as I was told and left it too late	7

Study three



Babies individual beahiour	11
baby gave in	3
baby reaction to bottle	18
bf is for comfort af is for feeds	5
cup not working	1
doesnt understand it	6
expressing	2
Feelings	28
cant go on	1
desparate	6
don't feel like there is an end to bf	1
feeling anxious	2
feeling frustrated	8
feeling guilty	6
feeling lonely	2
feeling trapped	5
feeling worried	7
felt like bad mother	1
hate BF	1
heartbraking	1
its a nightmare	2
like a failure	1
panicking	1

Appendix C Participant information sheet: online questionnaire

LIVERPOOL JOHN MOORES UNIVERSITY PARTICIPANT INFORMATION SHEET

Bottle refusal by breastfed babies: an exploration of mothers' experiences.

Clare Maxwell. Faculty of Health Education and Community.

You are being invited to take part in a research study. Before you decide to take part it is important that you understand why the research is being done and what it involves. Please take time to read the following information. Ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not.

What is the purpose of the study?

I am Clare Maxwell a Registered Midwife and Senior Lecturer in Midwifery at Liverpool John Moores University and I am undertaking a study on bottle refusal by breastfed babies as part of my PhD. Bottle refusal by breastfed babies is something that a number of breastfeeding mothers experience yet there is very little research concerning it. The purpose of the study is to gain understanding of the experiences of mothers whose breastfed babies refuse to accept a bottle. It is hoped that by undertaking the study the scenario of bottle refusal will be given recognition and develop knowledge in relation to it.

How do I know if I am eligible to take part?

You need to have experienced bottle refusal* by your breastfed baby: this can be up to 5 years ago or you could be experiencing it now

AND

Your baby should have been born after 37 weeks gestation

Your baby should have no serious health problems

You need to be over 18

You need to be living in the UK

*Bottle Refusal definition

* For the purpose of this study 'bottle refusal' is when your breastfed baby initially or continuously refused to accept a bottle containing either expressed breastmilk or infant formula

Do I have to take part?

No. It is up to you to decide whether or not to take part. By completing the questionnaire you will be implying that you have consented to undertake it. You are still free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your rights/any future treatment/service you receive. As the questionnaire is anonymous once you have submitted it, it will not be possible to withdraw your data.

What will happen to me if I take part?

You will be asked to complete an anonymous questionnaire lasting up to 10 minutes on your experiences of bottle refusal by your breastfed baby. The questionnaire results will collected and then analysed as part of my PhD project.

Are there any risks / benefits involved?

There are no envisaged risks to taking part. It is hoped that the research will give the scenario of bottle refusal by breastfed babies recognition and could also help to inform the advice and support mothers receive when experiencing it.

Will my taking part in the study be kept confidential?

Yes. All personal information collected during the research will be anonymised and remain confidential. It is expected that the results of this study will be published but your individual details will not be mentioned. Your comments may be included but your individual details will not be mentioned. Any personal information about you will not be disclosed to anyone and it will be stored securely. Only the supervisor, co-supervisors and myself will have access to the data.

What do I do now?

If you wish to take part you can complete the questionnaire which will then be uploaded for me to analyse. If you do not want to take part thank you for taking the time to read this information sheet.

This study has received ethical approval from LJMU's Research Ethics Committee - ref: 15/EHC/088 approved on 15/12/15.

Contact Details of Researcher: Clare Maxwell . c.maxwell @ljmu.ac.uk 0151 231 4556 Mob: 07938841747

Contact Details of Academic Supervisor: Lorna Porcellato L.A.Porcellato@ljmu.ac.uk 0151 231 4201

If you any concerns regarding your involvement in this research, please discuss these with myself in the first instance. If you wish to make a complaint, please contact researchethics@ljmu.ac.uk and your communication will be re-directed to an independent person as appropriate.

Appendix D Participant information sheet: Interviews

LIVERPOOL JOHN MOORES UNIVERSITY

Bottle refusal by breastfed babies: an exploration of mothers' experiences

Clare Maxwell. Faculty of Health Education and Community.

You are being invited to take part in a research study. Before you decide to take part it is important that you understand why the research is being done and what it involves. Please take time to read the following information. Ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not.

1. What is the purpose of the study?

I am Clare Maxwell a Registered Midwife and Senior Lecturer in Midwifery at Liverpool John Moores University and I am undertaking a study on bottle refusal by breastfed babies as part of my PhD. Bottle refusal by breastfed babies is something that a number of breastfeeding mothers experience yet there is very little research concerning it. The purpose of the study is to gain understanding of the experiences of mothers whose breastfed babies refuse to accept a bottle. It is hoped that by undertaking the study the scenario of bottle refusal will be given recognition and develop knowledge in relation to it.

2. How do I know if I am eligible to take part?

You need to have experienced bottle refusal* by your breastfed baby: this can be up to 5 years ago or you could be experiencing it now
AND
Your baby should have been born after 37 weeks gestation
Your baby should have no serious health problems
You need to be over 18
You need to be living in the UK

*Bottle Refusal definition

For the purpose of this study 'bottle refusal' is when your breastfed baby initially or continuously refused to accept a bottle containing either expressed breastmilk or infant formula

3. Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do you will be asked to give consent. You are still free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your right/ any future treatment/service you receive.

4. What will happen to me if I take part?

You will be asked to undertake an interview with me lasting up to 60 minutes. This can be by telephone, FaceTime or SKYPE. If you live in Liverpool it could be face to face at your home if you prefer. All interviews will take place at a date and time convenient to yourself. The interview will focus on areas around bottle refusal by your breastfed baby. It will be audio recorded and written up and the results will be analysed as part of my PhD project.
Please note that although the contents of the interview will be confidential if you discuss anything I feel could be harmful to you or your baby I would be required to disclose this to relevant personnel.

5. Are there any risks / benefits involved?

There are no envisaged risks to taking part. It is hoped that the research will give the scenario of bottle refusal by breastfed babies recognition and could also help to inform the advice and support mothers receive when experiencing it.

6. Will my taking part in the study be kept confidential?

Yes. All personal information collected during the research will be anonymised and remain confidential. It is expected that the results of this study will be published but your individual details will not be mentioned. Your comments may be included but your individual details will not be mentioned. Any personal information about you will not be disclosed to anyone and it will be stored securely. Only the supervisor, co-supervisors and myself will have access to the data.

7. What do I do now?

If you wish to take part in an interview please contact me at:

c.maxwell@ljmu.ac.uk or on 07938841747

and we can arrange a date and time and discuss whether you wish to it to be at your home (Liverpool only) or by FaceTime, SKYPE or telephone. If you do not wish to be interviewed thank you for taking the time to read this information sheet.

This study has received ethical approval from LJMU's Research Ethics Committee Ref: 15/EHC/088 on 15/12/15

Contact Details of Researcher: Clare Maxwell. c.maxwell@ljmu.ac.uk 0151 231 4556
Contact Details of Academic Supervisor: Lorna Porcellato L.A.Porcellato@ljmu.ac.uk 0151 231 4201

If you any concerns regarding your involvement in this research, please discuss these with myself in the first instance. If you wish to make a complaint, please contact researchethics@ljmu.ac.uk and your communication will be re-directed to an independent person as appropriate.

Appendix E Consent form: Interviews

LIVERPOOL JOHN MOORES UNIVERSITY

Bottle refusal by breastfed babies: an exploration of mothers' experiences

Clare Maxwell Faculty of Education, Health and Community.

1. I confirm that I have read and understand the information provided for the above study ☐
2. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily ☐
3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and that this will not affect my legal rights. ☐
4. I understand that any personal information collected during the study will be anonymised and remain confidential ☐
5. I agree to take part in the above study interview ☐
6. I understand that the interview will be audio recorded and I am happy to proceed ☐
7. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised. ☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature
Name of Person taking consent *(if different from researcher)*	Date	Signature

Note: When completed 1 copy for participant and 1 copy for researcher

Appendix F Risk assessment form

<table>
<tr><th colspan="4">Risk Assessment</th></tr>
<tr><td>Building</td><td>Various mothers' homes</td><td>Date of Risk Assessment</td><td>16/11/15</td></tr>
<tr><td>School/Service Department</td><td>Nursing and Allied Health</td><td>Assessment carried out by</td><td>Clare Maxwell</td></tr>
<tr><td>Location</td><td>As above</td><td>Signed</td><td>  </td></tr>
<tr><td>Activity</td><td>Undertaking of Research study:

Bottle refusal by breastfed babies: an exploration of mothers' experiences</td><td>Persons consulted during the Risk Assessment</td><td>Dr. Lorna Porcellato (Director of Studies)

Dr. Raphaela Kane (Supervisor)

Dr. Valerie Fleming (Supervisor)</td></tr>
<tr><td>STEP 1
What are the Hazards?

Spot hazards by
Walking around the workplace
Speaking to employees
Checking manufacturers instructions</td><td colspan="3">1. Physical Violence
2. Emotional distress experienced by research participants
3. Research participant discloses methods of transition from breast to bottle that are against current weaning guidelines</td></tr>
<tr><td>STEP 2
Who might be harmed and how?

Identify groups of people. Staff and students are obvious, but please remember
Some staff/students have particular needs
People who may not be present all the time
Members of the public</td><td colspan="3">1. Researcher (Clare Maxwell) when interviewing in unknown environments with unknown participants
2. Mothers being interviewed – may cause some distress due to the negative feelings experienced during bottle refusal
3. Mother and or baby – methods used may have been harmful</td></tr>
</table>

• *How your work affects others if you share a workplace*	
STEP 3 (a) What are you already doing? *What is already in place to reduce the likelihood of harm, or to make any harm less serious*	1. Aware of LJMU lone worker policy (2012) 2. Researcher has support of Director of studies, supervisory team, own Supervisor of Midwives, and can sign post mothers to relevant health professional for support 3. As a registered midwife the researcher is aware of current weaning guidance and is therefore able to recognise practices that are outside of this guidance
STEP 3 (b) What further action is needed? *Compare what you are already doing with good practice. If there is a gap, please list what needs to be done.*	1, 2 & 3 - Ongoing assessment during interactions to ensure that the level of risk remains controlled
STEP 4 How will you put the assessment into action? *Please remember to prioritise. Deal with the hazards that are high risk and have serious consequences first*	1. Researcher to ensure Director of Studies (or if not available 2nd supervisor) is aware of whereabouts; expected time of completion of interview session and an action plan in place if researcher has not contacted after expected time of interview session completion. Researcher to ensure mobile phone contact prior to and after completion of interview. 2. If mothers express feelings of distress the researcher will signpost her to her health visitor or GP for support. The researcher will discuss this with her supervisory team (and own Supervisor of midwives if needed). 3. If the mother discloses methods that are outside of current weaning guidance the researcher will signpost her to her health visitor for advice. If the weaning practices are thought to cause harm the researcher will contact the health visiting team and inform the mother of this.

Appendix G Online Questionnaire

Bottle Refusal by Breastfed Babies.

Page 1: Welcome!

Welcome to this questionnaire about 'Bottle Refusal by Breastfed Babies'.

Please read the information on the next page and check to make sure you are eligible to take part.

The questionnaire is anonymous and will take you up to 10 minutes to complete.

You may have the option to select one or more boxes - please check the instructions

Thank you for considering to take part.

Page 3: Eligibility and Consent

I have read the participant information sheet and I am eligible to take part in this research study *Required*

- Yes

I have read the participant information sheet and I am happy to participate. I understand that by completing and submitting this questionnaire I am consenting to be part of this research study and for my data to be used as described in the information sheet provided. *Required*

- Yes

Page 4: Your Bottle Refusal Experience

1. **Which baby did you experience bottle refusal with?** If you have experienced bottle refusal with more than one baby please complete the questionnaire based on the most recent baby you experienced it with. If you experienced it with twins please complete based on the oldest of the twins.
Required

- ○ 1st
- ○ 2nd
- ○ 3rd
- ○ 4th
- ○ Other

If you selected Other, please specify:

2. **What is the sex of your baby?** *Required*

- ○ Male
- ○ Female

3. How long ago did you experience bottle refusal? *Required*

- I am experiencing it now
- up to 1 year ago
- up to 2 years ago

- up to 3 years ago
- up to 4 years ago
- up to 5 years ago

4. At what age was your baby when you FIRST tried to introduce a bottle to it? If you cannot remember exactly, please put in the approximate age *Required*

5. Why did you want to introduce a bottle to your baby? *(select all that apply)* *Required*

- wanted to give up breastfeeding
- returning to work
- wanted some independence/more social life
- wanted partner/family to be able to feed baby
- wanted to spend some time with other children
- Other

If you selected Other, please specify:

6. How often did you want your baby to feed from a bottle if it accepted one?
Required

- ○ every feed - no more breastfeeding
- ○ daily - alongside breastfeeding
- ○ occasionally- not on a daily basis
- ○ Other

If you selected Other, please specify:

7. Which method(s) did you use to try to introduce a bottle to your baby? *(select all that apply)* *Required*

- ☐ partner/family member/friend fed baby
- ☐ cold turkey (didn't feed baby until it accepted a bottle)
- ☐ used different bottles/teats
- ☐ put expressed breastmilk into a bottle
- ☐ used a cup
- ☐ gave bottle only when baby wasn't hungry
- ☐ gave bottle only when baby was hungry
- ☐ Other

If you selected Other, please specify:

8. **Which method(s) worked?** i.e. your baby accepted a bottle *(select all that apply)*

- ☐ partner/family/friend feeding baby
- ☐ cold turkey
- ☐ using different bottles/teats
- ☐ putting expressed breastmilk into a bottle
- ☐ using a cup
- ☐ giving the bottle when baby wasn't hungry
- ☐ giving the bottle only when baby was hungry
- ☐ nothing worked
- ☐ other
- ☐

If you selected Other, please specify:

How long did it take for your baby to accept a bottle when using the cold turkey method? If you cannot remember exactly, please put in the approximate time taken

9. Where did you go to for advice/support? *(select all that apply)* *Required*

- ☐ health visitor
- ☐ other mothers
- ☐ family and/or friends
- ☐ breastfeeding support groups
- ☐ Internet
- ☐ did not seek any advice
- ☐ Other

If you selected Other, please specify:

10. Which source(s) of advice/support were helpful to you? *(select all that apply)* *Required*

- ☐ health visitor
- ☐ other mothers
- ☐ family and/or friends
- ☐ breastfeeding support groups
- ☐ Internet
- ☐ don't think any advice helped me
- ☐ not applicable as did not seek advice
- ☐ Other

If you selected Other, please specify:

11.How long OVERALL did it take for your baby to accept a bottle? i.e. from your first attempt to the attempt that was successful. If you cannot remember exactly, please put in the approximate time taken, this could be in hours, days, weeks, months. **If your baby is still refusing a bottle please state this.**

12. What age was your baby when it accepted a bottle? If you cannot remember exactly, please put in the approximate age. **If your baby is still refusing a bottle please state this.**

13. **Have you experienced bottle refusal previously?** □
Required

- ○ Yes
- ○ No

Which babies did you experience it with? (select al that apply)

- ☐ 1st
- ☐ 2nd
- ☐ 3rd
- ☐ 4th
- ☐ twins
- ☐ other

If you selected Other, please specify:

14. Where you aware of bottle refusal by breastfed babies before this experience?

- ○ yes
- ○ no

15.What impact did bottle refusal have upon your overall breastfeeding experience? *Required*

- Negative
- Positive
- Had no impact

13 / 19

- Other

If you selected Other, please specify:

16.In hindsight is there anything you would have done to try to prevent bottle refusal occurring? *Optional*

Page 5: Your Details

17. What is your age? *Required*

- 18-19
- 20-24
- 25-29
- 30-34
- 35-39
- 40+

18. What is your ethnic group? *(Choose the option that best describes your ethnic group or background)* *Required*

- White
- Mixed/Multiple Ethnic Groups
- Asian/Asian British
- Black/African/Caribbean/Black British
- Chinese
- Other

If you selected Other, please specify:

19. Where do you live? *Required*

- Scotland
- Northern Ireland
- Wales
- Yorkshire and the Humber
- North East
- North West
- West Midlands
- East Midlands
- East of England
- London
- South East
- South West

20. How old were you when you finished full-time education? *If you are still in full-time education please select the age you intend to finish it* *Required*

- 16 or under
- 17
- 18
- 19 or over

21. What is your employment status? *Required*

- employed
- self employed
- looking after family
- unemployed

What is your job title?

Page 6: Any other comments?

22. If you have any other comments please add here

Page 7: Interviews on the subject of bottle refusal

Thank you for taking part in this survey. I will also be conducting **interviews on** the subject of 'bottle refusal'. If you would like more information please leave your contact details below. I will send an information sheet to you and contact you at a later date to see if you would like to be interviewed. *Please note your details will only be used by me to send you an information sheet. They will not be disclosed to anyone else or used for any other purpose.* Clare Maxwell *Optional*

Appendix H Age conversion strategy

At 3 separate points during the questionnaire mothers were asked to report numerical data:

- Question 4. Baby's age at first attempt to introduce their baby to a bottle,
- Question11. How long it had taken their baby to accept a bottle
- Question 12. Baby's age at acceptance.

All free text responses were converted into weeks as follows:

Data reported using the term 'At birth': was coded as 0

Data reported as hours: was rounded up or down to the nearest day and converted as per days.

Data reported in days but less than 1 week: was converted to a proportion of 1 week and rounded up or down

Data reported as weeks remained as weeks

Data reported in months: data was converted to weeks using a 'months to weeks convertor'

Data reported as a fraction i.e. 6 ½ months: was converted to weeks as above.

Appendix I Notes from pilot study focus group

Pilot Study - Focus Group Schedule

6/2/16

Not tape recorded as in a public place. Feedback also gained on changes that have been made.

Present: id's 1, 2, 3 and Clare Maxwell

Ease of use

How easy was the survey to use?

All felt it easy to use. A link was sent within a text message and all completed the questionnaire on their phone. Phone: i-phone 4, 5, 6 and a Samsung Galaxy. Did not mind 'scrolling' through pages 'I always do that anyway'. No problems with connecting to BOS and submitting.

How long did each take you?

All less than 10 minutes

Any barriers you see to completing the questionnaire?

Recall. Id 1 felt some mothers might be put off as they can't remember. Felt the change to giving 'approximate info' might encourage mothers. Id 3 felt bottle refusal was quite stressful and this might make mothers remember.

Id 2 discussed new mothers may not have the time or may start it and complete it. Mooted the option to start and complete later – but all felt this would not be realistic and that as a mother they would forget and might think they had completed it.

Question content

Did you understand the participant information leaflet and eligibility criteria?

Felt this was clear, knew who should be completing it.

Bottle refusal definitions?

All felt they understood the original definitions.

Id 3 wondered if the term 'exclusive' next to breastfeeding should be included, however this would not then include mothers who were BF who had started to introduce food to their baby (i.e. babies over 6 months). Id 1 wondered if the mothers needed to be giving up BF totally and going to all bottles or could it be the introduction of 'a bottle'. Said it was both, rest of mums felt it was clear it was both.

Were the questions in a logical order?

Yes, Id 2 - you can see it from the initial decision to trying to introduce a bottle, and then what happens next.

Did you understand the questions? (go through each one for comments)

Qu. 10 How long OVERALL did it take for your baby to accept a bottle? i.e. from your first attempt to the attempt that was successful. If you cannot remember exactly, please put in the approximate time taken, this could be in hours, days, weeks etc. If you baby is still refusing a bottle please state this: Id 2 asked does this mean you can have stopped in between trying? Asked group should I put in an example? – group not sure as would make the question even longer. Id 1 asked what I was trying to get out of the question? It may show from first to last attempt, or some may answer the 'main period' of trying to get baby onto a bottle. Discussed further and group agreed its complicated and mothers might need a lot of free text to tell their story, can be followed up in interviews, group suggested it should be taken from beginning (first attempt) to acceptance and this would probably contain periods of stopping and starting but the intent to introduce a bottle still there.

Would you rephrase or make changes to any of the questions?

Qu. 12 Which sources were most helpful to you?

Id 3 queried use of word 'helpful' - would I consider 'useful'? rest of group agreed helpful was easier to put into context

Were the follow up questions clear and applicable? (went through for comments)

All agreed yes

Additional

Are there any questions you don't feel are relevant?

Read out changes: inclusion of demographics, all happy to answer. Id 2 queried education answer, felt was confusing especially if gone back to 'school'. Hadn't noticed the word 'full time' suggested putting it in bold.

Are there any questions you feel should be included?

none

Anything you would like to add?

Id 1: should I include somewhere that if the mother wanted to completely move to bottles or if it was a complementary bottle? Discussed due to analysis I could analyse both scenarios

Feasibility discussion

Asked if on-line was a good medium to reach mothers?

Yes – should send to NCT, tweet woman's hour, mumsnet.

Appendix J Coded, and merged and recoded categories

Coding

Question 5 - Reasons to introduce a bottle - 39 mothers who selected 'other' reported they wanted to introduce a bottle to their baby due to 'attending an event'. These cases were coded 'Attending an event', n = 39.

Question 6 – Frequency to feed - All 11 mothers who selected 'other' reported that they wanted to give a bottle to their baby as a 'one off event'. 'Other' was recoded to 'one off event' and merged with 'occasionally not on a daily basis' for further analysis.

Questions 11 & 12 – Cases were coded as 'refusal' or 'eventual acceptance' using data from these questions.

Question 16 – Hindsight - Free text was coded in relation to whether in hindsight mothers would have done anything different to try to prevent bottle refusal occurring. Four categories were coded: would have given a bottle earlier, would have considered giving a bottle earlier, would not have done anything different, would not have offered a bottle in the first place. This was not a compulsory question and there were 231 missing values due to mothers not completing this question.

Question 21 - Job classification - Job title was coded from free text using the online ONS occupation coding tool into 9 categories (ONS 2016). Twenty eight cases could not be coded due to the reported occupation not being recognised and were excluded for this question but retained for all other analysis.

Merged and recoded categories

The categories of 'unemployed' and 'students' were merged and recoded to give Unemployed/student

The categories of '18-19' and '20-24' were merged and recoded to 18-24

Number of methods used - The categories of '9' and '8' methods to introduce baby to a bottle were merged to reduce categories to >=8

Number of sources of advice used - The categories of '6' and '5' sources of advice were merged and recoded to give >=5

Appendix K Coding and theming for 'Other' reasons to introduce a bottle

Coded reason	N = 112, n (%)	Theme
Maternal illness/hospitalisation	19 (17)	Health/medical related
Baby weight loss	12 (11)	
Baby illness/hospitalisation	7 (6)	
Baby requiring medication from a bottle	4 (3)	
Informed after hospital procedure not to breastfeed	1 (1)	
Advised to give bottle after tongue tie division	1 (1)	
Tongue tie	7 (6)	
Pregnant	4 (3)	
Didn't want to feed in public	12 (11)	Breastfeeding related
Breast/nipple trauma/thrush/mastitis	9 (8)	
Breast refusal	4 (3)	
Previous bottle refusal	4 (3)	
Expressing for comfort and not wanting to waste milk	2 (2)	
Maternal tiredness/exhausted due to breastfeeding	9 (8)	
In case of an emergency	6 (5)	Forward planning
In preparation for nursery	3 (3)	
In preparation for ceasing breastfeeding	3 (3)	
Wanting to give water	2 (2)	
Baby too clingy	2 (2)	Misc.
Part of study researching teats for breastfed babies	1 (1)	
Total	112 (100)	

Appendix L Interview schedule

Ice breakers

Gain consent (written/verbal)

Thank mum for agreeing to be interviewed.

Discuss confidentiality. Remind that interview will be recorded. May need to come back to them.

Going to use the interview to explore/expand on the overall findings of the questionnaire a bit more, also to give opportunity for mum to discuss her experience in more detail

How did you find out about the study?

About your breastfeeding experience

How long have you been breastfeeding for? (if you are not breastfeeding now how long did you breastfeed for?)

Can you tell me about your breastfeeding experience?

About introducing a bottle

Why did you want to introduce a bottle to your baby? (what were the circumstances behind introduction? any 'pressures' to do so - if so why? own decision?)

What are your thoughts on partner/ family member to be able to feed your baby? (if should be involved – why? if not why?)

What information did you receive on breast with bottle feeding? (during pregnancy? postnatally? what was the content? if received none - why?)

Who/where did you go for advice about introducing a bottle? (what were the responses/information from sources of advice? If did not seek advice – why?)

How did you decide on when to introduce a bottle? (timing affected by what/whom?)

About managing bottle refusal

Where did you go to for advice for what methods to use? (no advice sought - if so why? decisions behind where you went to for advice used?)

What methods did you use to try to introduce your baby to a bottle? (multiple methods used? why did you choose to use these methods? anyone else involved?)

How successful were the methods you used? (why do you think they did/didn't work?)

About support

What support did you seek/receive during bottle refusal? (no support sought - If so why? decisions behind the support you sought?)

What was the nature of the support? (how helpful/unhelpful was the support?)

How do you think mothers can be supported when they are experiencing bottle refusal? (should the topic be discussed and when - if at all?)

About the potential impact

Can you tell me how you felt during the time your baby refused a bottle? (initially? as bottle refusal continued? If your baby eventually accepted?)

Can you tell me about any impact your baby's refusal to accept a bottle had/have upon you? (what led to the impact and why? impact upon others – what and why? no impact? – why? positive impact? – why?)

About why your baby refuses

Why do you think your baby refuses/refused to have a bottle?

Do you have anything else to add? Well I've no more questions, thank you for taking part.

Appendix M Forum post guide

Posts about introducing a bottle

Posts about why mothers wanted to introduce a bottle to their baby (include: information they sought and received, who they went to for advice, where they went to for advice, decisions on when to introduce a bottle)

Posts about managing bottle refusal

Posts about advice on what methods to use

Posts about which methods mothers had already used/were using

Posts about how successful/unsuccessful methods were (including why they think they did/didn't work)

Posts about support

Posts about support did during bottle refusal (include: who supported, what support sought, helpful/unhelpful?)

Posts about how mothers could/should be supported

Posts about the potential impact

Posts about how mothers felt/were feeling (include those who eventually accepted)

Posts about the impact upon the mother (include others, breastfeeding etc,)

Post about why babies refuse a bottle

Posts about nipple confusion/delaying introduction of a bottle

Posts about bottle refusal being a normal response/due to attachment etc

Any other posts that could contribute (if in doubt capture post)