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Toward a Women-Centred Approach to Infant Feeding Research

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Toward a Women-Centred Approach to Infant Feeding Research

by

Lynne Ellen Callaghan

A thesis submitted to the University of Plymouth
in partial fulfilment for the degree of

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For Joe and Kira

Lynne Ellen Callaghan

Toward a Women-Centred Approach to Infant Feeding Research

Abstract

This thesis aimed to provide an integrated model of infant feeding, centred on women's experiences. Two studies were employed in order to meet this aim. Firstly, a questionnaire-based longitudinal study within a Social Cognitive framework was carried out in order to understand the internal and external processes involved in the infant feeding experience. Eighty-five first time mothers participated in this study. Participants were assessed at three stages; once during pregnancy, once at six to eight, and again at four to six months postpartum. The results of the longitudinal study supported the use of the Social Cognitive framework, and more specifically the applications of both the Theory of Reasoned Action (Ajzen & Fishbein, 1980), and Self-Efficacy Theory (Bandura, 1977). Further, analysis revealed support for the conceptualisation of Social Support in this study, and enhanced understanding of the role of external variables. The second study contained within this thesis was a qualitative interview-based study of the infant feeding experiences of eight participants of the longitudinal study who volunteered to be interviewed. The combination of the results of the quantitative longitudinal study and the qualitative study gave rise to a reconceptualisation of infant feeding encompassing three phases; the decision phase, the initiation phase, and the maintenance phase that were formed and are themselves guided by internal and external processes based on women's individual experiences. It is proposed that this integrated model can be used as a platform for the furthering of women-centred theoretically based infant feeding research, and furthermore, the development of women-centred, evidence-based practice.

Contents

Title of chapter / section	Page number
Acknowledgements	xxii
Author's declaration	xxiii
Chapter 1: Conceptual Framework	1
1.1 The benefits of breastfeeding	4
<i>1.1.1 Physical benefits to infants</i>	5
<i>1.1.2 Physical benefits to mothers</i>	7
<i>1.1.3 Psychological benefits of breastfeeding</i>	10
1.2 Breastfeeding problems	13
1.3 Focusing on women's experiences	26
1.4 Platform for research	36
1.5 Thesis outline	41
Chapter 2: Theoretical Framework:	
The Theory of Reasoned Action	43
2.1 The search for an appropriate Social Cognition Model	49
2.2 Overview of the Theory of Reasoned Action	51
<i>2.2.1 Assumptions of the Theory of Reasoned Action</i>	51
<i>2.2.2 Attitudinal component</i>	54

2.2.2.1 <i>General attitude</i>	54
2.2.2.2 <i>Behavioural beliefs and outcome evaluations</i>	57
2.2.3 <i>Normative component</i>	59
2.2.3.1 <i>Subjective norm</i>	59
2.2.3.2 <i>Normative beliefs and motivation to comply</i>	61
2.2.4 <i>Integrated model</i>	63
2.2.5 <i>Summary of overview of the Theory of Reasoned Action</i>	65
2.3 Review of the Theory of Reasoned Action Literature	65
2.3.1 <i>Item generation methods and scale construction</i>	70
2.3.2 <i>Theoretical components and component-relationships measured</i>	75
2.3.3 <i>Statistical analysis used in applications of the Theory of Reasoned Action</i>	85
2.3.4 <i>Summary of review of the Theory of Reasoned Action literature</i>	91
2.4 The application of the Theory of Reasoned Action to infant feeding	92
2.5 Theory of Reasoned Action chapter summary	101
 Chapter 3: Maintenance Issues: Self-Efficacy, Social Support And External Variables	 103
3.1 The application of Self-Efficacy Theory to infant feeding	103
3.1.1 <i>Self-Efficacy Theory</i>	104
3.1.2 <i>Review of the Self-Efficacy Theory Literature</i>	110
3.1.3 <i>Self-Efficacy Theory and infant feeding research</i>	116
3.2 The application of social support to infant feeding	120

3.2.1 <i>The conceptualisation of social support</i>	120
3.2.2 <i>The application of social support in the infant feeding literature</i>	124
3.3 The influence of external variables on infant feeding	130
3.3.1 <i>The effect of formula supplementation on infant feeding</i>	130
3.3.2 <i>The effect of birth experience on infant feeding</i>	132
3.3.3 <i>The effect of sociodemographic characteristics on infant feeding</i>	134
3.3.4 <i>Summary of external variables</i>	121
3.4 Research Questions	135
3.4.1 <i>Research questions based on the Theory of Reasoned Action</i>	136
3.4.2 <i>Research questions based on Self-Efficacy Theory</i>	137
3.4.3 <i>Research questions based on Social Support</i>	137
3.4.4 <i>Research questions based on external variables and infant feeding experience</i>	138
3.4.5 <i>Summary of Research questions</i>	139
 Chapter 4: Instrument Development	 140
4.1 Design	140
4.2 Scale development study	143
4.2.1 <i>Recruitment</i>	145
4.2.2 <i>Participants and procedure</i>	148
4.2.3 <i>Analysis</i>	150
4.3 The Breast and Bottle-feeding Attitude Scale	151
4.3.1 <i>Attitudes</i>	151
4.3.2 <i>Behavioural beliefs</i>	152

4.3.3 Normative beliefs	154
4.3.4 Summary of the development of the Breast and Bottle-feeding Attitude Scale	155
4.4 The Breast and Bottle-feeding Self-Efficacy Scale	157
4.5 The Breast and Bottle-feeding Social Support Scale	160
4.6 Sociodemographic Variables Questionnaire	163
4.7 Details of Birth Questionnaire	165
4.8 Infant Feeding Details Questionnaire	165
4.9 Development of the Qualitative Study Interview Schedule	166
4.10 Instrument development study summary	168
Chapter 5: From Belief to Behaviour?	170
5.1 Method	171
5.1.1 Recruitment	171
5.1.2 Participants and procedure	176
5.2 Individual analyses of the Breast and Bottle-feeding sections of the Attitude Scale	179
5.2.1 The relative importance of the attitudinal and normative components in the prediction of behavioural intention	179
5.2.1.1 Predicting intention to breastfeed	179
5.2.1.2 Predicting intention to bottle-feed	183
5.2.2 The mediating role of behavioural intention	184
5.2.2.1 The mediating role of behavioural intention regarding breastfeeding behaviour	185

5.2.2.2 <i>The mediating role of behavioural intention regarding bottle-feeding behaviour</i>	189
5.3 Direct versus indirect measures of attitude and subjective norm	191
5.3.1 <i>Comparison of direct and indirect measures of attitude and subjective norm in predicting breastfeeding intention</i>	193
5.3.2 <i>Comparison of direct and indirect measures of attitude and subjective norm in predicting bottle-feeding intention</i>	196
5.4 The determinants of attitude and subjective norm	200
5.4.1 <i>Determinants of breastfeeding attitude and subjective norm</i>	201
5.4.2 <i>Determinants of bottle-feeding attitude and subjective norm</i>	205
5.5 Understanding infant feeding decisions	209
5.6 Discussion	214
 Chapter 6: Theoretical explanations of the maintenance of infant feeding: Application of Self-Efficacy Theory and Social Support to Breast and Bottle-feeding	 219
6.1 Recruitment and Procedure	219
6.2 Self-Efficacy Analysis	221
6.2.1 <i>The effect of type of self-efficacy expectancy</i>	222
6.2.2 <i>The effect of stage of study</i>	225
6.2.3 <i>The role of self efficacy expectancies and subsequent infant feeding behaviour</i>	228
6.2.4 <i>The effect of infant feeding experience</i>	229
6.3 Social Support Analysis	232

6.3.1 Antenatal Social Support	233
6.3.1.1 Antenatal stage: emotional support	233
6.3.1.2 Antenatal stage: tangible support	235
6.3.1.3 Antenatal stage: informational support	237
6.3.1.4 Antenatal stage: appraisal support	239
6.3.1.5 Summary of antenatal stage social support	241
6.3.2 The effect of infant feeding experience on breast and bottle-feeding social support	242
6.3.2.1 Breastfeeding social support: Comparison between breastfeeders and mixed feeders	243
6.3.2.2 Bottle-feeding Social Support: Comparison between bottle-feeders and mixed feeders	251
6.3.2.3 Summary of Social Support	258
6.4 Discussion	259
 Chapter 7: External Variables and the Infant Feeding Experience	 264
7.1 The effect of sociodemographic variables on infant feeding behaviour and maintenance	264
7.1.1 The effect of age	265
7.1.2 The effect of marital status	266
7.1.3 The effect of education	268
7.1.4 Summary	269
7.2 Infant feeding practices	270
7.3 Birth experience	279

7.4 Problems with infant feeding	284
7.5 Women's experiences of infant feeding	289
<i>7.5.1 Profiles of qualitative study participants</i>	289
<i>7.5.2 Infant feeding decisions</i>	291
<i>7.5.3 Initiation of the chosen method of infant feeding</i>	294
<i>7.5.4 Maintenance of the chosen method of infant feeding</i>	299
<i>7.5.5 Summary</i>	302
7.6 Discussion	303
Chapter 8: Discussion: Toward an integrated approach to women-centred infant feeding research	306
8.1 Statement of findings	307
<i>8.1.1 Principle findings of the application of the TRA to infant feeding</i>	307
<i>8.1.2 Principle findings of the application of SET to infant feeding</i>	308
<i>8.1.3 Principle findings of the application of Social Support to infant feeding</i>	310
<i>8.1.4 Principle findings of the understanding of external variables in relation to infant feeding</i>	312
8.2 The three phases of the infant feeding experience	314
8.3 Examining the evidence	319
<i>8.3.1 The decision phase</i>	319
<i>8.3.2 The initiation phase</i>	323
<i>8.3.3 The maintenance phase</i>	327

8.4 Toward an integrated model of the infant feeding experience of first time mothers	332
<i>8.4.1 Synopsis</i>	332
<i>8.4.2 Formulation and explanation of the model</i>	334
8.5 Limitations of the study	338
8.6 Recommendations	341
<i>8.6.1 Theoretically based recommendations for future research</i>	341
<i>8.6.2 Practical recommendations for women-centred, evidence- based practice</i>	344
8.7 Conclusion	349
 Appendices	
Appendix 1: Instrument development study interview schedule	351
Appendix 2: Press release	352
Appendix 3: Breast and bottle-feeding behavioural beliefs and sources	353
Appendix 4: Breast and bottle-feeding modal salient referents and sources	355
Appendix 5: Breastfeeding and Bottle-feeding Attitude Scale	356
Appendix 6: Generalised Self-Efficacy Scale	369
Appendix 7: Antenatal Self-Efficacy Scale	370
Appendix 8: Postnatal Self-Efficacy Scale	372
Appendix 9: Problems with Infant Feeding Scale	375

Appendix 10: Antenatal Social Support Scale	376
Appendix 11: Postnatal Social Support Scale	378
Appendix 12: Antenatal Sociodemographic Variables Questionnaire	380
Appendix 13: Postnatal Sociodemographic Variables Questionnaires	382
Appendix 14: Details of Birth Questionnaire	384
Appendix 15: Infant Feeding Details Questionnaires	387
Appendix 16: Qualitative Study Interview Schedule	391
Appendix 17: Antenatal and Postnatal Pilot Studies	393
Appendix 18: Leaflet administered to hospital tour participants	439
Appendix 19: Longitudinal study information sheet	440
Appendix 20: Longitudinal study consent form	442
Appendix 21: Normal probability plot for breastfeeding MLR analysis	444
Appendix 22: Normal probability plot for bottle-feeding MLR analysis	445
Appendix 23: Longitudinal study: Examples of residual plots for SET analysis	446
References	447
Publication	478
List of Tables	
Table 1: Meta Analysis	67
Table 2: Scales and questionnaires to be administered at each stage of the study.	143

Table 3: Demographic characteristics of scale development participants.	150
Table 4: Significant correlations of behavioral beliefs and attitude, and normative beliefs and subjective norm for breastfeeding.	202
Table 5: Significant correlations of behavioral beliefs and attitude, and normative beliefs and subjective norm for bottle-feeding.	205
Table 6: Results of the F-tests between results of the SLRs and comparative MLR analyses.	208
Table 7: Number of participants to have completed the GSES and the Breast and Bottle-feeding Self-Efficacy Scales at each stage of the longitudinal study	223
Table 8.1: Antenatal social support: Perceived need for emotional support for breastfeeding and bottle-feeding.	234
Table 8.2: Antenatal social support. Perceived need for tangible Support for breastfeeding and bottle-feeding.	236
Table 8.3: Antenatal social support. Perceived need for informational Support for breastfeeding and bottle-feeding.	238

Table 8.4: Antenatal social support. Perceived need for appraisal support for breastfeeding and bottle-feeding.	240
Table 9.1: Frequency of perceived need for breastfeeding emotional Support for breastfeeders and mixed feeders at stage 2.	246
Table 9.2: Frequency of perceived need for breastfeeding emotional Support for breastfeeders and mixed feeders at stage 3.	246
Table 10.1: Frequency of perceived need for breastfeeding tangible Support for breastfeeders and mixed feeders at stage 2.	247
Table 10.2: Frequency of perceived need for breastfeeding tangible Support for breastfeeders and mixed feeders at stage 3.	247
Table 11.1: Frequency of perceived need for breastfeeding informational Support for breastfeeders and mixed feeders at stage 2.	248
Table 11.2: Frequency of perceived need for breastfeeding informational Support for breastfeeders and mixed feeders at stage 3.	248
Table 12.1: Frequency of perceived need for breastfeeding appraisal Support for breastfeeders and mixed feeders at stage 2.	249

Table 12.2: Frequency of perceived need for breastfeeding appraisal	
Support for breastfeeders and mixed feeders at stage 3.	249
 Table 13.1: Frequency of perceived need for bottle-feeding emotional	
Support for bottle-feeders and mixed feeders at stage 2.	254
 Table 13.2: Frequency of perceived need for bottle-feeding emotional	
Support for bottle-feeders and mixed feeders at stage 3.	254
 Table 14.1: Frequency of perceived need for bottle-feeding tangible	
Support for bottle-feeders and mixed feeders at stage 2.	255
 Table 14.2: Frequency of perceived need for bottle-feeding tangible	
Support for bottle-feeders and mixed feeders at stage 3.	255
 Table 15.1: Frequency of perceived need for bottle-feeding informational	
Support for bottle-feeders and mixed feeders at stage 2.	255
 Table 15.2: Frequency of perceived need for bottle-feeding informational	
Support for bottle-feeders and mixed feeders at stage 3.	256
 Table 16.1: Frequency of perceived need for bottle-feeding appraisal	
Support for bottle-feeders and mixed feeders at stage 2.	256

Table 16.2: Frequency of perceived need for bottle-feeding appraisal Support for bottle-feeders and mixed feeders at stage 3.	257
Table 17: Frequency of marital status with regard to duration of Breastfeeding.	267
Table 18: Frequency of education achieved with regard to duration of breastfeeding.	269
Table 19: Current infant feeding methods being used by participants at the postnatal stages of the longitudinal study	271
Table 20: Type of delivery and breastfeeding duration experienced by who had experienced problems with the birth	280
Table 21: Pain relief used by participants during labour and delivery	282
Table 22: Coping scores of participants who have experienced Breastfeeding problems	286
Table 23: Coping scores of participants who have experienced bottle-feeding problems	288

List of Figures

Figure 1: Diagram to show relationships among the theoretical components of the Theory of Reasoned Action (Ajzen & Fishbein, 1980).	54
Figure 2: Relationship between the components of the TRA regarding first-time mothers' decision to breastfeed.	180
Figure 3: Relationship between the components of the TRA regarding first-time mothers' decision to bottle-feed.	183
Figure 4: Relationship between the components of the TRA regarding first-time mothers' decision to breastfeed.	187
Figure 5: The mediating role of behavioural intention to breastfeed regarding infant feeding behaviour.	188
Figure 6: Relationship between the components of the TRA regarding first-time mothers' decision to bottle-feed.	190
Figure 7: The mediating role of behavioural intention to bottle-feed regarding infant feeding behaviour.	191

Figure 8.1: Ability of direct measure of attitude and subjective norm to predict behavioural intention to breastfeed.	193
Figure 8.2: Ability of cross-products measurement of attitude and subjective norm to predict behavioural intention to breastfeed.	194
Figure 8.3: Ability of sums of belief measurement of indirect attitude and subjective norm to predict behavioural intention to breastfeed.	195
Figure 9.1: Ability of direct measure of attitude and subjective norm to predict behavioural intention to bottle-feed.	197
Figure 9.2: Ability of cross-products measurement of attitude and subjective norm to predict behavioural intention to bottle-feed.	197
Figure 9.3: Ability of sums of belief measurement of indirect attitude and subjective norm to predict behavioural intention to bottle-feed.	198
Figure 10.1: Model proposed by backward elimination method to contain behavioural beliefs that are most predictive of breastfeeding attitude.	204

Figure 10.2: Model proposed by backward elimination method to contain normative beliefs that are most predictive of breastfeeding subjective norm.	204
Figure 11.1: Model proposed by backward elimination method to contain behavioural beliefs that are most predictive of bottle-feeding attitude.	206
Figure 11.2: Model proposed by backward elimination method to contain normative beliefs that are most predictive of bottle-feeding subjective norm.	207
Figure 12: Differential model and the relationship with choice intention	210
Figure 13: The ability of choice intention and differential intention to predict behaviour.	212
Figure 14: Finalised differential model.	213
Figure 15: Graph to show the types of breastfeeding problems experienced by participants at stage 2	284
Figure 16: Graph to show the types of breastfeeding problems experienced by participants at stage 3	285

Figure 17: Graph to show the types of bottle-feeding problems experienced
by participants at stage 2 287

Figure 18: Graph to show the types of bottle-feeding problems experienced
by participants at stage 3 287

Figure 19: An integrated model of first-time mothers’ infant feeding experience 333

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Author's Declaration

This is to certify that I am responsible for the work submitted in this thesis. The original work is my own except as specified in the acknowledgements. At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award. This study was financed with the aid of a studentship from the Department of Psychology, University of Plymouth. A programme of advanced study was undertaken, which included a postgraduate course on psychological research methods. Relevant conferences were attended at which a paper and a poster were presented. The abstract of the presented paper was published in the conference proceedings.

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12/11/02

Conceptual Framework

Despite the distinct advantages of breastfeeding, only 66% of mothers in the UK initiate breastfeeding, a figure that falls to 27% at four months postpartum (Foster, Lader & Cheesbrough, 1995). This study seeks to understand how first time mothers make the decision to breast or bottle-feed their babies, the influences upon this decision, and the factors preceding the resulting behaviour. This will be achieved from a women-centred perspective by means of a longitudinal study that will examine women's infant feeding decisions and behaviours within a theoretically based framework.

An editorial in the *Lancet* (1986, pp. 17-18, cited by Veraldi, 1988) stated that, "at least 95% of mothers are able, if they wish, to breastfeed their infants for 4-6 months and can provide enough milk over this period to allow their babies to grow to their full potential." However, the Office for National Statistics (Foster et al., 1995) Infant Feeding Survey estimates that 75, 000 new mothers in the UK cease breastfeeding their babies in the first week after delivery. Of these, a mere 1% (750) had only intended to breastfeed their babies for this short period. Consequently, if it is to be assumed that women who initiate breastfeeding actually intended to breastfeed their babies, what happens during the postnatal period that accounts for this steep decline in breastfeeding rates? Furthermore, why do so many mothers in the UK choose not to grant their babies the best possible start in life by breastfeeding, and instead choose bottle-feeding?

It is this preconceived notion of mothers 'choosing' not to do the best for their babies that is at the heart of this study, and what in part drives the women-centred focus of the

research. It is widely assumed that prospective mothers have a choice regarding which infant feeding method they adopt for their babies; either breast feeding or bottle-feeding, and they are often encouraged to explore and in many cases make this decision antenatally, both during routine antenatal appointments and in the writing of birth plans. The assumption of straightforward choice of infant feeding practice is transferred to the postnatal period despite the fact that a wide variety of circumstances may have inhibited what previously appeared to be a simple choice decision (e.g. type of birth; maternal morbidity; neonatal morbidity, Ellis & Hewat, 1984). It is unlikely that many mothers, regardless of age, race, socio economic status or education, would choose not to maximise their babies' protection against disease or make vulnerable their own health, by simply choosing not to breastfeed.

From my own experience, I felt terribly let down by this assumption of (simple) choice, and have met many others who have had similar experiences. At the age of nineteen I found myself to be unexpectedly pregnant during the first year of my degree in psychology. From my first antenatal appointment when infant feeding was discussed, I knew that I wanted to breastfeed my baby. My mother had breastfed my brothers and myself and I saw it as the most natural and the best way to feed my baby. I intended to breastfeed for at least 6 months in order that my baby should have the full benefits of the breast milk, and I armed myself with all of the latest literature. Despite my age and the fact that the pregnancy was unplanned (Feinstein, Berkelhamer, Gruszka, Wong & Carey, 1986), I was determined to breastfeed my baby. However, the reality of breastfeeding for me was that for ten days I breastfed my son every two to three hours with bleeding, cracked nipples which eventually culminated in a raging mastitis which I was warned could progress to an abscess. This, coupled with wounds resulting from a 48-hour labour, resulted in my making one of the most difficult decisions of my life – to give up breastfeeding. I felt as though I had no choice. I felt a failure.

Part of the way through this study, I felt pregnant again. As with my son, I desperately wanted to breastfeed my new baby. With all of the reading that I had done for this research, I felt that I was well equipped to face whatever was thrown at me. I even began to feel that if I had tried harder, perhaps it would have worked with my son... However, despite a planned pregnancy, an easy birth and all of the knowledge and perseverance I could muster, I only managed to breastfeed my daughter for eight days. Cracked bleeding nipples, raging mastitis and in this instance a serious uterine infection, led me again to make the difficult decision to give up breastfeeding. Again, I felt a failure.

After the feelings of grief had subsided, this experience strengthened my resolve to continue this research in order to explore the notion that infant feeding decisions are not (always) as simple as a basic choice, and that in order to understand women's decisions concerning breastfeeding and bottle-feeding, it is vital to centre the research on *women's* experiences. Although the literature states that 95-98% of women *can* breastfeed (Veraldi, 1988), far less than 95-98% actually *do* breastfeed in the UK (Foster et al., 1995). Instead of laying the blame on the mothers, it is essential that we understand women's experiences of infant and particularly breastfeeding in order that a full understanding of the significant issues behind infant feeding choice and behaviour might be achieved.

From the literature on infant feeding, and from my own personal experience revealed above, it would appear that for the woman who intends to breastfeed her baby, breastfeeding problems fall into three categories. These are, initiation problems, maintenance problems and practical/cumulative problems. However, prior to addressing each of these problems, this chapter will briefly examine the evidence for the benefits of breastfeeding made by the literature, thereby providing the context of the study.

1.1 The benefits of breastfeeding

"Breastfeeding gives your baby the best possible start in life," (Health Education Authority, 1997, p. 2).

"Breastfeeding is best for babies. There's no better food than breast milk for your baby, and breastfeeding is good for you too," (Boots, 1998, p. 3).

"YOUR breastmilk is perfect for YOUR baby and adapts to meet you baby's changing needs," (UNICEF, n.d., p. 3).

"By breastfeeding, you are able to give your baby exactly what she needs, when she needs it – and it's free." (Mothercare, 1998, p. 2)

*"When you breastfeed, you can be sure that you are giving your baby the best possible start in life. Breast milk contains **everything** a baby needs for healthy growth and development. It is the **perfect food** for your newborn baby." (Department of Health, 1998, p. 1).*

New and pregnant mothers can be left in no doubt by the current literature that breastfeeding is by far the superior form of infant feeding available to them, with health and psychological benefits both for themselves and their baby (Dermer, 1998; Labbok, 1999), which are unequalled by any method of artificial feeding. The wide array of lay literature regarding infant feeding, which is freely and widely available in clinics and antenatal classes throughout the UK is dominated by assertions of the myriad of unique advantages of breastfeeding over artificial feeding. The extracts in the text box above, taken from a selection of the available lay literature, show how declarations of the extraordinary properties and incomparability of breast milk and breastfeeding are designed to eradicate any reservations that new and pregnant mothers may have about choosing to breastfeed their babies.

The benefits of breastmilk have been widely researched as well as being clearly documented throughout history. Valerie A. Fildes (1986), in her historical account of infant feeding from 1500 – 1800, found documentation to account for knowledge of the benefits of breastfeeding, both for the infant and mother individually, and for the relationship between them. Letters written by women who gave birth at the end of the nineteenth century also show how far the benefits were thought to extend. For example, one woman wrote, "...the mother who works and worries generally loses the milk which is so necessary for the baby. If only mothers could take it easy, I am certain we could rear a much better race." (Llewelyn Davies, 1978, p.102). While it is doubtful that breastfeeding may result in the rearing of a superior race, what benefits have been established by research to date?

1.1.1 Physical benefits to infants

Today, knowledge of the properties of breast milk, and research investigating the health of breast and bottle-fed infants has allowed not only specific advantages of breastfeeding over artificial feeding to be known, but also health preventive properties of breast milk to be identified (Anholm, 1986). For example, one of the best known benefits of breastmilk is the presence of antibodies to enable the newborn to fight infections (Wang & Wu, 1996). Some studies have found links between decreased incidence of disease or illness such as gastrointestinal disorders in babies who have been breastfed as opposed to artificially fed (e.g. Kakai, Bwayo, Wamola, Ndinya-Achola, Nagelkerke, Anzala & Plummer, 1995). While such findings are important, it has been argued that they need to be accepted with caution. Williams (1994) in his statement to the Standing Committee on Nutrition of the British Paediatric Association highlighted the problem of case detection bias in such studies, whereby the method with which a baby is being fed might predispose researchers to record or ignore certain outcomes. For example, a baby being exclusively breastfed

might be less likely to be admitted to hospital for a gastrointestinal disorder than an infant being exclusively bottle-fed, due to concerns about separating the lactating mother and her infant. In order to compensate for this bias, Williams (1994) argues that researchers should clarify the outcomes to be measured in the study without reference to a particular feeding method. For instance, if it is known that breast fed babies are less likely to be hospitalised, then the outcome measure for a baby suffering from a gastrointestinal disorder could be, for example, initial diagnosis rather than hospitalisation.

Decreased incidence of asthma, eczema and related allergies have been shown in children who have been given breastmilk as opposed to formula (e.g. Pratt, 1984). A recent prospective study has also found that the duration of breastfeeding plays an additionally significant role in the reduction of the occurrence of asthma, if infants are exclusively breastfed for four months (Oddy, 2000). However, Taylor (1984) casts doubt on the now widely held assumption that breastfeeding protects against allergies such as asthma and eczema. Again, bias was considered to be a problem when ascertaining outcomes between breast and bottle-fed babies, with many studies being led by what Taylor (1984, p. 356) terms “breast-feeding enthusiasts”. The diagnoses of asthma and eczema can also be problematic, which, coupled with the arguably biased perspective of the researcher, could account and ought to be considered when drawing conclusions regarding the results of such research.

Normal physical and cognitive development has been found to be optimised in infants fed breastmilk compared with those fed infant formula (e.g. Jones, Riley & Dwyer, 2000; Lanting, Fidler, Huisman, Touwen & Boersma, 1994). Scientific advances in the study of the biochemistry of breastmilk have also shown how breastmilk itself changes its composition, not only in tune with the baby’s chronological development (e.g. colostrum), but also during each feed within which the baby receives both foremilk and hindmilk

(Lawrence, 1989). Therefore, exclusive breastfeeding allows all of the nutritional needs of the infant to be met, and optimum physical and developmental level to be achieved until at least 4 months postpartum (Wang & Wu, 1996).

Overall, research suggests that the potential physical benefits of breastfeeding for infants cannot be underestimated. However, as has been discussed above, the research used to uncover these benefits may suffer from some bias and so potentially may exaggerate the benefits of breastmilk over formula for infants. Hence, results should be interpreted with a degree of caution. The following section focuses on research carried out to reveal and provide evidence for the physical (often, long-term) benefits of breastfeeding for the mother.

1.1.2 Physical benefits to mothers

Many studies have revealed physical benefits of breastfeeding for the mother both in the immediate postpartum period (e.g. reduced risk of postpartum haemorrhage due to faster contraction of the uterus, UNICEF, 1998), and in later life. Specifically, studies are increasingly focusing on the relationship between the decreased risk of breast cancer in both premenopausal (Case Control Study Group, 1993, cited by Henschel & Inch, 1996; Enger, Ross, Henderson & Bernstein, 1997; Freudenheim, Marshall, Vena, Moysich, Muti, Laughlin, Nemoto & Graham, 1997) and postmenopausal women (Cumming & Klineberg, 1993, cited by Henschel and Inch, 1996; Freudenheim et al. 1997; Newcomb, Egan, Titus-Ernstoff, Trentham-Dietz, Greenberg, Baron, Willett & Stampfer, 1999).

Unlike the studies reporting benefits of increased duration of breastfeeding to infants, this has been found either to have no inverse relationship to breast cancer risk (e.g. Michels, Willett, Rosner, Manson, Hunter, Colditz, Hankinson & Speizer, 1996) or the inverse

relationship reported is regarded as modest (e.g. Freudenheim et al., 1997; Newcomb et al., 1999). Similarly, although breastfeeding has been shown to be associated with reduced risk for epithelial ovarian cancer (e.g. Siskind, Green, Bain & Purdie, 1997; Hartage, Schiffman, Hoover, McGowan, Leshner & Norris, 1989), not only is this association weak and possibly lacking for postmenopausal women (Siskind et al, 1997), no inverse relationship between increased *duration* of breastfeeding and epithelial ovarian cancer has been reported (Siskind et al, 1997; Hartage et al, 1989). Despite these weak relationships, Lobbok (1999) declares that women should be made aware of the trend (however statistically non significant), which suggests a relationship between breastfeeding and decreased risk of both premenopausal and epithelial ovarian cancer upheld by a substantial proportion of the literature. Conversely, it is suggested here that the tenuous nature of the relationship between breastfeeding and decreased risk of both premenopausal breast cancer and epithelial ovarian cancer should also be disclosed in order that women can be made aware of the reality of the conclusions of the relevant research literature and so make an adequately informed choice.

While the importance of potential physical benefits for mothers should not be underestimated, the methodologies employed in the above studies (e.g. correlational and retrospective epidemiologic studies) may limit the nature of the conclusions that can be drawn. Indeed studies professing benefits of breastfeeding for the mother are considered “controversial by some” (Lobbok, 1999, pp. 491). For example, many of the studies focusing on breast and ovarian cancer employ retrospective techniques which are not only based on participant’s ability to recall events (often over a lengthy time scale), but equally are problematic regarding the ability to control for extraneous variables. A prospective study which has attempted to address this methodological issue by Michel et al. (1996) found no relationship between the two variables that might suggest a protective attribute of breastfeeding regarding breast cancer risk.

In order to reduce the consequences of extraneous variables on results, many studies employ Case Control Designs (e.g. Newcomb et al. 1999; Hartage et al., 1989 & Siskind et al., 1997). Each participant or group of participants (e.g. patients attending a clinic for treatment for breast cancer) is matched with an equivalent participant (or group) on variables that might be considered extraneous (e.g. age, ethnic origin and parity). Comparisons are then made between each group to discover, for example, if the number of months participants breastfeed has an inverse relationship with breast cancer risk (e.g. Newcomb et al., 1999). However, the researcher must ensure that the variables chosen to match experimental and control groups are not only appropriate but also sufficient in number if conclusions are to be drawn from such research and ultimately generalised. Studies differ in their inclusion criteria for controls. For example, some studies select control participants simply on the basis of age (e.g. Newcomb et al., 1999), whereas other researchers add ethnic origin as well as age to the inclusion criteria (e.g. Hartage et al., 1989). Ultimately, although selection of control participants is made more difficult for the researcher with the increase in inclusion criteria, the comparison of study participants with a control group is only useful if all other known risk factors, for example history of breast cancer, are accounted for.

The aforementioned concern, coupled with the retrospective design often used in such research, demonstrates how methodological issues can call results into question. However, inconsistency in researchers' definitions of breastfeeding (Dermer, 1998) have also yielded discrepancies concerning both interpretation of data and comparisons across studies. What might be regarded as exclusive breastfeeding by one researcher (e.g. the only nutrition given to the infant is by breastfeeding) might be very different to that of another researcher (e.g. the only milk the infant receives is breastmilk, but solid foods are also part of the regular diet) (Labbok & Krasovec, 1990). In order to clarify definitions, the Interagency

Group for Action on Breastfeeding (IGAB) including members from both The World Health Organisation (WHO) and their sister organisation, UNICEF agreed terminology which would allow breastfeeding behaviours to be classified appropriately. However, since then the WHO have proposed their own definitions of infant feeding behaviour (World Health Organisation, 1991), and consequently inconsistency in terminology in infant feeding research remains problematic (Labbok & Krasovec, 1990; Dermer, 1998). So far the discussion has focused on the separate potential physical benefits for mothers and their babies. The following section concerns the combined psychological benefits of breastfeeding for both mothers and infants.

1.1.3 Psychological benefits of breastfeeding

The biological benefits of breastfeeding for the infant discussed above are possible whether the infant is actually breastfed by the mother, or the mother's breastmilk is expressed in order to be given to the infant. However, the act of breastfeeding itself aids in the production of exactly the correct amount required by the infant, as the quantity drawn from the breast by the infant is replaced for the next feed. Moreover, it is the close physical contact between the mother-infant dyad that allows the act of breastfeeding to be psychologically beneficial to the relationship between them. The breastfeeding mother and her baby are entwined in this unique and compelling relationship, described by Kitzinger (1987, p.144) as "an intimate dialogue between two people." It is, therefore, the act of breastfeeding and the closeness and comfort that this affords, rather than the biochemical properties of breastmilk, that distinguishes breastfeeding as a powerful medium for attachment between mother and child.

Surprisingly, studies concerning the effects of breastfeeding on bonding between mother and infant in the scientific literature are scarce. Not only is the measurement of mother-

infant attachment problematic in itself due to the obligatorily subjective nature of the outcome, but also as each birth and postnatal experience is unique, possible extraneous variables are difficult to identify and control. As measures of the psychological effects of bonding are unattainable in neonates, studies investigating the psychological effects of breastfeeding on attachment in new mothers have focused either on maternal behaviour (e.g. Widström, Wahlberg Matthiesen, Eneroth, Uvnäs-Moberg, Werner & Winberg, 1990) or on the observable interactions between the mother-infant dyad (e.g. Kuzela, Stifter & Worobey, 1990). Early breastfeeding (i.e. immediately following the birth) has been found to have a positive effect on the mother-infant relationship, but it is as yet unclear as to how far reaching the consequences of such effects might be.

Mothers of premature infants who are feeding expressed breastmilk or formula by, for example, nasal gastric tube or cup to their babies, are encouraged to hold their baby in direct skin to skin contact on their chests, even expressing a little breastmilk from the breast to encourage the infant to have a taste of the milk and a lick of the breast (Lang, 1997). Although the psychological endowment of breastfeeding may be jeopardised in premature infants, it is vitally important that they receive breastmilk in order that they benefit from its physical properties (Lang, 1997). By preserving skin to skin contact, the infant is not only encouraged to ultimately breastfeed naturally, but is also able to enjoy the psychological benefits of breastfeeding by being skin-to-skin with his/her mother.

Such is the perceived importance of the psychological benefits of close skin to skin contact between mother and infant, Kangaroo Mother Care (KMC) was developed by Dr. E. Rey-Sanabria in 1978. KMC allows the mother to bond with her preterm infant in as satisfactory a way as mothers breastfeeding their healthy term babies (Tessier, Cristo, Velez, Giron, de Calume, Ruiz-Palaez, Charpak & Charpak, 1998). As soon as the infant has adapted to extra-uterine life, mothers are encouraged to hold (and if possible)

breastfeed their baby skin-to-skin and upright against them. KMC has not only been shown to promote good mothering (Tessier et al., 1998) and have an analgesic effect on the infant (Gray, Watt & Blass, 2000), but also to regulate the infant's body temperature, through utilising mothers as incubators (Tessier et al., 1998). Unfortunately, there is little scientific evidence to endorse the KMC method. However, several studies have found KMC to be as valuable a method of caring for the premature infant with regard to regulation of temperature until it has reached full gestational age as standard incubator care (Simkiss, 1999).

It is as yet unclear as to the short or long term psychological benefits of KMC to the mother-infant dyad. Moreover, it is uncertain that it is the act of breastfeeding that affords skin-to-skin contact, or the skin-to-skin contact itself which achieves the professed psychological benefits to mothers and babies. If KMC is shown to have analgesic and incubating properties as mentioned above (Gray et al., 2000; Simkiss, 1999), could bottle-feeding mothers who allow skin-to skin contact with their babies achieve the same degree of bonding and attachment as breastfeeding mothers?

The above section has focused on the physical and psychological benefits of breastfeeding to both mothers and babies. With the multiple and ever increasing knowledge of the benefits of breastfeeding, it is hard to understand why some mothers choose to artificially feed their babies. The following section of this chapter seeks to understand why some mothers do not breastfeed, or cease breastfeeding once initiated, by examining some of the problems associated with breastfeeding that can be encountered by women.

1.2 Breastfeeding problems

It was argued in the introduction to this chapter, that breastfeeding problems fall into one of three categories: initiation problems; maintenance problems and practical or cumulative problems. Each of these “types” will now be discussed in turn with reference to their effect on the behaviour of breastfeeding, their treatment and their potential effect on the breastfeeding experience of the woman.

In the general population of new mothers, potential initiation problems incorporate several types. Physical difficulties or morbidity resulting from the birth (both for the infant and mother) can have a severe effect on the initiation of breastfeeding, and its continued duration (Ellis & Hewat, 1984). However, if, for instance, an infant is premature and requires incubation, expressed colostrum and ultimately breast milk can often be fed by nasal gastric tube or cup, still allowing the infant to benefit from the physical properties of breast milk. Expected physical problems, such as for example, cleft palate in the infant, or flat / inverted nipples in the mother can also cause problems (although often temporarily) with initiation. For example, for the mother of an infant with a cleft pallet, modified positioning of the infant to an upright position can achieve satisfactory attachment to the breast (Lang, 1997). Flat or inverted nipples also pose problems with attachment, but with the correct advice and preparation, these can often be overcome (Byam-Cook, 2001).

Research upon which UNICEF’s 10 steps to successful breastfeeding are based, suggests greater likelihood of successful breastfeeding if mothers are given the opportunity to have prolonged contact with their babies soon after the birth (Riguard & Alade, 1990), and on demand thereafter. This knowledge, coupled with the increasingly common procedure of rooming in (Department of Health, 1993) lessen the possibility of breastfeeding problems due to lack of contact during the initiation stage. Where women are not given these

opportunities, however, it is essential that trained staff are on hand to provide information and support regarding breastfeeding when the mother has contact with her baby.

With appropriate intervention it is often possible for these initiation problems which are occasionally encountered in the general population, to be overcome in order that breastfeeding can be initiated and a routine established. Nevertheless, not all mothers whom, for example have either been through a traumatic birth, or who discover that their baby has a cleft palate are able to make best use of the resources available to them. This might be due to the shock or trauma that has befallen them, or the mothers might not indeed have access to optimal resources and expertise. Moreover, for some mothers the initiation of breastfeeding is not a safe option for their babies due to the problems of both HIV and drug addiction.

Mothers with HIV (who can give birth to healthy infants with planned caesarean section) run the risk of passing the infection onto their babies through breast milk (World Health Organisation, 1998). Although researchers are testing methods of treatment of HIV infected breastmilk to reduce transmission of infection (e.g. Orloff, Wallingford & McDougal, 1993) other methods of feeding such as formula or wet nursing by lactating HIV-negative women are more common choices for HIV-positive mothers and their health professionals (World Health Organisation, 1998). Similarly, mothers addicted to drugs such as cocaine and heroine can also damage their babies' health due the passage of drugs in their breastmilk. Though babies born to addicted mothers are consequentially addicted themselves at birth, the proportion of certain drugs such as heroin in breastmilk (Lawrence, 1989) can place the infant in further danger. The physical dangers aside, due to the unavoidably erratic life style of the drug user, it is unlikely that a routine conducive to breastfeeding could be established in order to either initiate or maintain breastfeeding.

The second set of problems relating to breastfeeding concern maintenance and can be considered in two categories: problems concerning education, and physical problems arising from breastfeeding. Firstly, education regarding balanced nutrition is vital during pregnancy and lactation. Although, “the quantity, protein content, and calcium content of [breast] milk are relatively independent of maternal nutritional status and diet,” (Lawrence, 1989, p.236), certain constituents of breastmilk (such as fatty acids and water soluble vitamins) and the physical health of the lactating mother herself require a nutritionally balanced diet (Kitzinger, 1987).

Although maternal malnutrition is not such a widespread issue in the UK as it is in developing countries, knowledge of what constitutes a balanced diet, particularly during pregnancy and lactation is often lacking or misguided. Mothers who are young and/or of low socio economic status often perceive healthy foods as expensive (e.g. Oakley, 1992), and are therefore unwilling to adopt a diet to accommodate their changing needs. The fast food culture that we live in today does not compel much of the population to think about good nutrition as a long-term aim and a foundation for later life. Research has shown that knowledge of the benefits of healthy foods increase the likelihood of an individual eating a healthy diet (e.g. Kristal, Bowen, Curry, Shattuck & Henry, 1990). It is therefore suggested here that without knowledge and understanding of the importance of good nutrition, it is unlikely that mothers living on a poor diet will have either a sufficient appreciation of the importance of breastfeeding their baby, or the ability to physically sustain themselves or their babies when breastfeeding. Although much of the infant feeding and pregnancy lay literature contains information and advice regarding maternal diet (e.g. Lees, Reynolds & McCartan, 1997), in order to be successful in modifying an individual’s dietary habits, such information should be taught as early as possible, ideally prior to the onset of pregnancy.

The British Government has assisted pregnant and new mothers on low incomes by providing milk tokens for many years. Milk tokens not only allow pregnant and breastfeeding mothers one pint of milk a day until their child is five years old, but also allows bottle-feeding mothers one tin (900 grammes) of their chosen formula milk each week until their baby reaches twelve months of age. Reports have suggested that a proportion of mothers in receipt of such benefits do not use the tokens for their intended purpose, and instead redeem the value of the token for 'junk' food and alcohol (Kelso, 1999). However, neither the nutritional value of the milk for both pregnant and breastfeeding mothers, nor the message sent by its provision by the Government should be underestimated.

Despite the provision of milk tokens, breastfeeding groups have long felt that simply providing one pint of milk a day to low-income breastfeeding women was insufficient both in supporting the complete nutritional requirements of breastfeeding, and also in encouraging such women to breastfeed. The Government has recently proposed a scheme whereby breastfeeding mothers would be given an allowance to buy healthy food in order to provide adequate nutrition for lactation. Although in principle, such a scheme could prove beneficial to low income nursing mothers, without sufficient education of the importance of balanced nutrition, it is likely that this scheme could also be subject to abuse.

Much of the argument behind the appeal for an extra allowance for breastfeeding mothers was related to the ability of bottle-feeding mothers to exchange the tokens for formula. It was argued that if bottle-feeding mothers are able to exchange their tokens for all that they needed for their bottle-fed baby (and therefore redeeming their token for a higher value), then surely breastfeeding mothers should be able to exchange their tokens for products for equivalent value. The Government has also come under attack simply for providing tokens,

which can be redeemed for formula as it could be argued that this provision simply encourages low-income mothers to bottle-feed their babies. This creates a dilemma – although it could be argued that the welfare token scheme enables low-income mothers to choose to bottle-feed their babies (McInnes & Tappin, 1996), surely it is vital that women should have the right to choose how to feed their babies?

Education regarding not only the nutritional and psychological benefits of breastfeeding, but also the practice of breastfeeding is essential for this method to be successfully maintained. Many new mothers today do not have the benefit of having mothers or other members of their family who have breastfed to whom they may look for support (e.g. Oakley, 1992). Therefore, when problems arise (e.g. how to continue breastfeeding on return to work; how to cope with breastfeeding in public) and health professionals are not available to offer advice, such women may believe that bottle-feeding is a safe and practical solution to whatever difficulty they are facing.

Lack of formal education has been shown to play a significant part in the duration of breastfeeding (e.g. Cooper, Murray & Stein, 1993) and may provide a considerable contribution to the specific educational gaps of nutrition and breastfeeding practice discussed above. Although N.H.S. antenatal classes are designed in part to educate new mothers about the benefits of breastfeeding, many mothers do not receive the level and type of support that they require (Oakley, 1992). Moreover, although knowledge of the benefits of balanced nutrition and breastfeeding as well as the varied benefits of breastfeeding itself are vital to women in making an informed choice regarding infant feeding, women need to receive this education as early as possible (e.g. at school) in order that the information learnt can be assimilated and used in everyday life. To conclude, although interventions are in place to promote these issues (e.g. antenatal classes and lay literature), the problem of deficient education is on-going and detrimental to the

maintenance of breastfeeding, particularly for mothers of low socio-economic status whose infants are arguably in greatest need of the benefits of breastfeeding.

The second category of problems that effect the maintenance of breastfeeding involves physical problems relating to breastfeeding. Physical problems with the maintenance of breastfeeding also fall into two subcategories, these being physical problems resulting from or related to the birth (e.g. caesarean scar), and problems with the breasts themselves (breast disorders). The former of these subcategories may also be considered as an initiation problem, as a caesarean section (performed under general anaesthetic) may inhibit initiation of breastfeeding as it may take some time before the mother (and infant) are alert. However, caesarean sections are often planned (e.g. for breech birth) and are able to be performed using epidural anaesthesia, allowing mother (and infant) to be conscious and attentive both throughout and post delivery. The initiation of breastfeeding is therefore not simply a possibility, but actively encouraged as in the case of a vaginal delivery. It is when the analgesic effects of the epidural diminish that maintenance problems can occur due to both the positioning of the caesarean scar, and the difficulty some women face when trying to reposition themselves into a comfortable position to breastfeed their baby. As is the case with problems relating to cleft palate in the infant, difficulties for breastfeeding mothers who have given birth by caesarean section can be solved by education of such mothers of different positions by health professionals, who often suggest positioning the baby next to the mother as she is lying down (Lang, 1997). However, again, as was discussed in relation to cleft palate and traumatic vaginal delivery, although in theory there are practices in place to aid women who have undergone a caesarean section to breastfeed, in practice, it is possible that many women do not manage to access this aid.

The second subcategory of physical problems of breastfeeding pertain to breast disorders, some of which (such as mastitis) effect just under 10% of lactating women in the UK

(Department of Child and Adolescent Development, 2000). These problems are not considered to be contraindications to breastfeeding (Fildes, 1986), but can effect its maintenance. Whilst mothers who experience physical difficulties with their breasts in developing countries such as India may have to endure septic breasts (Jeffrey, Jeffrey & Lyon, 1988) and in the past actually losing their nipples (Fildes, 1986), mothers in the UK today have the benefit of interventions aimed at relieving the pain (such as nipple shields and nipple cream) and in addition antibiotics which can fight any infection whilst still allowing the mother to continue breastfeeding.

Indeed, as the extracts from the lay literature below show, new mothers are told to expect some discomfort whilst breastfeeding is being established:

"Many mothers suffer some initial soreness but this normally passes quite quickly as the nipples get used to feeding." (Farleys and Heinz, n.d., p. 5)

"Almost all women can breastfeed successfully, though it may take some practice to get it right." (Health Education Authority, 1997, p. 2).

Unfortunately, there is no consensus among health professionals as to an effective method of treating prolonged and acute nipple pain, despite several studies of such procedures (e.g. Griese, 1996; Tait, 2000). As it is thought that most nipple pain is due to poor attachment of the infant to the breast (which can be resolved through education) it is believed that most nipple pain is transitory, and can be resolved through establishment of a breastfeeding routine. Nevertheless, although the effects of nipple pain on the breastfeeding experience of mothers has not been adequately investigated, it has been observed that lactating women experiencing nipple pain experience elevated levels of emotional distress compared to those not experiencing such pain whilst feeding (Amir, Dennerstein, Garland, Fisher & Farish, 1996).

More severe problems for new mothers include lactation mastitis, an infection of the breast caused by blocked and inflamed milk ducts. Not only is the breast hard, engorged and tender to the touch, but sufferers can also experience flu-like symptoms, such as high temperature and fever. Breastfeeding is made problematic both for the infant due to difficulties with latching onto the engorged breast, and for the mother who will not only be feeling unwell, but will be suffering from sore, tender breasts making breastfeeding (and from my own experience, particularly latching on) painful. The general consensus regarding the treatment of mastitis is that above all else, the mother should keep breastfeeding her baby in order that the milk can be allowed to flow and the ducts unblock (e.g. Lees et al., 1997). Antibiotics (chosen to allow the mother to continue to breastfeed her baby) are administered in order to treat the infection. Women can be taught to massage their breasts, to disperse the blockages, and hand express a little milk to make it easier for the infant to latch on.

Similar treatment is recommended for the occurrence of a breast abscess, which often can occur after prolonged or untreated periods of mastitis. In severe cases, mothers and infants may need to be hospitalised and surgery performed to remove the abscess. Less is known about the psychological effects of mastitis and breast abscess than for nipple pain, and neither of these conditions is considered to be a contraindication to breastfeeding (as there are tried and tested treatments in place). Nevertheless, in the face of pain and discomfort, many women may cease breastfeeding possibly due to inadequate support. So, how much are mothers prepared for these conditions? Breastfeeding is seen by women, and portrayed by the lay literature, as natural – not causing painful debilitating ailments which not only make the continuation of breastfeeding difficult, but, it is suggested here, may well affect the psychological well being of the mother, and possibly impact on the relationship between mother and infant. Although the continuation of breastfeeding aids in the speedy recovery of these conditions, how much pain should a mother be expected to endure in

order to breastfeed her baby? Moreover, do women who are suffering from these conditions really feel that they have a choice as to whether or not to maintain breastfeeding?

The third set of problems that appear to influence mothers' decisions to cease breastfeeding involves issues of practicality. Practical problems, which often become cumulative, are experienced by most new mothers. As in the case of maintenance problems, practical problems can also be divided into two categories, these being social and personal difficulties.

Social problems include, for example, breastfeeding in public and returning to work. If breastfeeding mothers wish to breastfeed their babies for the optimum recommended period, these problems often need to be addressed. In many countries, breastfeeding is viewed as a natural process, and as such women are expected to breastfeed their babies. However, much of the UK population have not been breastfed themselves, and few have grown up in an environment where breastfeeding is practised and considered the norm. Recent research has shown that breastfeeding is shown far less than bottle-feeding both on television and in the newspapers, with the latter being shown to be used by "ordinary" families and as less difficult than breastfeeding (Henderson, Kitzinger & Green, 2000). Therefore, when confronted with a breastfeeding mother and infant in the UK, individuals may be shocked, embarrassed and feel uncomfortable in their presence, thus adversely impacting on the breastfeeding experience of mothers.

The incidental consequences of these feelings can have a disturbing effect on the nursing mother. I have yet to meet a breastfeeding mother who has not experienced, or known a friend who has experienced the humiliation of being asked or told that she could either not breastfeed her baby in a café or restaurant or been made to feel uncomfortable by doing so.

The cost of such negative attitudes toward breastfeeding on the breastfeeding experience of nursing mothers should not be underestimated. Although steps are being taken by many shops to include an area for breastfeeding mothers, these areas are often situated in the corner of the existing baby changing area and are not conducive to pleasant, relaxed breastfeeding. Although mothers should be given the opportunity for privacy when breastfeeding whilst in public areas if they wish, surely the ideal situation would be if mothers could feel comfortable and sufficiently accepted by society in order to breastfeed where it is most convenient for them to do so. Nonetheless, if nursing mothers are to be banished to a specified area in which to breastfeed, then surely this should be made as comfortable and pleasant an environment as possible. As environmental health laws state that food should not be served close to public conveniences, why should mothers be expected to feed their babies in the same facility used to change babies' nappies?

The necessity of nursing mothers working is not a modern phenomenon. New families often need the benefit of an extra income, particularly with all of the expenses that a child can bring. Documentation from the end of the nineteenth century shows how new mothers took on sewing and mending in order to supplement their spouse's income (Llewelyn-Davis, 1978). However, what has changed in recent years is that women are increasingly taking up work outside the home, and rather than being expected to choose between a career and a family, it is becoming more usual for women to have both.

Although working mothers can expect eighteen weeks of paid 'ordinary' maternity leave (Department of Trade and Industry, n.d.), this is not usually sufficient to allow mothers to stay at home for the best possible recommended breastfeeding period. It is on the return to work that many nursing mothers feel it necessary to relinquish breastfeeding for bottle-feeding (e.g. Arlotti, Cottrell, Lee & Curtin, 1998). However, providing breastfeeding is well established, it is possible to express breast milk (often using a manual or battery

operated pump) in order for it to be given to the baby in a bottle whilst the mother is away. Milk can also be frozen and stored in a freezer for convenience. If expressing breast milk is so easy, why then do women give up breastfeeding simply because they are returning to work?

Despite the seemingly convenient nature of expressing breast milk, this process can be problematic. Not only is expressing time consuming (particularly in the case of hand expression), but it can also be rather uncomfortable, if a pump is used (Lees et al., 1997). Furthermore, as explained in the previous section, the body replaces all milk drawn from the breast. Therefore, although it is possible to express large quantities of milk in order for it to be stored, as more milk is manufactured by the breasts, this must also be expressed in order to relieve the pressure of the milk and prevent engorgement.

It can be seen that with the difficulties that evolve from working and expressing breastmilk, a high degree of planning and support is needed to enable the working mother to continue breastfeeding successfully. As when breastfeeding is initiated, it is essential that family and friends provide support and understanding to the working nursing mother. This type of support is increasingly being provided by employers under the directive of the European Union Council, which states the need of employers to encourage and promote breastfeeding (1992, cited by The Scottish Executive, n.d.), but as yet is far from sufficient for most women, and therefore not significantly reducing the number of women who cease breastfeeding at this time.

The second subcategory of practical problems, are personal problems that might not be considered until the practice of breastfeeding is established. As such, although, taken singularly, these problems would be unlikely to cause a mother to stop breastfeeding altogether, the effects of the problems could accumulate to prevent breastfeeding from

being an enjoyable experience. These problems include leaking breasts, restricting freedom (as it is only the mother who can breastfeed the baby), restricting diet and making the father of the baby feel excluded, both from the baby's life and that of his partner. Most breastfeeding mothers experience leaking breasts either when it is almost time for a feed, or when they hear a baby cry. Although breast pads (either disposable or washable) can be used to prevent leaking onto clothes, they must be changed often in order to prevent yeast infections, which could make breastfeeding uncomfortable and be passed onto the baby.

Contrary to many mothers' beliefs, it is not essential to follow a strict diet whilst breastfeeding. Although, as discussed above, a balanced healthy diet is recommended during both pregnancy and lactation, there are no foods that need to be positively avoided during breastfeeding (Byam-Cook, 2001). However, some mothers might find that their babies appear unsettled after a breastfeed if they have recently eaten particularly spicy food, and so decide that such food should be avoided.

Looking after a baby, although often rewarding, can be a very isolating experience for a new mother. Breastfeeding mothers can feel particularly restricted, not only as each breastfeed can be time consuming, but also, coupled with difficulties with breastfeeding in public, a social life outside the home can be problematic. Whereas many breastfeeding mothers appear to be very confident in discreetly popping their babies under their shirt for a feed, some mothers feel awkward, and are bothered that others might guess what they are doing. If mothers wish to continue breastfeeding their babies, and the restrictive aspects of breastfeeding are a problem, expressing milk, either to be given by someone else or to be given by the mother whilst in public, is certainly an option.

Feeding expressed breast milk to the baby from a bottle could go some way to resolving the problem of a partner who might feel excluded, but this intervention cannot be utilised

until breastfeeding is well established. Although most new fathers would understand the important job that their partners are doing by breastfeeding their baby, it may leave them feeling rather useless and left out of the relationship. This possible imbalance in the relationship with the new baby could create relationship difficulties between the parents. which if not satisfactorily resolved could affect the establishment and maintenance of breastfeeding.

With appropriate advice and guidance, practical hurdles to successful breastfeeding can be avoided, and certainly do not have to mean that the cessation of breastfeeding is inevitable. However, it is often these problems, and in particular, that of returning to work which is cited as being the reason why many mothers terminate breastfeeding (e.g. Arlotti et al., 1998). It is therefore essential that support networks and provisions (e.g. a comfortable place to express milk at work) are set up in advance to prevent these practicalities from ruining the enjoyment of breastfeeding.

The above paragraphs, although not an exhaustive list, certainly provide an ample account of the broad range of difficulties faced by many mothers who want to breastfeed. The researcher does acknowledge that a great deal of new mothers (many of whom I have met during the course of this research) breastfeed without a hitch from the moment that breastfeeding is initiated. For these women, the time that they have breastfed their babies is a precious one, the memories of which they will treasure for the rest of their lives. Many women also experience at least one of the problems discussed above, but with good advice and the appropriate intervention, are able to rectify the problem and continue breastfeeding. Most of the problems mentioned above (apart from those associated with HIV infected and drug dependent mothers) can either be avoided and/or resolved provided that mothers are given the correct advice in time. It is when a problem is allowed to persist that it may become too much for the mother to cope with, and it may seem to her (as it did

to me) that the only solution to the problem, is to change to bottle-feeding. Although, as was the case with my episodes of mastitis, ceasing breastfeeding was not the best course of action for reducing the infection, it was the only course of action that I felt was left open to me that would alleviate the pain and allow me to enjoy my baby. Further, as the statistics presented at the start of this chapter show (Foster et al., 1995), for many women, continuing to breastfeed appears not to be an option.

It is argued here that the feelings and vulnerability of mothers must be taken into account when trying to understand infant feeding decisions and behaviour. During the early postpartum period, not only the mother's physical condition, but also the baby blues and postnatal depression may be inhibiting her ability to cope with the problems that she is facing. Given all of the possible problems that can confront women who initially choose to breastfeed, should the onus for upholding this decision through whatever circumstance be placed solely on women?

This section has focused on the difficulties faced by women when breastfeeding their babies, and the impact that these problems can have on the lactating mother. The following section reviews a selection of the literature that directly questions women about their infant feeding experiences in the light of the women-centred perspective to be taken in this thesis.

1.3 Focusing on women's experiences

A core theme throughout this thesis is the need to recognise women's beliefs and experiences concerning infant feeding as the basis for research leading to interventions to enhance these experiences. Simply by perusing the popular lay literature, in the form of pregnancy and birth magazines (for example, *Mother and Baby Magazine*; *Practical Parenting*), it can be seen that there are many issues that women believe require tackling in

relation to infant feeding. In recent years, online advice forums have been set up (for example, todaysparent.com; ivillage.co.uk), which allow women to voice their opinions and raise questions about infant feeding, and also to respond to their peers' views and questions in a 'self-help' style. Both the popularity of the lay literature, and the advent of these online services clearly show that women can and do express their views about infant feeding, and have insight into their experiences that could be invaluable as a research resource. In recognition of the value of women's experiences, there is a vast research literature that seeks to understand these experiences by directly questioning pregnant and new mothers.

One of the most noticeable features of this research is that it is conducted largely by health care professionals. Indeed, much of the research is published in midwifery and obstetric journals, and is carried out with a view to furthering knowledge; specifically, the knowledge and practice of midwives and those in allied health professions. As such, it is perhaps not surprising that the focus of this research is women's views and experiences, as health professionals who are in constant contact with women, would both recognise the importance of such views, and also have direct access to pregnant and new mothers in their professional lives, aiding the study of such experiences.

Much of this research literature investigating women's experiences does not exist within a recognised theoretical framework or perspective. However, the reliance upon women's experiences that is placed in these studies indicate that the results of such work examined, particularly in the light of the women-centred methodology to be adhered to in this thesis. Conceptually, the largest proportion of these studies focuses on two areas: the examination of infant feeding choices or the duration of breastfeeding. The prevalence of such studies in the midwifery literature ought to be expected, as health professionals concerned with infant feeding would want to be aware of the existence of variables that affect the duration

of breastfeeding and also why women decide to breastfeed or bottle-feed, in order that interventions can be designed to improve breastfeeding rates. Studies have, therefore, generally asked what causes women to choose either method of infant feeding and also what it is about women (i.e. specific characteristics or circumstances) that cause them to continue or stop breastfeeding once initiated. The scope of such research, which collectively seeks to understand both the commencement and conclusion of, particularly breastfeeding, is important in this thesis, which endeavours to understand women's infant feeding experiences using a longitudinal approach. The following paragraphs discuss work that has been completed with regard to infant feeding choices.

As noted, one body of work within the domain of research focusing on women's experiences, concentrates on women's choice of infant feeding method (e.g. studies by Baranowski, Bee, Rassin, Richardson, Brown, Guenther & Nader, 1983; Brown, Lieberman, Winston & Pleshette, 1960; Earle, 2000; Guttman & Zimmerman, 2000; Hoddinott & Pill, 1999; Hughes & Rees, 1997; McIntosh, 1985; Murphy, 1999; Scott, Binns & Aroni, 1997). Brown et al.'s (1960) early study of primiparas' choice of breast or bottle-feeding investigated individual differences among 55 mothers who had decided to breastfeed, and 55 mothers who decided to bottle-feed. Brown et al. (1960) observed that women received little support in hospital from health professionals when experiencing problems with breastfeeding, and went on to make recommendations based on these observations. Consequently, although this study did not specifically set out to assess the level of support provided to breastfeeding mothers, the researcher's direct contact with participants enabled recommendations based on women's experience to be made, that were themselves grounded in this experience. Therefore, Brown et al.'s study emphasised an important point; that of the role of health professionals within this experience.

Scott, Binns and Aroni (1997) unusually focused on the role of paternal attitudes in women's decisions to breastfeed their babies, and found that in their sample of Australian mothers, father's attitude toward breastfeeding had the greatest influence in their partner's decision to breastfeed. Shifting the behavioural focus from the more common centre of attention of breastfeeding, Hughes and Rees (1997) investigated women's decisions to choose to bottle-feed their babies. Using qualitative methodology, Hughes and Rees showed that women who choose to bottle-feed base this decision on their practical circumstances. Combining both paternal role and the focus on bottle-feeding, Earle (2000) conducted a longitudinal qualitative study of 19 women from early pregnancy until up to 14 weeks postpartum to uncover their reasons for choosing to breast or bottle-feed. Earle discovered that despite knowledge of the benefits of breastfeeding, women in the sample who chose to bottle-feed cited their wish to involve their partner in feeding as the most significant influencing variable.

Although Earle (2000) and Scott and Binns (1997) concentrated on paternal role in relation to infant feeding, their findings focused on women's subjective perceptions of their partner's attitudes and/or role. In this way, the influence of fathers on women's experience is assessed from the woman's perspective and thus remains women-centred. In fact, Earle used what could be regarded as a highly women-centred methodology as she employed the use of unstructured interviews to allow "each participant to establish their own agenda for discussion," (Earle, 2000, p. 324). Therefore, within the confines of the available sample, Earle enabled her participants to raise issues from their experience that they perceived to be important.

McIntosh (1985) investigated primiparas' infant feeding choices for both breastfeeding and bottle-feeding, and the role of significant others in this decision. McIntosh found that the women in his sample provided distinct explanations for choosing to breastfeed (predominantly benefits to the baby) and choosing to bottle-feed (predominantly cultural,

psychosocial and practical considerations). Additionally, the maternal grandmother was cited as being a significant influence in this decision. Further, Baranowski et al. (1983) found in their study of support and ethnicity in making infant feeding decisions that the individual cited as having the most important role in the women's infant feeding choices differed according to ethnic group. Therefore, the most prominent figure influencing the breastfeeding decision differed in the sample according to whether the woman was Anglo American (male partner), Black American (close friend) or Mexican American (maternal grandmother).

Hoddinott and Pill (1999) focused their qualitative study of infant feeding decisions on a sample of low-income women who, in general, experience low breastfeeding rates. Similar to Earle's (2000) results discussed above, all women regardless of choice of infant feeding method, knew that breastfeeding possessed potential benefits for health. However, women's experiences of watching women breastfeed, even in childhood had a strong effect on their decision and infant feeding experience according to whether they perceived observing breastfeeding as either positive or negative. Although Guttman and Zimmerman (2000) also found that the low-income women in their sample saw breastfeeding as more beneficial to health than bottle-feeding, interviews further revealed that often women's perceptions as to how important these benefits were to them affected their infant feeding decision. Moreover, participants' perceptions of their observations of other women breastfeeding in public were found to be an important emergent theme with most women perceiving that others around them felt uncomfortable watching a woman breastfeeding despite many of the women have positive feelings themselves. Therefore, both Hoddinott and Pill's (1999) study and Guttman and Zimmerman's (2000) study show that women's experience of direct observation of breastfeeding, as well as others' reaction to this observation can affect their infant feeding choices and consequently their experience. Although Guttman and Zimmerman (2000) examined a far larger sample ($N = 154$) than

Hoddinott and Pill (1999) (N = 21), and also used a combination of quantitative and qualitative techniques, a great strength of Hoddinott and Pill's study is the longitudinal nature of the research. Collecting data both during pregnancy and postpartum allows infant feeding decisions to be investigated close to the time when such choices are being made, and follow-up after birth permits these decisions to be further examined in the light of tangible experience with infant feeding.

In summary, it can be seen that the research discussed above in relation to infant feeding choice raises a number of issues. Firstly (e.g. Earle, 2000; Hughes & Rees, 1997), most research is concerned with, or is biased toward finding out why women do or do not breastfeed, rather than why women either choose to breast or bottle-feed. Although it might be evident that if a woman does not choose to breastfeed then she must bottle-feed, it is important to examine why women both choose to or choose not to perform both infant feeding behaviours for the decision to be adequately understood. Secondly, much of the research takes place retrospectively following the birth (e.g. Baranowski et al., 1983; Guttman & Zimmerman, 2000; Hughes Rees, 1997; Scott, Binns & Aroni, 1997) and so does not take advantage of examining decisions both before and shortly after infant feeding is initiated. Due to the effect that infant feeding experiences might have on women, this might effect their recall of these earlier states of decision making and initiation. However, despite the two points made above and the issues raised throughout the discussion of the infant feeding choice literature, the main advantage of the majority of these studies (e.g. Baranowski et al., 1983; Earle, 2000; Guttman & Zimmerman, 2000; Hoddinott & Pill, 1999; Hughes & Rees, 1997; McIntosh, 1985; Scott, Binns & Aroni, 1997), is the value they place on the subjective experiences of women. In particular, both Hoddinott and Pill (1999) and Hughes and Rees (1997) go to great lengths to ensure that their interviewing techniques enable the issues most pertinent to women's infant feeding choices to shine through. Although all of the studies discussed above do assess participants postnatally and

often note the initiation rates in their sample, they do not all collect data over a sufficient time period to allow duration of infant feeding to be measured and assessed with respect to choice. The following paragraphs deal with the second main area of research focusing on women's experiences; that which concentrates on the duration of breastfeeding, and discusses this research in the light of the women-centred research proposed in this thesis.

As mentioned earlier in this section, the main aim of research concerning infant feeding experience is both to encourage more women to decide to breastfeed, and also to implement interventions to aid women who initiate breastfeeding to breastfeed for longer. A number of researchers have investigated the effect of specific variables on breastfeeding duration (e.g. Dykes & Griffiths, 1998; Janson & Rydberg, 1998; O'Campo, Faden, Gielen & Wang, 1992; Piper & Parks, 1996). Two main studies, one based in the UK (Dykes & Griffiths, 1998), and the other in the USA (Piper & Parks, 1996) were based on the results of national infant feeding surveys. Dykes and Griffiths found that initiation and duration of breastfeeding were effected by a number of variables external to the woman herself, for example, social influences, formula marketing and health care professionals and significant others' influence on the woman. Piper and Parks, on the other hand, cited more personal variables as being attributable to the duration of breastfeeding such as the woman being a non smoker, having had more children, consistency in breastfeeding intention from pregnancy, and postponement in the return to work. Although there appears to be a marked difference in the results of these studies in terms of the conclusions reached, it must be remembered that the questions asked of women in the surveys upon which these studies were based would greatly influence the focus of these conclusions.

O'Campo et al. (1992) found similar results to Piper and Parks (1996) as they discovered, in their sample of urban breastfeeding women, that the most significant influences on breastfeeding duration were parity, mothers' plans to go back to school or work, and maternal confidence. Janson and Rydberg (1998) focused exclusively on the effect of

length of hospital stay, and more specifically early postpartum discharge, on the duration of breastfeeding, and found that timing of discharge did not affect duration of breastfeeding. In summary, the studies discussed above highlight a range of the variables that have been found to affect the duration of breastfeeding with a focus on women's experiences. However, it is often the specific focus of the research questions guiding these studies that uncovers such variables. In order to avoid predetermining the factors that affect duration, it is proposed here that it is important to ask women the factors that they believe are important, and so placing value on their beliefs and experiences in research process.

Bick, MacArthur and Lancashire (1998) postnatally interviewed large samples of mothers (N = 906) in order to provide explanations for their breastfeeding duration. Bick et al. (1998) directly asked women for their reasons for initiating and subsequently ceasing breastfeeding early. The most common explanation provided by women for prematurely stopping breastfeeding was suffering physical problems (for example nipple pain). However, by placing variables in a stepwise logistic regression analysis, the authors concluded that women who ceased breastfeeding before they had planned did so firstly for practical reasons, such as child care and returning to work, and secondly due to greater scores on the Edinburgh Postnatal Depression Scale (Cox, Holden & Sagorvsky, 1987). Therefore, the inconsistency between these results shows how important it is to directly question women about their experiences even if the research has a specific aim or focus.

While the above studies have shed light on factors that affect breastfeeding duration, others have investigated specific interventions with a view to discovering their utility in increasing women's duration of breastfeeding (e.g. Chen, 1993; Jenner, 1988; Pugh, Milligan, Frick, Spatz & Bronner, 2002; Susin, Giugliani, Kummer, Maciel, Simon and da Silveira, 1999). For example, Susin et al. (1999) introduced a breastfeeding information programme to mothers and/or fathers (according to the experimental group to which participants were allocated), and found that babies of mothers and/or fathers with the

highest rates of knowledge were breastfed for longer than those with low knowledge. Similarly, Jenner (1988) investigated the effect of increased knowledge, and additionally support, which was also investigated by Pugh et al. (2002) and Chen (1993). All three of these studies assigned women to experimental and control groups in order to discover whether programmes of providing extra support to breastfeeding women increased their duration of breastfeeding. Similar to Susin et al.'s (1999) results, Jenner found that women in the intervention group were significantly more successful (the criteria used in this study was exclusive breastfeeding for at least three months) in terms of duration than the control group (i.e. those participants who did not receive the intervention). Likewise, Pugh et al. (2002) reported that women in their experimental group breastfed for longer than women in the control group, although due to the small sample size ($N = 41$) this difference in breastfeeding duration was reported as a trend rather than as statistically significant. By contrast, Chen (1993), whose study had the largest sample ($N = 180$), did not find any significant difference between the control and intervention groups with respect to breastfeeding duration, but instead found parity to be the strongest predictor of duration.

Although it could be argued that the allocation of women to experimental and control groups is essential in such studies in terms of the clarity of the results (refer to discussion of randomised control trials, section 1.4), it is proposed here that within a women-centred perspective, it is the variables that allow the interventions to work (e.g. knowledge or support) that should be scrutinised in such research rather than the interventions themselves. Allocating women to groups, potentially disallows women from benefiting from the proposed advantages of the intervention. Further, in terms of the importance placed on choice with regard to women centeredness, random allocation of women to groups by the researcher both inhibits women from exercising choice, and removes their power in terms of choosing what is best for themselves and their baby. Therefore, rather than placing such importance on the comparison of control and experimental groups,

however useful this might be to the researcher, more emphasis and value should be placed on the experiences of women undergoing such an intervention

Few atheoretical studies have been conducted that have examined both choice and duration. Exceptionally, Jones et al. (1986) investigated both choice of infant feeding method and breastfeeding duration. As is the case with a number of these studies (as discussed above), all measures were made postnatally, and consequently, choice was examined after the initial infant feeding behaviour had been carried out. However, the combined examination of mothers' perceptions of their full breastfeeding experience from decision making to performance of behaviour, provides a more natural and woman centred approach to the investigation of this experience.

In conclusion, there are a number of points that have been raised in the discussion of the above research concerning infant feeding choice and duration. Firstly, as noted, the main strength of such studies is that they seek to directly question women about their experiences. Therefore, the women-centred approach proposed by this thesis seeks to understand women's collective experiences in order to inform care and practice. Secondly, however, the questions that are asked of women with regard to their experience may in some instances mask the factors of importance in their experience. Thirdly, in order for research to be considered as truly women-centred, it is argued here that women should be given choices throughout the research process, therefore mirroring the principles of woman-centred care, and additionally that the subjective perceptions of women of their experience should be valued and utilised. Fourthly, a holistic approach should be taken, in order to encapsulate the entire infant feeding experience, and in doing so, a pragmatic approach ought to be made in choosing the research methods (i.e. quantitative or qualitative) throughout the research process. Further, it is proposed here that in order to successfully understand infant feeding behaviour (both breastfeeding and bottle-feeding)

and experiences, such research should be structured within an appropriate theoretical framework that allows the above points to be met. The following section concentrates on the approaches made by the midwifery literature and further examples of the infant feeding research literature, with specific focus on a new perspective of infant feeding research within the current research and political climate.

1.4 Platform for research

From an idealised point of view there is nothing untoward about the way in which past and present infant feeding research is presented and carried out. There is a bias toward breastfeeding, but with the vast research literature claiming benefits to mother and baby (however tenuous the relationship), this bias appears reasonable. However, if women do have an initial choice as to whether or not to breast or bottle-feed, (as most women seem to assume), then surely it is essential that both ends of the decision making scale are taken into account in order that they can both be fully understood. Surely, if breastfeeding rates are to rise, not only must we take account of why women choose to breastfeed or not, but also why they make the decision to bottle-feed or not to bottle-feed. It is obvious that if one method is discarded as an option, the other must be accepted as there are no other accepted and successful methods of feeding a new baby (other than cup feeding or nasal gastric tube in premature babies, Lang, 1997). From my experience, coupled with my knowledge of the existing infant feeding literature, it became apparent that a new type of infant feeding research was required that not only allowed women's experiences of both breast and bottle-feeding (and the transition between these methods) to be heard, but also to be absorbed into appropriate practice and care.

On uncovering the discrepancy between the bias toward breastfeeding in the literature and the reality of the infant feeding behaviour of mothers in the UK, I felt that it was therefore

necessary to initiate a research process in a way that would not only allow women's infant feeding experiences to be heard, but also be relevant to the health professionals who care for them. In order to achieve this it was necessary to steep myself in the midwifery literature so that I understood and kept abreast of all of the latest and pertinent issues related to the work of midwives and midwifery in general. My interest was not simply restricted to articles related directly to infant feeding, but spanned across many subjects and concerns within the profession. After some time, I found that several key themes were emerging, which midwives and midwife-researchers felt needed addressing, namely, randomised control trials; women-centred care and research based practice. Although at this point in the research process my contact with midwives and other health care professionals was limited, I was able to witness, through midwifery publications, the issues that were of prime concern to nursing in general, and more specifically to midwifery as a profession. From this I could begin to construct the framework for this research.

Women-centred care is currently one of the most popular perspectives in nursing, and particularly maternity care (Homer & Davis, 1999), and exists on the basis that, "The needs of the woman provide the focus for the planning, organising and delivery of maternity services." (Green, Curtis, Price & Renfrew, 1998, p. 12). Therefore, women-centred care seeks to provide women with the ability to make informed choices in all aspects of their maternity care, from the onset of pregnancy through to postnatal care. As such, all information provided to women must be informed and unbiased in order that women can make appropriate individual choices. The report of the Expert Maternity Group, 'Changing Childbirth' (Department of Health, 1993, p. 8) made women-centred care its central theme:

"The woman must be the focus of maternity care. She should be able to feel that she is in control of what is happening to her and able to make decisions about her care, based on her needs, having discussed matters fully with the professionals involved."

Woman-centred care is all about choices: to have a home or hospital birth; to have pain relief or a drug free labour; to be induced or wait until the natural onset of labour; to breast or bottle-feed. It is clear from the statement of the Expert Maternity Group (Department of Health, 1993) above, that these choices must be informed, with information provided to women by the relevant health care professionals. Once the woman has made an informed choice, it is essential that she is provided with the support and understanding required to action that choice. Much of the infant feeding lay literature holds up this ideal of women being supported in the decisions that they make regarding their choice of infant feeding method (e.g. Stoppard, 1996). However, it is true that some practitioners have what has been described as a “missionary zeal” (Kitzinger, 1987, p.34.) with regard to breastfeeding, which could inhibit a woman’s fulfilment of her individual wishes. Women-centred care and practice concerning infant feeding is therefore essential, not only in allowing women to make an informed choice that is right for them, and supporting that choice, but also in accepting the rights of women to modify their decision.

A further popular perspective in maternity care is that care and practice received by women should also be evidence based (Homer & Davis, 1999). Evidence based medicine (EBM) or practice, recommends that all care received by women should be based on sound evidence. This evidence can take a variety of forms including personal experiences and health trust policies. Increasingly, midwifery has focused on the research literature as a major source of its evidence base. However, it is vitally important that the evidence upon which practice is based is appropriate, valid and useful to the practice to which it is being applied (Sackett, 1995, cited by Greenhalgh, 1997). As Greenhalgh (1997, pp.2) wrote, “...if you have asked the wrong question or sought answers from the wrong sources, you might as well not read any papers at all.”

So what constitutes the best evidence? Randomised Control Trials (RCTs) have been described as, “the gold standard,” (Procter & Renfrew, 2000, p.4) in the midwifery literature. RCTs allow a representative sample of the population to be studied’ and permit the researcher to place participants in experimental and control groups. The main benefit of this type of study is that the effects of a specific intervention or practice can be observed in the experimental group, and simultaneously evaluated against particular outcomes exhibited in both the experimental and control groups. Although RCTs provide researchers with the desired level of control over possible extraneous variables, and, it has been argued, are vital to evaluating the effectiveness of much of the midwifery care and practice, they do not allow the full experience of women in receipt of such care to be investigated and explained (Procter & Renfrew, 2000). Moreover, the extent of control that RCTs afford to women both as participants in research and recipients of interventions or practice, is in itself questionable. As is the case with all research involving human participants, women involved in such studies are initially asked to make an informed decision as to whether or not they would like to take part. Yet due to the required randomisation of participants to groups in RCTs, women cannot be given a choice regarding the group to which they are to be allocated, and in some instances are not informed as to which group they belong until the conclusion of the study. Furthermore, patients who are unable (e.g. due to medical reasons) or choose not to accept the intervention under scrutiny must be excluded from the study, at a time not only when their contribution and experience may be of significance to the study and provide valuable insights into the area under investigation, but also when they themselves might be feeling vulnerable.

The assumption that RCTs are the optimum methodology within which to work in all aspects of maternity care is therefore questionable on two counts. Firstly, as mentioned above, this is often a time when women feel vulnerable for themselves and their babies,

and removing control over a treatment could increase these feelings of vulnerability. Secondly, it simply would not be ethical to conduct a RCT within an area such as infant feeding. In order to maintain a women-centred perspective it is essential that choice is maintained. Therefore, although the results obtained from RCTs are often regarded as more valuable than those obtained using other methodologies, this cannot be generalised to areas where RCTs are not viable. Moreover within a service that seeks to promote and provide women-centred care and practice, the research upon which such care is based should itself be women-centred.

It is argued here that the uniqueness of women's experience of maternity care increases the need for women-centred care, which is itself vital in providing optimum treatment during this major life-changing episode (Department of Health, 1993). Furthermore, if research is to enhance care and practice as stated by EBM, whilst maintaining the overriding philosophy of women-centred care, surely the research itself should be embedded in such a women-centred perspective. Women involved as participants in research should be afforded the same rights and understanding as when they are undergoing treatment or in receipt of care, ensuring that research mirrors the principles of women-centred care.

Women-centred research, therefore, should be about choices, not simply informed choice as to whether or not to participate in such research as in RCTs, but knowledge that whatever choices the participant makes during the course of the research programme, these will be respected, supported and upheld. As individual women's choices and experiences should inform practice and care through the expert experience of health professionals, these should also inform practice and care through the research process. By revealing evidence founded on women's experiences upon which to establish practice and care, not only must this provide a means of implementing EBM into maternity care, but also allow women's voices to be heard and acknowledged. Indeed Richens (1999, p.670) has raised

the question, “In our search for evidence-based practice, have we lost the ability to listen to women and believe what they are telling us?”

As discussed above, it is essential that research regarding the experience of women mirrors women-centred care in two respects. Firstly, women should be fully informed as to the nature of the research in which they are participating. Informed choice should not simply be about whether or not to participate in research, but about all aspects of the study. Secondly, research should cover the full range of women’s experience within the area in which it is directed. As women-centred care is based upon women’s unique and individual needs, so women-centred research should uphold and validate each unique experience in order to achieve improved understanding and explanation.

1.5 Thesis outline

The central core of this thesis is a longitudinal study that aims to investigate the infant feeding experiences of first time mothers from pregnancy until four to six months postpartum. This chapter has therefore established the context within which the longitudinal study is set. The lack of understanding of why so many women either do not initiate or maintain breastfeeding calls for a women-centred approach facilitating sound evidence upon which practice and care can be built. Due to the atheoretical nature of the majority of the infant feeding literature, it was necessary to embrace a theoretical framework that would not only permit thorough investigation of infant feeding, but allow the investigation to be centred on women’s needs and experiences.

The following chapter introduces Social Cognitive Theory as the overall theoretical framework of the study, and focuses on the mechanism and application of the Social Cognition Model (SCM) of the Theory of Reasoned Action (Ajzen & Fishbein, 1980).

Chapter three continues the social cognitive perspective with the application of the SCM of Self-Efficacy Theory (Bandura, 1977) to infant feeding. Further maintenance issues such as social support, age, education, and birth issues will be discussed, and the main research questions of the thesis will be introduced. The fourth chapter of the thesis deals with the development of the quantitative and qualitative research instruments to be used to address the research questions in a longitudinal study, which is at the centre of this thesis. Chapters five and six are the results chapters from the longitudinal study. Chapter five focuses on the results obtained from the application of the TRA to breastfeeding and bottle-feeding, and chapter six consists of analysis of data concerning Self-Efficacy Theory and social support. Chapter seven presents results related to further maintenance issues measured in the longitudinal study as well as the results of the postnatal qualitative study. Finally, chapter eight explores the findings of the longitudinal and qualitative study in the light of the current research literature, the current political climate with regard to infant feeding, and the infant feeding experience of women.

Theoretical Framework: The Theory of Reasoned Action

The first chapter located the issues and gaps in knowledge about infant feeding, and the changes that need to take place in order to carry out relevant and useful research in the current political and social climate. Much of the past infant feeding research has been atheoretical, either in the case of studies reporting infant feeding practices (often based on culture) and their effects (e.g. Bentley, Gavin, Black & Teti, 1999; Dettwyler, 1987; While, 1989) or those that have explored beliefs and attitudes of specific groups concerning infant feeding, predominantly breastfeeding (e.g. Aumonier & Cunningham, 1983; Cash, 1997).

It could be argued that adhering to a theoretical framework would cause the research process to be restricted to rigid theoretical confines. However, it is maintained here that rather than constraining the research process to the limitations of the chosen theory, such a theoretical framework would seek not only to guide the research process, but would also provide the possibility of comparison of both methodology and results across previous studies, and also direct the form of any consequent interventions. It is of paramount importance, therefore, that the theoretical framework chosen not only allows the fulfilment of the aspirations for the research process discussed above, but also allows room both for the individual needs of the research and the creative aspect of the research process itself. Consequently, a theoretical framework was sought which would permit investigation of the infant feeding experience of first-time mothers with regard to their decision to either breast or bottle-feed, and the maintenance of the chosen behaviour.

In the quest for an appropriate theoretical framework for the research, it was necessary to look at infant feeding from a different perspective to the standard medical or midwifery standpoint due to the atheoretical approach that this type of research usually takes. It must firstly be asked what type of behaviour infant feeding is, and secondly, what it is about current infant feeding behaviour in the UK that is not fully understood, and so is particularly pertinent to this enquiry. By answering these questions, it is possible to ascertain the theoretical perspective(s) that might be suitable for the research. So, what type of behaviour is infant feeding? For the purpose of this study the focus of the research is on the behaviours of breastfeeding and bottle-feeding. Although infants can be, and in some instances are required to be fed by cup or through a nasal-gastric tube, this investigation is centred on the infant feeding experience of first-time mothers of 'normal' term infants, when such feeding methods are not usually necessary. Although the unique infant feeding experience of mothers of premature or disadvantaged babies requires examination, this is beyond the remit of the present study. It is the gap in understanding of the decline of breastfeeding by mothers of seemingly 'normal' infants without such disadvantages, which is at the heart of this investigation. Therefore, it is the behaviours undertaken by such women, i.e. breastfeeding and bottle-feeding, which are considered here.

The many health benefits of breastfeeding (discussed in chapter 1, section 1.1) would imply that breastfeeding, at least, is a health behaviour. Conner and Norman (1996) describe health (or health-related) behaviours as falling into four main categories: health enhancing behaviours (e.g. taking regular exercise and eating a low fat diet); health protective behaviours (also described by Harris & Guten, 1979, cited by Sarafino, 1994) (e.g. mammography participation, and vaccination against disease), avoidance of health-harming behaviours (e.g. smoking and excessive alcohol consumption) and sick role behaviours (e.g. taking a course of antibiotics). Breastfeeding can be seen to fall into at

least one of these categories. The literature demonstrates that breastfeeding promotes the health of the newborn by providing ultimate nutrition (Sheridan, 1997), which would suggest that it is a health enhancing behaviour (Conner & Norman, 1996). However, the range of possible future health benefits for both the newborn and the mother are ostensibly boundless (McNabb, 1997). Although it could be claimed that in the light of the last mentioned benefits, breastfeeding could also be viewed as a health protective behaviour, it is unlikely that an individual would initiate breastfeeding purely for the purpose of these benefits in the same manner that, for example, one would have a vaccination to prevent contraction of tuberculosis. It is argued here that breastfeeding may be in a unique position of affording protection against future health risks both to the mothers who carry out the behaviour, and their infants who are raised on the breastmilk. As this particular benefit of breastfeeding does not fit into any of Conner and Norman's (1996) categories of health behaviour listed above, it is proposed that breastfeeding could be viewed as a health-risk preventive behaviour, therefore establishing a new category.

From the above perspective, therefore, it would seem that breastfeeding might appropriately be considered to be a health behaviour. However, a brief perusal of the available lay literature both in the form of leaflets and pregnancy magazines reveals that the classification of breastfeeding as a health behaviour is not as clear as it may appear above. Although the benefits, or outcomes of successful breastfeeding are health related, the behaviours that need to be adopted in order to initiate and maintain breastfeeding are not all directly associated with health. For instance, the emotional benefits of breastfeeding (Sheridan, 1997) shows breastfeeding to be a complex behaviour with far reaching effects on both the mother and her infant. In addition, the social complexities of breastfeeding may have a significant impact on its initiation and maintenance. For example, when the infant requires feeding whilst out shopping, the mother may feel that she needs to find an appropriate place to feed discreetly. Further, it may also be difficult for the partner or

family of the new mother to become used to seeing her engaging in this new activity. In short, the behaviours involved in the initiation and maintenance of breastfeeding involve a variety of health, social, psychological, and interpersonal factors that are not covered simply by the term 'health behaviour.' Subsequently, a theoretical framework that is not simply confined to or found to be successful in the investigation of one behaviour type is required, not only to encompass the many facets of breastfeeding behaviour, but also to embrace the differences between the behaviours of breastfeeding and bottle-feeding. So are there any differences or similarities between breastfeeding and bottle-feeding, and how can the behaviour of bottle-feeding be classified?

Bottle-feeding formula milk is markedly different from breastfeeding with regard to the benefits or outcomes it affords and the actual behaviour involved. Although bottle-feeding could be regarded as a health enhancing behaviour (Conner & Norman, 1996), it is not endowed with any of the health-risk preventive properties of breastmilk described above. However, due to its nutritional values, bottle-feeding should be regarded as a health behaviour as it enables infants that are not breastfed to receive sufficient nutrition for growth and development. Although feeding expressed milk in a bottle would still benefit the infant from the health-risk preventive perspective, most infants who are being fed breastmilk in this way are also being breastfed at other feeds in order to maintain an adequate milk supply, and so would inevitably be receiving these benefits. The discussion here is concentrated on the bottle-feeding of infants being given formula milk in order to make the distinction between breast and bottle-feeding behaviours.

The differences between breast and bottle-feeding behaviours do not end with the subject of health. Although research has not shown bottle-feeding to have any distinct psychological benefits it might be possible that there is a difference in the psychological well being of breast and bottle-fed infants in part due to the physical closeness afforded by

the act of breastfeeding. This physical difference between breast and bottle-fed infants regarding the necessity of physical closeness to their mothers does not end with psychological implications. Socially, bottle-feeding rather than breastfeeding an infant can mean, for example, that finding a discreet place to feed is not essential, and that others can also take part in feeding. These differences do not prevent bottle-feeding from being classed as a social behaviour however, as the behaviour must be performed in a social context, but by the way in which the behaviour can be performed (for example, openly in a restaurant or by the father), the behaviour of bottle-feeding is distinctly different to breastfeeding. Therefore, despite the diverse nature of breast and bottle-feeding as behaviours, both methods of feeding can be viewed as behaviours that encompass health, social and psychological aspects. As a consequence, it is of vital importance that the theoretical framework that is to be utilised in this study is competent in furthering understanding of both health and social behaviour, whilst maintaining a central focus on individuals' psychological processes.

As indicated above, the main focus of this study is to investigate the infant feeding experience of first-time mothers of 'normal' infants in order to understand the sharp decline in breastfeeding in such mothers in the UK. One could be forgiven for believing that breastfeeding is a natural maternal behaviour, and that once the infant is born, the natural instinct of the mother is to suckle her offspring at the breast, as has been observed in animal studies, (e.g. Hall & Williams, 1999). Clearly, the current statistics show that this is not the case, either in the initiation or the maintenance of breastfeeding. Subsequently, it is essential that the chosen theoretical framework provides a way of understanding the processes involved in performing a behaviour other than the learned or innate reaction to an external stimulus (Fielder & Bless, 2001). It was therefore decided to examine an area of psychology in which the understanding of performance of behaviour is paramount.

One of the main concerns of social psychology that has been taken up by numerous theories, is the prediction of behaviour. Within this, it is the relationship between attitude and behaviour which has been most closely examined in the context of a variety of behaviours in social psychology (Aronson, 1992; Augoustinos & Walker, 1995). Since La Piere's (1933) (cited by Aronson, 1992) study involving the discrepancy between the attitudes and behaviour of American Innkeepers toward a Chinese couple, there has been great interest in understanding the relationship between attitudes and behaviours. Wicker's (1969, cited by Augoustinos & Walker, 1995) review of thirty-two studies investigating the attitude-behaviour relationship, found that attitude accounted for up to only ten percent of the variance in behaviour and prompted social psychologists to respond by addressing the problem of the attitude-behaviour relationship in two distinct ways (Augoustinos & Walker, 1995).

Researchers either worked to create measures that would strengthen the relationship, such as Fazio's (1986) Attitude Accessibility concept, or constructed models with additional components to attitude and behaviour in order to investigate the relationship (Augoustinos & Walker, 1995). In the case of infant feeding, pregnancy is a time when preparations and decisions about the new baby are made. It is therefore possible to assume that infant feeding methods would be considered (Sheridan, 1997), and attitudes regarding breast and bottle-feeding would be formulated by prospective mothers. It could be presumed that due to the long preparation period that pregnancy provides, infant feeding attitudes would be accessible to women at birth. Thus if Fazio's Attitude Accessibility concept is to be applied to this study, one would presume that attitude would predict infant feeding behaviour. However, women do not always perform the behaviour for their intended duration, despite positive beliefs about breastfeeding being widespread (e.g. Foster et al., 1995). Hence, for this study, an approach incorporating an extended set of components in

order to fully understand the attitude-behaviour relationship with regard to infant feeding is sought.

Social Cognition is a theoretical position which, “is concerned with the study of social knowledge and the cognitive processes that are involved when individuals construct their subjective reality” (Fielder & Bless, 2001, p.116). In other words, the social cognitive approach seeks to address the internal processes involved in the execution of behaviours, rather than simply observing individual’s behavioural responses to stimuli. This is of particular use in understanding why individuals behave in ways that might be considered to be unexpected as introduced in the case of breastfeeding above. When applied to infant feeding, Social Cognitive Theory may usefully concentrate on the internal subjective processes that occur when initiating and/or maintaining breastfeeding and bottle-feeding. By using Social Cognition as the theoretical framework in this study, it is proposed here that superior comprehension and location of the processes involved in carrying out the behaviours of breastfeeding and bottle-feeding can be reached, enabling a greater understanding in the fall of breastfeeding behaviour in new mothers.

2.1 The search for an appropriate social cognition model

Now that the overall theoretical framework for the model has been decided, it is necessary to ascertain the actual theories upon which the research will be based. Although Social Cognition is a theory in itself, researchers have constructed Social Cognition Models (SCMs), which are designed to focus on specific cognitions or processes in order to ascertain their role in the prediction of behaviour (Conner & Norman, 1996). As this study was to follow the infant feeding experience of first time mothers from pregnancy until four to six months after the birth, the first task was to locate a SCM that would provide understanding of the processes involved in making the decision both to perform a

behaviour and to choose between two alternatives (i.e. breastfeeding and bottle-feeding). SCMs vary in both structure and aim. Attribution models investigate causal attributions of individual's health behaviours, whereas the most commonly used SCMs (and the ones that will be applied in this study) aim to predict health behaviours based on underlying processes (Conner, 1993). In order to provide the understanding of the processes required to make the decision to breast or bottle-feed, and initiate the behaviour, it was necessary to apply an SCM that was well structured and whose components were coherently defined.

The Theory of Reasoned Action (TRA), was first introduced by Icek Ajzen and Martin Fishbein in 1975, and then refined by the researchers five years later (Ajzen & Fishbein, 1980). Ajzen (1988) then went on to form an extension of the TRA known as the Theory of Planned Behaviour (Ajzen, 1988), which included the component of Perceived Control. Basically, the TRA seeks to understand why individuals perform behaviours in terms of their attitudes toward the behaviour and the effect or predictive ability that their attitudes have on the 'behavioural intention'. It is this behavioural intention that is the immediate determinant of performance of the behaviour by the individual. As required by the study and discussed above, the TRA is not designed in order to strengthen the attitude-behaviour relationship, but rather to understand the relationship between attitude and behaviour through other mediating processes which aid in the understanding and prediction of behaviour. Further, the TRA has the capacity for enabling the investigation of the processes involved in forming an intention and ultimately choosing to perform one of two different behaviours. This is an essential requirement for a theory to be applied to the decision making phase of the infant feeding experience, as every prospective mother must choose between either breast or bottle-feeding.

To conclude this section, within the Social Cognitive framework used for this study, the TRA fulfills the needs of the study in terms of both the approach to understanding the

processes involved in forming an intention to and performing the behaviours of breast and bottle-feeding, and also in making the choice decision which is an essential duty of infant feeding behaviour by the mother. The following section provides a synopsis of the TRA in its most standard form stipulated by Ajzen and Fishbein (1980), with examples and illustrations of the interrelationships between the components of the theory and the processes that they are designed to represent.

2.2 Overview of the Theory of Reasoned Action

It is intended that this section should provide an account of the TRA in its most conventional and refined form (Ajzen & Fishbein, 1980) (i.e. that recommended by the authors themselves) using examples from a hypothetical study of male and female students' use of the male condom (due to the prevalence of the study of this behaviour in the literature, see section 2.3). Following this account, a detailed analysis of past and current research utilising the TRA will be presented, examining not only the variations in the application of the TRA, but more specifically how researchers have modified the theory in order to meet the aims of their research. Finally, infant feeding attitude research will be examined with a view to laying the foundations for the present study.

2.2.1 Assumptions of the Theory of Reasoned Action

In order to more fully comprehend the TRA it is necessary to understand the two major assumptions that underpin the theory. The first of these is that behaviour is under the individual's volitional control, i.e. that individuals have control over the processes they use in deciding whether or not to perform a behaviour. It can be seen from figure 1 that the TRA maintains that behaviour itself is determined exclusively by an individual's behavioural intention, i.e. the individual's intention to perform the behaviour. Therefore, if

an individual has formed an intention to perform a behaviour, it is likely that the behaviour will be carried out. However, in this respect the theory does not take into account the factors that might be outside the individual's control, and may inhibit their execution of the behaviour. According to Ajzen and Fishbein (1980) however, such 'external variables' can only affect behaviour, "if they are related to one or more of the variables specified by our theory," (Ajzen & Fishbein, 1980, p. 82). Thus, according to the TRA, external variables do not have a direct effect on behaviour but rather act on attitudes, subjective norm or intention. In this way, as the theory maintains that behaviour is immediately determined by behavioural intention, the actual performance of the behaviour remains under the individual's volitional control. For example, a woman may have formed an intention to regularly exercise at a gym, but feels that she cannot perform this behaviour as she feels uncomfortable at the gym. Although this feeling of being uncomfortable does effect the woman's performance of the behaviour, it does not affect the behaviour directly but is instead mediated by intention.

The second assumption of the TRA is that individuals are 'rational actors' (Thuen & Rise, 1994) in their decision to perform a behaviour. Hence, as the title of the theory suggests individuals utilise their reasoning to examine the existing evidence for and against carrying out a behaviour prior to forming an intention to perform it. For example, in deciding to walk or drive to work, a businessman might take the speed of each behaviour (walking or driving) into account, as well as other factors such as the weather and how much he had to carry with him. Although Ajzen and Fishbein (1980) admit that the TRA itself cannot account for all types of behaviour (e.g. repetitive or habitual behaviour), it is successfully applied to varying social and health behaviours where such reasoning used by individuals in forming such behavioural intentions could be assumed.

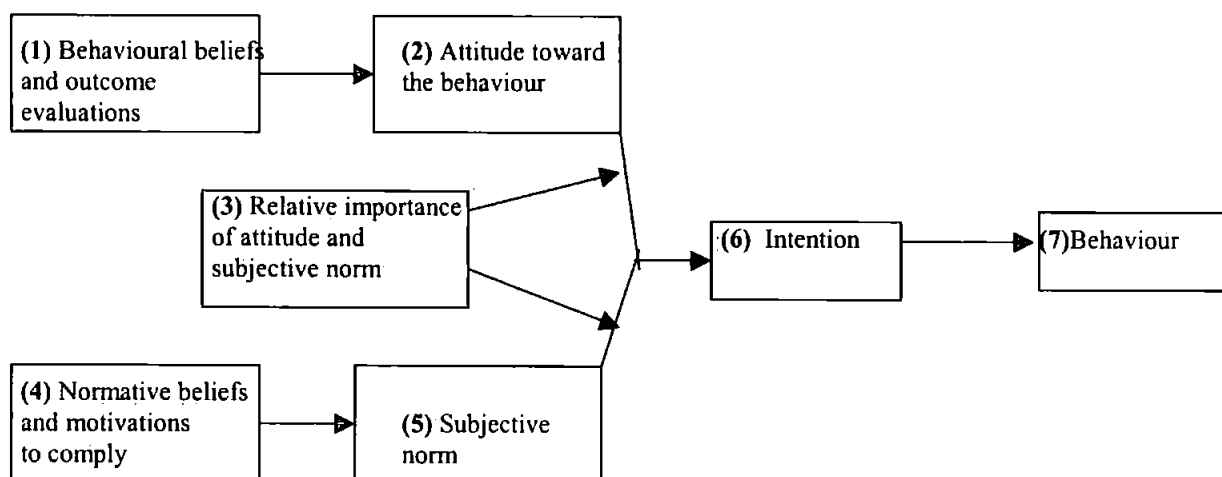
The assumptions of the TRA discussed above are associated with how individuals use their abilities and available knowledge respectively in order to form an intention. That does not mean to say that the only components of necessity to the theory are intention and behaviour.

The TRA also consists of an attitudinal and a normative component, which are proposed to allow the prediction of behavioural intentions. The attitudinal component is made up of both attitudes and behavioural beliefs. Attitudes are broad negative or positive feelings about performing the behaviour. For example, one individual might feel that horse riding is exciting, whilst another individual may consider horse riding to be dangerous. Compared to attitudes, behavioural beliefs are more specific thoughts about performing the behaviour, and can be regarded as beliefs about the advantages and disadvantages of performing a behaviour. Continuing with the behaviour of horse riding, one individual may believe horse riding will keep him or her fit, whereas another may believe that horse riding will cause his or her back to ache.

The normative component is also made up of two constituents, namely the subjective norm and normative beliefs. The normative component, unlike the attitudinal component, does not concern how the individual feels about performing the behaviour, but rather their belief about whether or not other people think that they should or should not perform the behaviour. Similar to attitudes, the subjective norm is the *general* belief by the individual that people who are important to them feel they should carry out a particular behaviour. Normative beliefs on the other hand are more specific and are the beliefs that particular people important to the individual (for example, partner or mother) think that they should perform the behaviour. Both behavioural beliefs and normative beliefs are proposed by the TRA to be determinants of attitude and subjective norm respectively.

In order to comprehensively explain the TRA, and the functions of its components it is necessary to look at the attitudinal and normative components both separately and in an integrated format, as presented in the following pages. Reference will be made to a hypothetical study about male condom use by students to further illustrate the measurement of the components and the overall coordination of the theory. Male condom use has been chosen as an example because it is currently one of the primary applications made by researchers of the TRA (e.g. Albarracin, Fishbein & Middlestadt, 1998; Diaz-Loving & Villagran-Vazquez, 1999; Smith & Stasson, 2000; Sutton, McVey & Glanz, 1999). All examples used to illustrate this hypothetical study referring to condom use represent *male* condom use. Figure 1 below also provides useful reference for understanding the theory.

Figure 1: Diagram to show relationships among the theoretical components of the Theory of Reasoned Action (Ajzen & Fishbein, 1980)



2.2.2. Attitudinal component

2.2.2.1 General Attitude

The attitudinal or personal component (Ajzen & Fishbein, 1980) of the TRA, illustrated in box number 2 in figure 1 above, is the individual's evaluation of a behaviour, or as Ajzen

and Fishbein (1980, p.54) described it, “ simply a person’s general feeling of favourableness or unfavourableness for that concept.”

Ajzen and Fishbein (1980) demonstrated that the attitude score can be calculated by use of a single bipolar scale such as:

Item 1:

My attitude toward using a condom when next participating in sex is

favorable _____ : _____ : _____ : _____ : _____ : _____ : _____ unfavorable
extremely quite slightly neither slightly quite extremely

The evaluation of the concept under scrutiny is, however, often measured by use of the semantic differential scale (Osgood, Suci & Tannenbaum, 1957). The adjectives used to elicit favourable or unfavourable responses from participants are ones that enable evaluation of performing the behaviour on such a bipolar scale. Most researchers ask participants to evaluate several facets of performing the target behaviour, in order to attain a broader, and hopefully more honest measure of individual’s attitudes concerning performing the behaviour. For example, in the hypothetical study, participants could be asked to evaluate using a condom when they next participate in sexual intercourse on the scales illustrated in items 2-5 below:

Item 2:

natural _____ : _____ : _____ : _____ : _____ : _____ : _____ unnatural
extremely quite slightly neither slightly quite extremely

Item 3:

comfortable _____ : _____ : _____ : _____ : _____ : _____ : _____ uncomfortable
extremely quite slightly neither slightly quite extremely

Item 4:

satisfactory _____ : _____ : _____ : _____ : _____ : _____ : _____ unsatisfactory
extremely quite slightly neither slightly quite extremely

Item 5:

safe _____ : _____ : _____ : _____ : _____ : _____ : _____ unsafe
extremely quite slightly neither slightly quite extremely

The way in which these adjectives can be chosen is discussed in the next chapter.

However, the point to be made here is that the adjectives must allow the individual to show his or her favourableness / unfavourableness toward the behaviour in a way that is relevant to performing that behaviour. It would be meaningless, therefore, for participants to be asked to evaluate using a condom when they next participate in sex as, for example, professional or unprofessional. These adjectives bear no relevance to performing the behaviour of using a condom during sexual intercourse, and so could not elicit the required evaluation of the favourableness or otherwise of the individual toward performing the behaviour.

The overall score of the attitudinal component of the theory is the sum of the scores on each of the 7-point bipolar scales. The score for each scale is calculated by taking the far left point on the scale as +3, and taking the far right point on the scale as -3. For example, regarding the first of the scales above, extremely natural would yield a score of +3, and extremely unnatural would yield a score of -3. Mid-point on the scale would equal zero. The single scores produced by this method show the individual's attitude toward performing the behaviour as either favourable (positive scores) or unfavourable (negative scores).

2.2.2.2 Behavioural beliefs and outcome evaluations

According to the TRA, attitude is determined by behavioural beliefs and outcome evaluations (refer to figure 1, box number 1). Hence, behavioural beliefs and outcome evaluations are related to (but not necessarily predictive of) attitude. Beliefs are developed about an object or behaviour, “by associating it with various characteristics, qualities, and attributes,” (Ajzen & Fishbein, 1980, p.63). Furthermore, attitude toward an object or behaviour is formed in conjunction with our association of that behaviour or object with predominantly positive or negative characteristics. According to Ajzen and Fishbein (1980), it is an individual’s ‘salient’ beliefs (the advantages and disadvantages of performing the behaviour that he or she can recall when asked) that influence their attitude and assists in its creation. However, it is not always practical to elicit individual’s salient beliefs about performing a behaviour, and assess their evaluation of these beliefs, as well as measuring the remaining components of the theory in one sitting. To circumvent this problem, Ajzen and Fishbein (1980) propose that ‘modal salient beliefs’ are elicited from the population that is to be studied. For example, in our hypothetical study where the condom use of students is to be investigated, a number of students from the same population could be asked about their salient beliefs about using a condom when they next participate in sexual intercourse. As it is important to extract both positive and negative beliefs about male condom use, participants could be asked to disclose what they believe to be the advantages and disadvantages of using a condom when they next participate in sex. Once a set of salient beliefs is elicited from each participant, it is necessary to perform a content analysis to determine the frequency of each belief. It is then left to the researcher’s judgment as to which beliefs to include in the set of modal salient beliefs used to test the theory on a larger sample of the same population.

When measuring a sample’s modal behavioural beliefs, a bipolar evaluative scale is used in order to assess participants’ judgement of the consequences of that belief, that is, how likely or unlikely it is that the outcome of that belief will occur on performing that particular behaviour. For example, item 6 below, represents a hypothetical positive modal salient belief with respect to condom use. Conversely, item 7, allows participants to evaluate the likelihood of the occurrence of a potential disadvantage of condom use.

Item 6:

My using a male condom when I next participate in sex will prevent me from catching STDs

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

Item 7:

My using a male condom when I next participate in sex will prevent sex from being spontaneous.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

Items 6 and 7 show how these modal salient beliefs can be evaluated by participants to have either positive or negative consequences. However, according to the TRA, this does not in itself assess whether the outcome of the belief is good or bad. This assessment is achieved through measuring the individual’s evaluation of the outcome of each of the modal salient beliefs. For example, items 8 and 9 below illustrate how participants are able to evaluate the outcome of each of the beliefs in items 6 and 7 above. Therefore, each behavioural belief item has a corresponding outcome evaluation item (for example item 7 above, and 9 below).

Item 8:

Preventing me from catching STDs is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Item 9:

Preventing sex from being spontaneous is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

As with the belief items (items 6 and 7 above), a 7-point bipolar scale is used for each of the 'outcome evaluations' as they are known. The adjectives used to describe the outcomes of each belief are 'good' and 'bad', each of which is situated at opposite ends of the scale. A mark on the positive (or far left) end of the scale achieves a score of +3, whereas a mark on the negative (or far right) end of the scale achieves a score of -3. A mark on the middle point of the scale achieves a score of zero. In order to score this component of the theory, the score from each corresponding behavioural belief and outcome evaluation item is multiplied. Subsequently, all of the products between each of these corresponding items are summed to provide a total behavioural beliefs and outcome evaluations score for each participant.

2.2.3 Normative component

2.2.3.1 Subjective norm

As introduced above, the normative component is made up of the subjective norm and its determinant of normative beliefs and motivation to comply. It is the subjective norm and attitude that are suggested by the TRA to predict behavioural intention. Ajzen and Fishbein (1980, p.57) describe the subjective norm as, "a specific behavioural prescription attributed to a generalize social agent." In other words, it is the influence of significant others in an individual's life upon a decision regarding whether or not to perform a behaviour. In the case of the normative component, which is illustrated in box number 5 in figure 1, Ajzen

and Fishbein (1980) recommend that a single evaluative 7-point bipolar scale should be used. The measure of participants' subjective norm in the hypothetical study regarding condom use could be as follows:

Item 10:

Most people who are important to me think
I should _____ : _____ : _____ : _____ : _____ : _____ : _____ I should not
use a condom when next participating in sex.

Although it can be argued that this is a totally subjective measure of the actual influence of significant others on participants' decision as to whether or not to use a condom (and not a direct measure of the influence), it is this subjective account that itself influences the intention of the individual to perform the relevant behaviour. Therefore, according to the TRA, the more strongly that the individual believes that their significant others think that they should perform a behaviour, the more likely it is that they will form an intention to perform that behaviour.

As with the attitude score, an individual's subjective norm is calculated by their stated evaluation on a semantic differential scale such as that above, with the far left point of the scale generating a score of +3 and the far right point of the scale generating a score of -3. Again, a cross on the mid-point of the scale yields a score of zero. Subsequently, a positive score on the subjective norm reveals that the individual believes that most people who are important to them think that they should perform the behaviour. According to the TRA, this should furthermore influence the individual to form an intention to perform the relevant behaviour. Conversely, a negative score on this component of the theory demonstrates the individual's perception that most people who are important to them think that the individual should not perform the behaviour, which according to the TRA, should influence the individual to form an intention not to execute the relevant behaviour.

2.2.3.2 Normative beliefs and motivation to comply

According to the TRA, normative beliefs and their corresponding motivations to comply, are the direct determinants of the subjective norm (refer to figure 1, box number 4). A normative belief is therefore, “ a belief about another person, and it concerns that person’s behavioural prescription,” (Ajzen & Fishbein, 1980, p. 73). In other words, it is the belief held by an individual, that a specific person who is important in his or her life, believes that the individual should or should not perform a certain behaviour. For example, in the hypothetical study, this would constitute a participant’s belief that her mother thinks that she should or should not use a condom when next taking part in sexual intercourse. As was the case with behavioural beliefs, it is the individual’s beliefs about their salient referents (people who are important to them), which are said to be the main determinants of their subjective norm, and therefore make up the constituent of normative beliefs. However, as made clear in the previous section, it is not always practical to elicit salient referents for each individual participant. As such, it is more convenient to elicit the modal salient referents of a representative sample of the population under scrutiny, by asking which individuals or groups would endorse or oppose their performing the behaviour in question. The modal salient referents to be used in the scale would again be chosen by carrying out a content analysis on the individual’s salient referents, and choosing those that had been elicited most frequently. It is essential that modal salient referents are obtained for each behaviour to be studied, as although some may remain constant across many behaviours (for example, partner), this is not true for all referents. For example, an individual may feel that using a condom when he or she next participates in sex would be highly supported by their G.P., but may be neither supported nor opposed by the individual’s boss. However, an individual may feel that their boss would oppose their taking a holiday during a busy work period, whereas they may think that their G.P. may not have an opinion about it.

In order to measure normative beliefs acquired from modal salient referents, a 7-point evaluative scale is used to assess participant's judgement as to whether each referent thinks that he or she should or should not perform the behaviour. Item 11 (below) is an example of such an item that could be used in the hypothetical study to determine whether participants believe that their partners think that they should or should not use a condom when they next participate in sex. As before, the scale proceeds from left to right from +3 to -3.

Item 11:

My partner thinks
I should _____ : _____ : _____ : _____ : _____ : _____ : _____ I should not
use a condom when I next participate in sex.

It is not enough simply to know whether each participant feels that his or her modal salient referents support or oppose their performing the behaviour. In order to successfully understand the subjective norm, the individual's motivation to comply with each referent must be measured. If a woman believes, for example, that her best friend feels strongly that she should use a condom when next participating in sexual intercourse, but that generally she does not want to do what her best friend thinks she should do, the effect of this normative belief on the subjective norm would be minimal. However, if the same woman believes that her GP thinks that she should use a condom when next participating in sexual intercourse, and the woman would usually want to do what her GP thinks she should, this would have a positive effect on her subjective norm, her intention to use a condom when next participating in sex, and according to the TRA, her subsequent behaviour. Therefore, each normative belief item must have a corresponding motivation to comply item (for example items 11 above and 12 below).

Item 12:

Generally speaking, how much do you want to do what your partner thinks you should do?

Not at all _____:_____:_____:_____:_____:_____ Very much

Unlike the previous items, the bipolar evaluative scale used to measure the motivation to comply with each referent is scored from +1 to +7. The score from each normative belief item is then multiplied by the score from its corresponding motivation to comply item. The products resulting from each of the sets of corresponding items is then summed to give a normative beliefs and motivation to comply score for each participant.

2.2.4 Integrated model

In order to understand the integration and collaborative nature of the theoretical components of the TRA in the prediction of behaviour (as illustrated in figure 1), it is necessary to grasp two key concepts of the theory. Firstly, the relative importance of attitude and subjective norm in predicting behavioural intention, and secondly, the mediating role of behavioural intention between the attitudinal and normative components and the performance of behaviour. Each of these key concepts will be discussed in turn below.

The TRA places great importance on the comparative ability of attitude and subjective norm to predict behavioural intention. That is, the theory concedes that not all behavioural intentions to perform all behaviours are predicted equally by attitude and subjective norm, and that it is vitally important to assess the relative importance of these elements of the theory in order to determine the origins of the behavioural intention. Ajzen and Fishbein recommend evaluation of the relative importance of attitude and subjective norm (refer to figure 1, box number 3) by use of regression analysis with the subjective norm and attitude as the independent or predictor variables and intention as the dependent variable.

Regression analysis not only allows the researcher to determine the proportion of variance in predicting intention which is attributable to attitude and subjective norm, but also the significance of the contribution of each of the components. In this way, if it was found that attitude and subjective norm explained a significant proportion of the variance in the model, it would be possible to determine whether both constituents would be required in order to successfully predict intention, or if only one was required for adequate prediction. Not only would this aid the measurement of intention to perform the behaviour in the future, but it would also add to the understanding of how individuals form an intention to perform that particular behaviour.

Research has shown variation in the ability of both the attitudinal and normative components in predicting behavioural intention. In some instances participants' intention to perform the target behaviour is predicted more by the attitudinal component of the model, whereas in other cases, the intention is more significantly predicted by the normative component of the model (Ajzen, 1988). Such information is useful when investigating how such intentions are formed and particularly when designing interventions to either promote or inhibit intentions to perform specific behaviours.

The second central concept of the TRA is the mediating role of intention between the attitudinal and normative components of the theory and resulting behaviour (refer to figure 1, box numbers 6 and 7). Without an appropriate measure of the behavioural intention it would not be possible, according to the TRA, to adequately predict engagement (or otherwise) in the behaviour in question. Although it is expected that there should be a relationship between both the attitudinal and normative components and behaviour, and that these components may in fact have some degree of predictive ability concerning behaviour, the optimum method for ensuring adequate prediction of behaviour is measurement of behavioural intention. According to Ajzen and Fishbein (1980),

behavioural intention can be measured successfully using a single bipolar evaluative scale such as that provided in item 13 below, written for the hypothetical study of male condom use.

Item 13:

I intend to use a male condom when I next participate in sex
likely _____:_____:_____:_____:_____:_____ unlikely
extremely quite slightly neither slightly quite extremely

2.2.5 Summary of overview of the Theory of Reasoned Action

The above pages provide an account of the components of the classic TRA, and the proposed relationships between these components recommended by Ajzen and Fishbein (1980). The TRA has been extensively utilized to understand the associations between these components with regard to a wide variety of behaviours in social psychology, and more recently, in health psychology. The following section provides an account of the recent TRA literature and explores the diverse nature of the applications of the theory and the influence that such diversification can bring.

2.3 Review of the Theory of Reasoned Action literature

It was intended that in order to sufficiently understand the current literature, a meta-analysis of the most recent TRA research would be carried out. Several meta-analyses of TRA research have been carried out including recent analyses of condom use studies (e.g. Albarracin, Johnson, Fishbein & Muellerleile, 2001; Sheeran & Taylor, 1999) that have largely focused on the statistical results and claimed success of the studies. It is proposed here that as an alternative to this general focus, the concentration of the current meta-analysis would be the methodological and theoretical differences between the studies, and the issues arising from these differences. In order to achieve this, due to the abundance of

research in the area, the search was limited to articles that were available to the researcher and that had been carried out in the preceding five years. As a consequence, twenty articles were chosen and reviewed (refer to Table 1, below). Methodological issues such as scale construction and statistical analysis were investigated, as well as the integral machinery of the TRA such as the components and component-relationships measured by each study, and the reporting of the relative importance of the attitudinal and normative components. These issues are of great importance as it is argued here that if variation in theoretical application and measurement of components of the TRA is not recognised, resulting analyses, whether statistically significant and/or purportedly upholding the theory, cannot be simply accepted. Without acknowledging these differences, comparisons across studies and more importantly generalisation of the usefulness of the TRA cannot be made.

The behaviours to which the theory has been applied are of a wide range, from social behaviours such as drink driving (Gastil, 2000) and career orientation (Ajzen & Fishbein, 1980; Vincent, Peplau & Hill, 1998) to health behaviours such as mammography participation (Montano & Taplin, 1991), cervical smear participation (Barling & Moore, 1996) and the donation of bone marrow (Bagozzi, Lee & Van Loo, 2001). By far the most widely published application of the TRA in recent years has been AIDs preventive behaviour, most commonly, condom use (e.g. Albarracin, Fishbein & Middlestadt, 1998; Bosompra, 2001 Diaz-Loving & Villagran Vazquez, 1999; Kashima, Gallois & McCamish, 1993; Smith & Stasson, 2000; Sutton, McVey & Glanz, 1999). With such a profusion of research perpetuating the utility of the TRA (in whole or in part), one might be forgiven for thinking that, although the results of a study applying the TRA may not in most instances be generalisable across behaviours or samples, the theory itself could be relied upon to enable understanding the forming of intentions and behaviour in the case of each new application. However, the applications of the TRA in much of the research literature is as varied as the behaviours to which it has been applied.

Table one: Components measured by each study

Study	Attitudinal component	Theory of Reasoned Action components		
		Normative component	Behavioural intention	Behaviour
1. Abrams, Ando & Hinkle (1998). Workers' turnover Intentions.	Attitude toward leaving Organisation.	Subjective norm: 4 referents. How each referent feel if left organisation	Intention to leave company: 4 measures: higher score represents greater intention to leave company	—
2. Albarracin, Fishbein & Middlestadt (1998) Condom use.	Attitude: current and past Outcome beliefs	Behavioural norm: perceived normative pressure to use condoms	Intention: next time have sex	Past condom use
3. Bagozzi, Lee & Van Loo (2001). Donation of bone marrow.	Direct measure: 5 affective attitudes 5 indicated evaluative attitudes	Direct measure: 4: people important/mother/father/grandmother/grandfather approve/disapprove	2 behavioural intentions in next 6 months: If asked to donate/ if bone marrow matched.	—
4. Bogart, Cecil & Pinkerton(2000) Female condom use	Attitudes Outcome beliefs (7 +ve, 3 -ve)	Normative beliefs (7 referents)	intention	—
5. Bosompra (2001) Condom use.	Indirect: 6 belief x outcome evaluation	Indirect: normative belief x motivation to comply.	2 items: I intend to every time I will try every time	—
6. Bunce & Birdi (1998) Physicians' job control	Attitude: direct measure 8 semantic differential scales	Subjective norm: 2 items: Direct subjective norm item Motivation to comply item	Intention: 1 measure	Past behaviour: since qualification, I have requested hospital autopsies for every patient in my care.
7. Chan & Cheung (1998) Premarital sexual Behaviour among college students	Attitude toward to act (premarital sex) Evaluations of anticipated outcomes x Belief strength	Subjective Norm (4 items) Normative beliefs (8 referents) x motivation to comply	behavioural intention (4 items)	—
8. Diaz-Loving & Villagran-Vazquez (1999) Condom use.	Behavioural attitudes behavioural beliefs	subjective norm motivation to comply	behavioural intentions	condom use request of condom use

Table one continued: Components measured by each study

Study	Attitudinal component	<u>Theory of Reasoned Action components</u>		
		Normative component	Behavioural intention	Behaviour
9. Evers & Karnilowicz (1996). Attitude as function of disease state in MS.	behavioural beliefs x belief evaluation provided indirect measure of attitude	indication that normative beliefs measured, but not reported due to attitudinal focus of study	-	-
10. Gastil (2000) Drinking & Driving	outcome expectancy: likelihood of being arrested outcome evaluation: severity of Punishment	normative beliefs (1 referent)	indirect measure due to strong social norms – agree/disagree to statements.	-
11. Kim, Goto, Bai, Kim & Wong (2001). Participation in mentoring Program.	Direct measure 4 semantic differential	Direct measure 1 item: people who are important	Intention to participate in mentoring program.	Participation in mentoring Program.
12. Levin(1999) Health care workers glove use	Attitude direct behavioural beliefs x belief evaluation	subjective norm normative beliefs x motivation to comply	2 measures: glove use over next month % time think will wear gloves	How many times not worn gloves over past month.
13. Poss (2000) Participation in a Tuberculosis screening program	General attitude behavioural beliefs	Subjective norm Normative beliefs	2 measures: intention to have skin test intention to have skin test read	2 measures: having the skin test having the skin test read
14. Sideridis, Kaissidis & Padelidu (1998) Student study behaviour.	Belief strength Outcome evaluation	Normative beliefs: friends/most people. Motivation to comply	Intention: 2 measures: Intend to study hard for 4 weeks Determined to study hard for 4 weeks	Assessment by each participant regarding how hard they felt that had studied during 4 mths since initial assessment

Table one continued: Components measured by each study

Study	Attitudinal component	Theory of Reasoned Action components		
		Normative component	Behavioural intention	Behaviour
15. Smith & Stasson (2000) Condom use & discussion of AIDs related information with partner	Direct attitude (3 items) for both using a condom & discussing AIDs related information with a partner. Negative expected outcomes adapted from scale by O'Leary et al. (1992).	Subjective norm assessed by single item measures from Terry et al. (1993) for both condom use and discussing AIDs related information with partner.	intention for both condom use and discussion of AIDs related information with a partner.	—
16. Steen, Peay & Owen (1998) Adolescents' intentions to minimise sun exposure	Estimated (indirect) attitude achieved from behavioural beliefs x outcome evaluations. Direct attitude assessed by 3 scales.	Estimated (indirect) subjective norm achieved from normative beliefs x motivation to comply. Direct subjective norm (1 item).	intention (1 item)	—
17. Sutton, McVey & Glanz (1999) Condom use.	Indirect attitude achieved by behavioural beliefs x outcome evaluations	Indirect subjective norm achieved by normative beliefs (5 referents) x motivations to comply.	behavioural intention (future)	condom use: past 12 months first time sex last time sex
18. Taylor & Todd (1997) Consumer composting behaviour.	Personal & societal relative advantages provide indirect measure of attitude.	Internal and external normative beliefs provide indirect measure of subjective norm.	Behavioural intention	Composting behaviour over 2 week period (participants requested to keep diary).
19. Trafimow (1996) College student's intention to drink.	Direct attitude measure	Direct subjective norm measure	Intention measure: varied according to condition: Avoid drinking/ slight buzz/ get drunk	—
20. Vincent, Peplau & Hill (1998). Women's career Behaviour.	Gender role attitudes scale used to attitude.	Subjective norm comprising of normative regarding 3 referents.	career intention	career 14 years later

2.3.1 Item generation methods and scale construction

The most common instrument used for the application of the TRA is a scale including separate subscales used to measure each of the components of the theory. As discussed earlier, Ajzen and Fishbein (1980) recommend that in order to generate items for use on the subscales, modal behavioural beliefs and modal normative beliefs should be gathered from a sample of the population to be studied in order to provide items for the behavioural and normative belief subscales respectively. In the case of modal behavioural beliefs it is advised that as well as asking the sample to provide advantages and disadvantages of performing the behaviour, they should also provide information regarding, “anything else they associate with performing the behaviour under investigation, “ (Ajzen & Fishbein, 1980, p.68). In this way, additional themes concerning the performance of the behaviour can be observed and used for measurement of, for example, attitude. Brief examination of the literature, however, shows that this method of item generation is not always adhered to, and even when it is, there is often variation from this method of eliciting modal behavioural and normative beliefs.

On reviewing the studies, it became apparent that the reported methods of item generation and scale construction fell into two main categories. Firstly, six studies broadly followed Ajzen and Fishbein's (1980) recommendations, and consulted a sample of the population to be studied in the main investigation in order to elicit the modal salient beliefs of the population (Bosompra, 2001; Chan & Cheung, 1998; Evers & Kamilowicz, 1996; Kim, Goto, Bai, Kim & Wong, 2001; Steen, Peay & Owen, 1998; Taylor & Todd, 1997). The second category of item generation identified was researchers' use of the measures used by or the results attained by previous research (Albarracin et al., 1998; Bogart, Cecil & Pinkerton, 2000; Diaz-Loving & Villagran-Vazquez, 1999; Levin, 1999; Poss, 2000;

Sideridis, Kaissidis & Padaliadu, 1998; Smith & Stasson, 2000; Trafimow, 1996; Vincent, Peplau & Hill, 1998). Each of these two categories will now be discussed in turn with regard to the appropriateness of each method used to generate items for measurement of the components of the TRA.

The first category of item generation to be dealt with here is the method recommended by Ajzen and Fishbein (1980), that a sample of the population to which the finished instrument is to be administered should be consulted as to the modal behavioural and normative beliefs, and additional information or concerns that they might have about carrying out the behaviour. The researchers employing this method of item generation often term this process an 'elicitation study' (e.g. Chang & Cheung, 1998). The elicitation studies in this category varied in their methods of obtaining modal behavioural and normative beliefs. A number of researchers administered open-ended questionnaires, or requested written answers from their participants in response to questions concerning the advantages and disadvantages of performing the behaviour under question (e.g. Evers et al. 1996; Steen et al. 1998). Conversely, Kim et al.(2001) employed qualitative methodology by carrying out interviews with a sample of the study population. Although stating accordance with Ajzen and Fishbein's (1980) recommendations, Taylor and Todd (1997) do not make it clear as to the methodology used to elicit salient beliefs from the population.

It is not surprising that the majority of studies in this category use written formats to achieve the information required to generate items for the scales. This method of elicitation is both less time consuming and less complicated than conducting interviews or focus groups, as all participants can be asked to respond to the same question simultaneously, and the resulting data (short written answers) is easier to code. Although Ajzen and Fishbein do not actually endorse qualitative methodology in their recommendation

regarding item generation the benefit of using interviews (either single participants or groups) to elicit responses, is the richness of the data that can be achieved. By using such qualitative methodology, specific questions pertinent to the inquiry can still be addressed and additionally talking more generally about the subject could result in a line of investigation that may be vital to the measurement of the theory that might otherwise not have been pursued.

The second and largest category of item generation methods used in the research reviewed here are those based on previous research, either from earlier studies (Bogart et al., 2000; Diaz-Loving & Villagran Vazquez, 1999; Levin, 1999; Poss, 2000), or in the form of previously constructed scales (Albarracin et al., 1998; Sideridis et al., 1998; Smith & Stasson, 2000; Trafimow, 1996; Vincent, Peplau & Hill, 1998). The main point to be raised here is the relevance of the scales/past research to the current investigation and the effect that the application of such information could have on the measures and consequently the outcomes of the investigation. Explicitly, if the measures used are not relevant to the behaviour being investigated, the components will not be appropriately measured and consequentially, the understanding and prediction of the behaviour could not be achieved.

Of the studies that based their scale construction on the findings of previous research, in two cases the previous research in question was written by the authors of the current study (Diaz-Loving & Villagran-Vazquez, 1999; Poss, 2000). Unfortunately, little information was provided as to the nature of the pilot study upon which the scale construction of Diaz-Loving and Villagran-Vazquez's (1999) study was based. However, Poss's (2000) study of migrant farmworkers' intentions to be screened for tuberculosis (T.B.) was based on a qualitative study by the author (Poss, 1998), which investigated a sample of the population's explanatory models regarding T.B. It could be assumed that because the

previous research was by the author of the current study, the subject of the base of item generation would be appropriate. However, it is the time between the qualitative study and the current investigation that could be of concern here. If the researcher could be assured that there were no major changes in migrant farm worker's perceptions of T.B. screening between the times of these studies (e.g. due to new epidemic), the qualitative study can be regarded as an appropriate elicitation study for the current research. Researchers using past research as a basis for item generation, no matter how relevant the subject matter, must ensure that no major changes have taken place with regard to the behaviour under question prior to making use of such research.

Time is also an important factor in Levin's (1999) study of health workers' glove use. The items in this study were partially based upon a study by Fox (1989). Given the time between the two studies is a full decade, it is possible that issues relevant to health care workers regarding their use of gloves could have changed over this time. For example, advances in knowledge of the transmission of hospital based infections such as MRSA (Struelens, 1998) and changes in the availability and cost of products on the market may have occurred. Both of these aforementioned factors could affect the applicability of certain items to the proposed measures. If items are to be based on past research it is clear that the research must be relevant to the current study both in terms of the effect of time on current issues, and the subject of the behaviour under investigation.

In terms of relevance of the research to the behaviour under investigation, the scale used in Bogart et al.'s (2000) study of intentions to use the female condom was based upon the research literature regarding not female condom use but male condom use. The rationale provided by the authors for basing measures on such research was that participants would not have formed salient beliefs regarding the use of female condoms (due to their relatively recent introduction), but would have formed such beliefs regarding the male condom.

There are three points to be made here. Firstly, the issues associated with using a male condom may well be very different to those associated with using a female condom. Therefore, basing the items on research concerning male condom use could risk both the inclusion of irrelevant items in the scale, and also the omission of items fundamental to the investigation. Secondly, it is unreasonable to assume that participants have not yet formed salient beliefs about the use of the female condom without conducting an elicitation or exploratory study to ensure that this is so. Finally, if it is the case that the sample have not yet formed beliefs relating to the female condom, how is it possible to measure such beliefs on a scale (particularly with items that have not been specifically designed for the purpose)?

Relevance of past research upon which items are based is as vital an issue to studies employing existing scales (in whole or in part) as it is to those basing their items upon the results of previous investigations with regard to appropriate measurement of the theoretical constructs of the TRA. Although existing scales may have been tested regarding reliability and validity for the studies in which they have been used previously, it cannot simply be assumed that they are appropriate for every study. Similar to the studies that use the findings of previous research to construct scales, it is essential that the measures used reflect not only the topic under investigation, but also measure the theoretical construct that they are to represent. Vincent et al.'s study of women's career behaviour used a scale previously written to measure sex-role traditionalism (Peplau, Hill & Rubin, 1993) to provide a measure of attitude for their scale. The grounds provided for using the scale were that, "In the present study, we used a gender-role attitude measure because an attitude measure reflecting specific career-related beliefs was not available," (Vincent et al., 1998). Although using such a scale is advantageous as regards time, such expediency is worthless if the measure used is not specific to the research question to be addressed. Furthermore, Albarracin et al.'s (1998) replication of Fishbein, Trafimow and Middlestadt's (1995)

study of condom use shows it might still be necessary to check and modify measures to ensure that the theoretical constructs are appropriately represented in the scale, for example, due to moderate changes in the sample under investigation, despite the instrument (or at least parts of it) being used previously.

Thus, it is of vital importance when conducting research involving the application of the TRA, that the items that are used in the scale (whether adapted from a previous study or generated specifically for the current investigation), both satisfy the needs of the research question and permit accurate measurement of each component. Interestingly, several studies did not provide adequate details of the method of item generation used (e.g. Abrams, Ando & Hinkle, 1998; Bagozzi et al., 2001; Bunce & Birdi, 1998; Gastil, 2000; Sutton, McVey & Glanz, 1999). Apart from Gastil's (2000) study, which used a telephone interview method, all of the aforementioned studies used scales which would have required detailed construction and analysis prior to use. Despite the importance of knowledge of the item generation methods to the reader, it is apparent that a proportion of the research literature does not see this to be a critical issue. This is further substantiated by the focus of the recent meta-analyses conducted in this area (e.g. Albarracin et al., 2001; Sheeran & Taylor, 1999) that have concentrated primarily on collating the results of studies regarding a particular area to observe any consistency in the findings. It is argued here however, that without ensuring accurate measurement of components by appropriate item generation methods, subsequent results could be questioned despite what may be considered to be statistically significant findings.

2.3.2 Theoretical components and component-relationships measured

As much as it is essential to ensure the adequate measurement of components through appropriate item generation methods, it is also critical to assess the representation of the

TRA itself through the existence and interpretation of the theoretical components in each TRA study. It may not be either appropriate or necessary to measure all of the components of the TRA discussed in the overview of the theory above. For example, not all research questions will require in-depth knowledge of the determinants of attitude and subjective norm and so measures of behavioural and normative beliefs will not need to be made. However, it is vital that all measures performed are undertaken appropriately to ensure accurate representation of each component, and that the central concepts of the TRA are accounted for. The theoretical concepts of the relative importance of attitude and subjective norm in predicting intention, and the mediating role of intention between attitude, subjective norm and the measure of behaviour will now be discussed in turn, in relation to both how the components are measured, and the impact that this has on the subsequent results using examples from the studies reviewed here (refer to Table 1, above).

As discussed in the previous section, according to the TRA, in order to adequately understand the determinants of intention to perform a behaviour, it is essential that the relative importance of attitude and subjective norm is calculated to determine how such intentions might be predicted. Table one above, shows the components measured by each of the twenty studies examined in this meta-analysis, and, where the information was provided in the paper, the details of how each component was scored from the scale (e.g. cross-products or sums across scores). In order to assess the appropriateness of the studies' attention to this concept, it is crucial that the measurement of the components of attitude, subjective norm and intention are examined. The representation of each of these theoretical components by the studies in Table one will now be considered in turn.

It is apparent that there is a difference between many of the studies in the way in which attitude and subjective norm are measured. Ten of the studies examined obtained a direct measure of attitude and subjective norm (Abrams et al., 1998; Bagozzi et al., 2001; Bunce

& Birdi, 1998; Chang & Cheung, 1998; Diaz-Loving & Villagran-Vazquez, 1999; Kim et al., 2001; Levin, 1999; Poss, 2000; Smith & Stasson, 2000; Trafimow, 1996). That is, researchers asked participants to provide a general evaluation of their favorableness/unfavorableness toward performing the behaviour as suggested by Ajzen and Fishbein (1980). Although there are still differences between the studies in the items and subscales used to measure attitude in this way (e.g. Chan & Cheung's, 1998, use of four items to measure subjective norm as opposed to Smith and Stasson's, 2000, use of a single item) they still provide a direct measure.

Conversely, eight studies in the table provided indirect measures of attitude and subjective norm (Albarracin et al., 1998; Bosompra, 2001; Evers & Kamilowicz, 1996; Sideridis et al., 1998; Steen et al., 1998; Sutton et al., 1999; Taylor & Todd, 1997; Vincent et al. 1998). An indirect measure of attitude and subjective norm, as opposed to direct measurement of these components, means that participants have not been asked as to their broad favourableness or unfavourableness toward performing the target behaviour, but a conclusion has been derived from other measures taken. Four of the studies (Bosompra, 2001; Evers & Kamilowicz, 1996; Steen et al., 1998 ; Sutton et al, 1999) indirectly measure these components by sums of the cross products of behavioural beliefs and outcome evaluations to achieve a measurement of attitude, and sums of the cross-products of normative beliefs and motivation to comply to achieve an indirect measure of subjective norm.

The remaining studies that used an indirect measurement of attitude (Albarracin et al., 1998; Sideridis et al.; 1998; Taylor & Todd, 1997; Vincent et al., 1998) have all used different methods of indirect measurement of attitude and subjective norm. For example, Albarracin et al. (1998) gauged attitude and subjective norm regarding condom use by assessing past and current behavioural norms, and participants' perceived normative

pressure respectively, whereas Taylor and Todd (1997) indirectly measured attitude by examining personal and societal advantages of composting perceived by participants, and indirectly measured subjective norm by evaluating participants' internal and external normative beliefs. The remaining studies used either a combination of direct and indirect methods (e.g. Bogart et al. 2000) or a simplified version of indirect component measurement due to the instrument being used (e.g. Gastil's, 2000, telephone survey of drink-driving behaviour). So why do researchers use indirect measures of attitude and subjective norm, and what are the effects of its use on the application of the theory in concerning the central concept of the relative importance of attitude and subjective norm?

Indirect measures of attitude allow researchers to gauge more specific and far reaching aspects of performing the behaviour under investigation than either the semantic differential scales or one-item attitude or subjective norm measures recommended by Ajzen and Fishbein (1980). As Ajzen (1988) explains, "The responses they [the participants] provide to a set of specific questions are then used to infer the disposition under investigation." (Ajzen, 1988, p. 13). Therefore, by using the specific measures of, for example, behavioural and normative beliefs, rather than general and more global feelings of participants toward the target behaviour, it is anticipated that a more accurate measure of attitude and subjective norm will be achieved. It is uncertain, however, that all researchers, particularly those investigating behaviour that has not already been extensively applied to the TRA, could be sure that an indirect measure of attitude and subjective norm would allow a more accurate prediction of behavioural intention than a direct measure of the components. Without direct evaluation of the utility of both forms of these measures for specific behaviours, such a judgement cannot be made. It is therefore argued here that unless reliable previous research has proven that an indirect measure of the attitudinal and normative components predicts a greater proportion of the variance in intention than does a direct measure, both specific behavioural and normative beliefs and

general attitude and subjective norm should be measured as proposed in the full TRA model (Ajzen & Fishbein, 1980).

Not only must the attitude and subjective norm measurement methods be assessed to ensure satisfactory prediction of intention, but, according to the TRA the items used to measure the key relationship between attitude, subjective norm and intention, must match across the “behavioural elements” of action, target, context and time (Ajzen & Fishbein, 1980, p.34). This ‘principle of compatibility’ (Ajzen, 1988; Ajzen and Fishbein, 1980), states that the components of the TRA must correspond according to the aforementioned behavioural criteria to enable relationships between the components to be accurately measured. Thus it must be ensured, between attitude and intention for example, that both components are measuring the same action or behaviour performed in the same context, toward the same target during a specific or given period of time. Referring back to the hypothetical study of condom use from section 2.2 of this chapter, the action would be male condom use, the context could be during sexual intercourse, the time could be the next time the individual practices sexual intercourse, and the target could be with the individual’s regular partner. Depending upon the research question all four of the behavioural elements may not be required. For example, if the research question guiding the hypothetical study of male condom use was about condom use by the individual generally, it may not be necessary for the behavioural element of target of the behaviour to be addressed in any of the theoretical components. However, as stated by the theory, in order for the relationships among the components to be adequately understood, the principle of compatibility should be adhered to in as many of the behavioural elements as possible.

Unfortunately, it is not always possible to know whether studies have abided by the principle of compatibility, as researchers often do not provide enough information about

the items in the subscales of their instrument. However, even without the detailed information that examples of items would afford, it is possible to witness examples of studies that have not conformed to this principle. It can be seen (refer to Table 1, above) that all of the measurements of intention in the studies, as would be expected, are intentions to perform the behaviour at some time in the future. Yet, for example, Albarracin et al.'s (1998) study of condom use uses past and current attitudes toward condom use as the attitude measure, but participants are asked to state their intention to use a condom the next time that they take part in sexual intercourse. Clearly, the behavioural element of time is not consistent across the two components. Further, Vincent et al.'s (1998) study of women's career behaviour shows another example of a breach of the principle of compatibility, as the attitudes measured concern gender role, whereas participants are requested to declare the career that they intend to be in fifteen years after the study. Not only is time not accounted for in the attitude measurement, but the attitude measure itself is not compatible to intention regarding the behavioural elements of context, action and target. Although significant relationships might be found between components constructed without reference to the principle outlined above (e.g. Levin, 1999), it cannot be assumed that these resultant relationships represent those sanctioned by the TRA.

Adherence to the principle of compatibility is further evident in a central concept of the TRA: the relative importance of attitude and subjective norm in their ability to predict behavioural intention. In order to understand the processes that are used to form a behavioural intention, it is necessary to calculate the predictive value of both attitude and subjective norm. It can be seen in Table one that all but one of the studies (Evers & Kamilowicz, 1996) measures intention in some form. Further, all of these studies also make a type of measure of attitude and subjective norm. All of the studies in Table one apart from Evers and Kamilowicz (1996) make some attempt to understand intention by calculating the proportionate predictive ability of attitude and subjective norm. Although

different statistical methods are used (such as structural equation modelling, and regression analysis which will be discussed below) and in some cases, where other theories apart from the TRA are also being applied to understanding the behaviour (e.g., Poss, 2000; Smith & Stasson, 2000; Trafimow, 1996) other variables are entered into the equation apart from attitude, subjective norm and intention, all of these studies seek to test the TRA in regard to this central concept of the relative importance of attitude and subjective norm.

The problem with readily accepting the findings of these analyses lies in the measurement issues highlighted by the breaches of the principle of compatibility discussed above.

Despite the majority of studies finding that attitude and subjective norm significantly predict intention, it is possible that the predictive ability of one or both of these constructs could be improved by more accurate measurement and compatibility among the components. Interestingly, Vincent et al.'s (1998) study of women's career orientation (discussed above concerning the breach of the principle of compatibility in the measures of attitude and intention) found there to be no significant relationship between attitude and intention. Perhaps, had the two constructs of attitude and intention been matched with regard to the behavioural elements of time, target, context and action, this relationship could have been improved and the determinants of intention more satisfactorily understood. Accuracy of measurement and the adherence to the principle of compatibility have similar implications for the second of the main concepts of the TRA, the mediating role of intention.

According to the TRA, intention mediates between the constructs of attitude and subjective norm, and behaviour (refer to figure 1, box number 6). An investigation of the assessment of this key theoretical concept by the studies in this meta-analysis must involve examination of the representation of the components of intention and behaviour, and the

compatibility of these measures with regard to the behavioural elements of the principle of compatibility.

One of the most striking differences between the studies reviewed is the measurement of behaviour. Many of the studies do not measure behaviour (e.g. Abrams et al., 1998; Bagozzi et al., 2001; Bogart et al., 2000; Bosompra, 2001; Chan & Cheung, 1998; Evers & Kamilowicz, 1996; Gastil, 2000; Smith & Stasson, 2000; Steen et al., 1998; Trafimow, 1996). Further, those that do often differ greatly in the forms of measurement used. As was the case with item generation methods, it is necessary to refer to the method of behaviour measurement endorsed by Ajzen and Fishbein (1980) in their classic account of the TRA for the theoretical standard. Ajzen and Fishbein (1980) recognise the difficulty in the objective measurement of behaviour, which is often due to the problem of researchers' inability to observe the performance of some types of behaviour (e.g., condom use).

However, as a SCM, the TRA not only makes use of the subjective accounts of individuals for measurement, but embraces the subjectivity of the measurement in understanding the underlying processes surrounding performance of behaviour. In order to rectify the dilemma of using a subjective measurement of behaviour to utilise the theory, Ajzen and Fishbein (1980) suggest using repeated observations of behaviour over a period of time, or where behavioural categories (e.g. dieting behaviour) are under investigation, a behavioural index should be used, allowing a number of specific behaviours to be measured to achieve an overall behaviour score.

Of the studies that recorded a measure of behaviour, only Poss (2000) made an objective measure of behaviour in determining which of the farmers in her sample both had a skin test for tuberculosis, and had the results read. Kim et al. (2001) used student records to determine whether students had participated in a mentoring program. The majority of studies which measure behaviour elicit self-reports of past behaviour from their

participants (e.g. Albarracin et al., 1998; Bunce & Birdi, 1998; Diaz-Loving & Villagran-Vazquez, 1999; Levin, 1999; Sutton et al., 1999). Therefore, the latter studies illustrate one of the advantages of using a subjective measurement of behaviour, as a measurement of past behaviour could not be attained if researchers rigidly adhered to objective measurement of behaviour. Making a subjective measurement, consequently, saves both time and resources that an objective measure would necessitate. The remaining three studies (Sideridis et al., 1998; Taylor & Todd, 1997; Vincent et al., 1998) represent two further ways in which a subjective measurement of behaviour can be obtained. Taylor and Todd (1997) adopted Ajzen and Fishbein's (1980) suggestion of repeated measurement of behaviour by asking participants to keep a diary of their composting behaviour over two weeks. On the other hand, Sideridis et al. (1998) and Vincent et al. (1998) recorded intention and behaviour at two separate assessments. Sideridis et al. (1998) assessed students as to their study intentions, and reassessed them regarding their self-report of their level of studying behaviour between the assessment periods four weeks later. Vincent et al. (1998) left a rather longer time period between assessments as participants were asked their career intentions at the first assessment period, and self-report of current career was measured 14 years later.

Although the varied methods of behaviour measurement might make the direct comparison between studies problematic, this is not the most detrimental outcome of using past behaviour as the overall measure of behaviour. What is important in relation to the theoretical concept being addressed here (the mediating role of intention) is the compatibility of the measurement of behaviour with that of intention. As was discussed above, all of the studies in the meta-analysis that have obtained a measure of intention, have measured participants' intention to perform the behaviour in the future. For example, in Levin's (1999) study of health worker's glove use, participants were asked as to their intended glove use over the next month and to state the percentage of time that they

thought that they would wear gloves during that time. The problem here is that the behavioural element of time is not compatible between the TRA components of intention and behaviour in the studies that have measured past behaviour, such as Levin (1999) above. Although past behaviour as a separate factor has been found to be predictive of intention or future behaviour (e.g. Bentler & Speckart, 1979), there is no theoretical purpose in using future intention to predict behaviour that has already taken place. For example, it would be implausible to use an individual's intention to use a condom next time they practice sexual intercourse to predict their behaviour over the last twelve months. Although it is possible that future intention could statistically explain variation in past behaviour (e.g. Levin, 1999), the way in which this assists the application of the theory as a whole is doubtful. It is contended here that rather than using past behaviour as the behaviour measure in the TRA model, it should be made clear that the role of past behaviour in the theory is distinctly different from either an objective measure, or a subjective measure taken after a time period specified in the intention measure.

Time is not the only behavioural element that has been found to be incompatible between the components of intention and behaviour in the studies under scrutiny here. For example in Vincent et al.'s (1998) study of women's career behaviour, although time is consistent between the two constructs, action is completely incompatible. The career that participants would like to have, which was the measurement of intention, is distinctly different to that which they think they will have. Although Structural Equation Modelling showed career orientation to be significantly related to career behaviour, this relationship might have been strengthened, and the construct of career behaviour more fully understood with the use of a measure of intention that is compatible with that of behaviour with respect to action.

The accurate measurement and compatibility of components across the behavioural elements of action, target, context and time are therefore essential when investigating the

main concepts of the TRA of the relative importance of attitude and subjective norm and mediating role of intention. However, even if all of these measurement issues are taken into account, it is critical that the resulting scores obtained from these measures are analysed appropriately. The following section provides a critique of the main statistical analyses used in applications of the TRA and that are in evidence in the studies in this literature review. Consideration is given to bivariate correlation analysis, multiple regression analysis and Structural Equation Modelling in relation to the theoretical appropriateness and usefulness of the analyses to the understanding of the constructs of the TRA.

2.3.3 Statistical analysis used in applications of the Theory of Reasoned Action

A major difference between a number of the studies examined in this meta-analysis involves the statistical analysis used to analyse the relationships between the theoretical components. This section addresses the major issue of the debate between the use of Multiple Linear Regression and Structural Equation Modelling in applications of the TRA, and goes on to deal with three issues of importance when utilising Multiple Linear Regression in such research. The standard practice for applications of the TRA recommended by Ajzen and Fishbein (1980) is the use of bivariate correlations and Multiple Linear Regression between specified components (refer to figure 1), to predict intention. However, more recent studies have been utilising the technique of Structural Equation Modelling in order to assess the relationships between the components of the model (van den Putte & Hoogstraten, 1997). Two recent studies have assessed the use of Multiple Linear Regression (Hankins, French & Horne, 2000) and Structural Equation Modelling (Hankins et al., 2000; van den Putte & Hoogstraten, 1997) in studies analysing the applications of the TRA.

Although, as discussed above, Multiple Linear Regression was the recommended method of statistical analysis when the classic account of the TRA was formulated (Ajzen & Fishbein, 1980), it cannot automatically be assumed that Multiple Linear Regression is the best mode of analysis to use. Indeed, the development of statistical techniques has advanced rapidly in the twenty years since Ajzen and Fishbein's (1980) original work, aided particularly by the writing of computer programs (e.g. such as LISREL & EQS), which have allowed increasingly complex models to be analysed. The question that arises is whether one statistical technique is better suited to analysis of the TRA, or whether both are equally valid.

Despite the advances in statistical techniques available, Multiple Linear Regression remains the most popular choice of statistical analysis used by researchers investigating applications of the TRA. This trend was evident in this meta-analysis, as the results of the majority of the studies have been analysed using Multiple Linear Regression in order to understand variance in individual's intention to perform behaviour (e.g. Abrams et al., 1998; Albarracín et al., 1998; Bosompra, 2001; Bunce & Birdi, 1998; Bogart et al., 2000; Chan & Cheung, 1998; Diaz-Loving & Villagran-Vazquez, 1999; Evers & Karnilowicz, 1996; Gastil, 2000; Kim et al., 2001; Poss, 2000; Smith & Stasson, 2000; Steen et al., 1998; Sutton et al., 1999; Trafimow, 1996).

Multiple Linear Regression can be described as an advancement on correlation analysis as it allows several independent variables to show their utility in predicting a dependent variable (Musil, Jones & Warner, 1998). Therefore, for example, in the case of Díaz-Loving and Villagrán-Vázquez's (1999) application of the TRA to condom use, attitudes toward using condoms, and subjective norm regarding using condoms would be the independent variables in the regression analysis to predict the dependent variable of intention to use condoms.

Even though Structural Equation Modelling has been used by a number of researchers applying the TRA (van den Putte & Hoogstraten, 1997), only five of the studies examined in this meta-analysis have employed the use of this statistical technique (Bagozzi et al., 2001; Sideridis et al., 1998; Taylor & Todd, 1997; Vincent et al., 1998; Levin, 1999). Examination of the operation of these two techniques reveals that they have somewhat different functions. Structural Equation Modelling, rather than being applied to predict dependent variables such as behavioural intention from independent or predictor variables, is applied in order to understand the causal relationships between variables (Dennis, personal communication, February 13, 2002; Musil et al., 1998).

Hankins et al. (2000) put forward three advantages of using Structural Equation Modelling rather than Multiple Linear Regression in such studies. Firstly, Structural Equation Modelling allows not only the strength of the relationships between the components to be measured (as does Multiple Linear Regression), but also allows assessment of the adequacy of the measures made in representing the components. Therefore, both the strength of component relationships, and the reliability of component measures can be measured simultaneously. A second advantage is that Structural Equation Modelling permits simultaneous analysis of more than one multivariate relationship among independent and dependent variables. This is of particular use to studies applying the Theory of Planned Behaviour (Ajzen, 1988) or those evaluating the usefulness of the TRA against the Theory of Planned Behaviour in certain applications (e.g. Smith & Stasson, 2000, in this meta-analysis). This aforementioned ability of Structural Equation Modelling would thus allow the analysis of the influence of attitude, subjective norm and perceived behavioural control (a Theory of Planned Behaviour variable) on intention, whilst simultaneously permitting analysis of the influence of intention and perceived behavioural control on behaviour. Use of Multiple Linear Regression in this instance would necessitate

at least two separate analyses. The third advantage of Structural Equation Modelling over Multiple Linear Regression put forward by Hankins et al. (2000) is the ability of Structural Equation Modelling to, “assess the extent to which a model proposed by a researcher fits a particular dataset,” (Hankins et al., 2000, p. 155). That is, Structural Equation Modelling has the capacity for assessing the overall fit of the data to the variables proposed by the researcher, which then allows comparisons to be made with other theories or theoretical constructs (Hankins et al. 2000). It is this latter advantage of Structural Equation Modelling, however, which forms the basis for one of the potential problems with interpreting results acquired through use of Structural Equation Modelling.

Although the ability to provide goodness of fit indices is advantageous to the use of Structural Equation Modelling, the researcher must ensure that the model does adequately fit the data before interpretations based on the relationships can be made. Van den Putte and Hoogstraten (1997) found in many of the studies that they examined, that the data did not fit the proposed model, which, “cast serious doubt on the validity of the conclusions,” (van den Putte & Hoogstraten, 1997, p. 320). The array of goodness of fit indices can add further doubt as to the validity of results. For example in Levin’s (1999) study, interpretations regarding health care workers’ glove use were based upon a TRA model that the goodness of fit indices X^2 (a commonly used index) reported did not accurately fit the data. However, the researcher used further goodness of fit measures (e.g. adjusted goodness of fit, and root-mean square residual), which showed the model to be a good fit, and upon which interpretations could be based.

Multiple Linear Regression however, has been shown to have advantages over Structural Equation Modelling in the specific case of analysis models of the TRA despite the advantages of Structural Equation Modelling outlined above, for two reasons. Firstly, in an application of the TRA to infant feeding, only one multivariate analysis would be required

for each model. Therefore, the more challenging operationalisation of Structural Equation Modelling (Musil et al., 1998) would not be required for such a simple model. Secondly, it is important that in deciding which statistical technique to choose, a theoretical rationale should be made. In the case of the study at the centre of this thesis, it is essential that measures are constructed that can predict behavioural intention to breastfeed or bottle-feed. Therefore, it is the prediction aspect of the requirements of the TRA that provide further weight to the argument for the use of Multiple Linear Regression in the multivariate analyses to be carried out in the application of the TRA to infant feeding.

The above paragraphs have built up a case for the use of Multiple Linear Regression in the application of the TRA on infant feeding. The discussion below, therefore, regards further issues that require consideration prior to such an application being undertaken. Firstly, a statistical limitation that effects the interpretation of results in TRA research, is inclusion of multiplicative measures in models of the TRA (Hankins et al., 2000; van den Putte & Hoogstraten, 1997). As discussed above in the overview of the classic form of the TRA, cross-products are often used to score, for example, participant's measures of behavioural beliefs and outcome evaluations. "Multiplicative composites," (Hankins et al., 2000; p. 157) are not original measures of the basic theoretical constructs, but are instead an 'interaction term' for the two measures (Cohen & Cohen, 1983). Researchers have attempted to resolve this problem by using separate measures of, for example, normative beliefs and motivation to comply, but, although this might aid the ability of Multiple Linear Regression to provide statistically comprehensive and reliable results, these results would not be theoretically meaningful (van den Putte & Hoogstraten, 1997). For example, it would not be theoretically significant to observe the relationship between outcome evaluations of behavioural beliefs and intention without some assessment being made of individuals' belief that such an outcome would take place. This limitation of the use of multiplicative measures is of particular relevance to the interpretation of findings from

studies such as those discussed in the previous section, that use indirect measures of attitude and *subjective* norm based upon cross products of behavioural beliefs and outcome evaluations, and cross products of normative beliefs and motivations to comply respectively (e.g., Evers & Kamilowicz, 1996; Steen et al., 1998; Sutton et al., 1999).

The second cautionary measure that must be taken by researchers is based on the assumptions that must be satisfied prior to analysis. Multiple Linear Regression assumes normal distribution of the dependent or predictor variable. Violation of this assumption could result in inaccuracy in interpretation if the variance in the residuals of the dependent variable were related to its predicted value. As most researchers do not report the satisfaction of assumptions of these multivariate analyses, the reader must trust that the researcher has performed these tests, and is not presenting the results of analyses based on data which violates the assumptions of the statistical technique being used.

The final concern that TRA researchers should take account of is specifically related to the use of Multiple Linear Regression. Ajzen and Fishbein (1980) suggest that the measure used to report explained variance in a model tested by Multiple Linear Regression is the value of R^2 . However, Hankins et al. (2000), suggest that the value of adjusted R^2 is a more accurate measure of variance in the dependent variable that can be attributed to the independent variables. This is of particular importance when researchers use stepwise or hierarchical regression analysis to examine the effect that the addition of a number of independent variables might have on the proportion of explained variance. As Hankins et al. (2000) explain, "if the sample size remains the same, the addition of an independent variable will never decrease R^2 and will tend to increase it even if the additional variable is very poorly correlated with the dependent variable," (Hankins et al., 2000, p. 156).

Therefore, if researchers rely on the change in the value of R^2 , a model could be chosen due to a significant increase in R^2 that is caused simply by the addition of another variable,

and not to the predictive ability of the variable. By instead using the value of adjusted R^2 , Hankins et al., (2000) propose that the resulting value is a more accurate estimate of the value of R , as it controls for the bias of values of R^2 which, “increases as the ratio of independent variables to sample size increases,” (Hankins et al., 2000).

The aim of the above discussion was not to assess the validity for use of the statistical techniques of Multiple Linear Regression and Structural Equation Modelling in applications of the TRA. Both techniques have the ability to satisfactorily test the theory and allow theoretically based conclusions to be drawn from the results of the analysis. Instead, the purpose of this section was twofold. Firstly, researchers need to be aware of the actions that need to be taken in order that the results upon which interpretations are to be based are both reliable and accurate. Secondly, readers of such research should also be made aware of possible flaws or misleading interpretations which may lead them to believe, for example, that intention to perform a particular behaviour is attributable predominantly to attitude rather than subjective norm. Hence, it is essential that the use of statistical techniques is scrutinised reviewing TRA research as, “the extent to which the models are supported is therefore dependent on the appropriate use of these statistical methods,”(Hankins et al., 2000, p. 151).

2.3.4 Summary of review of the Theory of Reasoned Action literature

The above meta-analysis was conducted to highlight the methodological and interpretational problems that are often encountered in studies of the application of the TRA. The most noticeable aspect of the studies examined above, is the variation in the applications of the theory, and the effects that these differences can have on the outcome of the investigations. However, as stated above with regard to the methods of statistical analysis used in such studies, this meta-analysis does not propose that all applications of

the TRA should strictly adhere to Ajzen and Fishbein's (1980) standard format. Rather, if adaptations are made, the reasons for such changes should be theoretically well founded and meaningful, and as is also the case with studies applying the classic version of the theory, all measures, analyses and interpretations should be scrutinised to ensure accuracy.

With these methodological and interpretational concerns in mind, the next section of this review of the TRA will focus on the application of the TRA to infant feeding behaviour. Past research employing the TRA in order to understand infant feeding behaviour will be presented, and a case for a more comprehensive application of the theory to both breast and bottle-feeding behaviour will be made.

2.4 The application of the Theory of Reasoned Action to infant feeding

The TRA has been applied to infant feeding because it has the potential to increase knowledge of the formation of intentions to breast and bottle-feed by examining mothers' perceptions of social influence over their behavioural intentions through the constructs of normative beliefs and subjective norm, as well as through mothers' own attitudes. By understanding the internal processes involved in the formation of intentions and performance of behaviour, more fully comprehensive interventions could be constructed incorporating greater appreciation of these integral processes. This section will review the literature that has focused on women's attitudes toward infant feeding, and more specifically, applications of the TRA and an extension of this theory, Theory of Planned Behaviour (TPB), to infant feeding.

Much of the research that has focused on the infant feeding attitudes of mothers is approached from an atheoretical perspective and is frequently exploratory in nature, (e.g. Holmes, Thorpe & Phillips, 1997; Libbus, Bush & Hockman, 1997). Such studies

sometimes examine the attitudes of specific populations; for example Scott, Binns and Arnold (1997) examined mothers in a low-income area of Perth, Australia, in order to gain understanding of breastfeeding practices within that societal context. Also in evidence in the literature are elicitation studies that aim to determine specific types of beliefs regarding infant feeding for use as items in scales (for example, Kelley, Kviz, Richman, Kim & Short's, 1993, elicitation study of gender-role attitudes toward breastfeeding among primiparas). Although the results of such studies are undoubtedly interesting, and could well form the basis of research to formulate interventions by highlighting issues of concern to populations under investigation, they do not provide the information essential to the understanding of the processes involved in women's infant feeding experiences and the development of interventions. Further, most of these studies simply cease at the elicitation stage and do not go on to examine the emergent themes in a rigorous and systematic way. Some researchers who base their research on understanding women's attitudes to infant feeding have recognised the need for a theoretical framework within which to structure their investigations, and as such have opted for the TRA and TPB as they have the potential to increase understanding of the processes involved in forming an intention to breast or bottle-feed, and the determinants of the subsequent behaviour.

A small number of studies have utilised aspects of the TRA in order to understand mothers' infant feeding intentions and behaviours, and while they offer some interesting findings, are not without their problems. Although it is unclear as to whether Quarles, Williams, Hoyle, Brimeyer and Williams (1994) specifically set out to directly measure the theoretical components of the TRA in their study of mothers' exposure to the help of Certified Lactation Consultants, the results of the study do lend support to one of the premises upon which the theory is based. This premise concerns the assertion by Ajzen and Fishbein (1980) that behaviour is under the individual's volitional control. Quarles et al., (1994) found that intended mean duration of breastfeeding was the superior predictor of

achieved duration of breastfeeding in their sample. The second study reviewed here that has incorporated aspects of the TRA was carried out by Martens and Young (1997), who proposed a decision-making model based on the TRA in order to understand the infant feeding intentions and behaviours in four Canadian Ojibwa communities. Beliefs and referents were measured in place of attitude and subjective norm respectively (a form of indirect measurement of these components) in order to predict intention through the use of logistic regression. Analysis showed that behavioural beliefs, normative beliefs and maternal confidence (a variable added to the decision-making model by Martens and Young, 1997) were significantly related to both prenatal intentions for breastfeeding choice, and intended duration of breastfeeding. While both studies, as noted, represent interesting applications of the TRA and are based around the principles thereof, neither provides either direct measurement of all of the theoretical components, nor provides a sufficient test of the theory to ensure its applicability to the behaviour of infant feeding.

Several researchers have directly applied the TRA to infant feeding (Humphries, Thompson & Miner, 1998; Kloeblen, Thompson & Miner, 1999; Manstead, Proffitt & Smart, 1983; Manstead, Plevin & Smart, 1984) in programmes of research. However, the studies headed by Manstead (Manstead et al., 1983; 1984), are markedly different to those headed by Kloeblen (nee Humphries) (Humphries et al., 1998; Kloeblen et al., 1999), from both methodological and theoretical perspectives. The first point to make about these studies is that neither those headed by Kloeblen nor those headed by Manstead used Ajzen and Fishbein's recommendations for the elicitation of modal salient beliefs from a sample of the population to be studied in order to generate items for use in the scale designed to measure the theoretical components. Although Manstead et al. (1983) utilised modal salient beliefs in his first study of infant feeding, these were elicited from previous research by Martin (1978). It is, therefore, unclear as to whether these beliefs were wholly applicable to the target population of Manstead et al.'s (1983) study. Moreover, it is

uncertain as to how items were generated for the scale used in Manstead et al.'s second study of infant feeding (Manstead et al., 1984), as no item generation details are provided. Similarly Humphries et al. (1998) only vaguely refer to the development of the scale by the first author (as in their later study) but do not provide extensive details of the generation of items. Kloeblen et al. (1999) similar to Manstead et al. (1983) also based their items on previous research as well as the first author's experience as a breastfeeding educator. Thus while Ajzen and Fishbein (1980) argue that it is essential, as discussed in the meta-analysis earlier in this chapter (refer to chapter 2, section 2.2), that items are generated in consultation with a sample of the population under investigation in order to develop relevant items (particularly in an under researched area), these sets of studies have either not followed this advice or have failed to report this information adequately.

The second point to be made concerning the applications of the TRA regards the behavioural focus of the research, that is, the behaviour to be investigated by the model, i.e. breastfeeding and/or bottle-feeding. The earlier work by Manstead et al., (1983; 1984) covers both breastfeeding and bottle-feeding, whereas the TRA associated constructs measured by the instruments in the studies by Kloeblen and her colleagues (Humphries et al., 1998; Kloeblen et al., 1999) focus specifically on breastfeeding (although there are bottle-feeding related items measuring the processes of change construct in Humphries et al.'s study). Although the ultimate aim of this type of research is to create interventions to increase the initiation and maintenance of *breastfeeding*, it is argued throughout this thesis that it is essential that both infant feeding behaviours, breastfeeding and bottle-feeding, are thoroughly investigated in order that the processes involved in what is initially a choice intention are fully understood. For instance when a prospective mother is required to make the decision to breast or bottle-feed, and the choice of bottle-feeding is made, it is necessary to understand both why she *did not want* to breastfeed as well as why she *wanted* to bottle-feed. In order to fully comprehend such a choice decision as that required when

deciding to breast or bottle-feed, Ajzen and Fishbein (1980), propose that differential intention (and its determinants of differential attitude and differential subjective norm) is a more accurate predictor of choice intention (the intention that women are required to formulate when making infant feeding decisions) than the simple behavioural intention that has been dealt with so far in this chapter. Only Manstead et al. (1983) calculated differential attitude and differential subjective norm from the breast and bottle-feeding scores of their participants to predict choice intention, analysis that has in general been neglected in such research. However, these researchers did not compare the results of this analysis to the use of separate measures of these constructs (Manstead et al., 1983). Therefore, it could not be concluded from the analysis undertaken as to whether differential components were significantly better or worse than separate measures of breastfeeding or bottle-feeding in the prediction of intention. Consequently, as it is asserted by Ajzen and Fishbein (1980) that differential measures are the best predictors of choice intention, it is essential that this assertion be checked in future applications of the TRA to infant feeding.

The third concern of interest here, and one that was highlighted in the above meta-analysis (refer to chapter 2, section 2.2), is the debate concerning the direct or indirect formation of the theoretical components of attitude and subjective norm. Manstead et al.'s (1983) study utilised an indirect measure of attitude derived from the summation of the calculated products of each behavioural belief with its corresponding outcome evaluation. Similarly, an indirect measure of subjective norm was calculated from the sum of the products of each normative belief and its corresponding motivation to comply. In both of their studies, Kloeblen et al. (1999; Humphries, 1998), also used indirect measures of these components by using cross-products of beliefs and outcome evaluations to measure attitude, and normative beliefs and motivation to comply to measure subjective norm. Alternatively, in Manstead et al.'s second study (Manstead et al., 1984) a direct measure of attitude was

made in order to predict intention. Although the authors state that their modified constructs are consistent with previous research, and that for example they believe outcome evaluation to be a more accurate measure of attitude than the traditional direct measure (Kloebler et al., 1999), it is argued here that as one cannot assume the superiority of these modified or indirect measures, it is essential that reliable evidence is obtained. Only by using both direct and indirect measures in analysis (as in Manstead et al.'s 1984 study) is it possible to assert the superiority of the construction of the theoretical components. Thus far, this review has focused on studies that have explored attitudes with no theoretical framework, and those that have applied the TRA to infant feeding to a greater or lesser extent. The following section advances this study of the literature to an extension of the TRA, the TPB (Ajzen, 1988), and the research that has applied this modified theory to infant feeding.

Several studies have applied the modified form of the TRA, the Theory of Planned Behaviour (Ajzen, 1988) to infant feeding. Although this chapter, and ultimately this thesis is primarily concerned with the TRA, it is important to acknowledge and examine the relevant research of the Theory of Planned Behaviour as they are essentially quite similar. To recap, as noted earlier in chapter two (refer to chapter 2, section 2.1) the Theory of Planned Behaviour includes all of the theoretical components of the TRA, but includes an additional component of Perceived Behavioural Control, which embraces aspects of both Self-Efficacy Theory and Locus of Control. Perceived behavioural control is proposed by the theory to predict behavioural intention in collusion with attitude and subjective norm, and also to have a direct influence on behaviour.

Several studies have explored the applicability of the Theory of Planned Behaviour, or aspects of the theory, to infant feeding. The first of these studies by Janke (1994) focused on breastfeeding attrition and examined retrospectively attitudes, subjective norm and

control in relation to breastfeeding of 201 postpartum women who had planned to breastfeed their babies for at least eight weeks. Duckett, Henly, Avery, Potter, Hills-Bonczyk, Hulden and Savik (1998) based their structural model for the explanation of breastfeeding for homemakers, part-time and full-time employees on the components of the Theory of Planned Behaviour as well as other variables such as knowledge and perceived insufficient milk. Based upon Duckett et al.'s study, Stockdale (2001) adapted the Theory of Planned Behaviour Structural Model for Breastfeeding (Duckett et al., 1998) in order to investigate the utility of this model in understanding infant feeding behaviour motivations and predicting intention and initiation of breastfeeding. Finally, Wambach (1997) tested the Theory of Planned Behaviour longitudinally following 135 prospective mothers from pregnancy until four to six weeks postpartum.

The issues to be raised about these studies are akin to those raised in the discussion of Manstead et al.'s (1983, 1984) and Kloeblen et al.'s (1998; Humphries, 1998) applications of the TRA to infant feeding. The first issue to be raised here is that of the generation of items to be used in the instruments constructed by the researchers to represent and measure the theoretical components of the Theory of Planned Behaviour. Although Wambach (1997) states that she followed Ajzen and Madden's (1986) and Ajzen's (1988) guidelines for the generation of items to measure subjective norm and perceived behavioural control, the component of attitude was measured using a scale written by Cusson (1985) in order to understand the attitudes toward breastfeeding of adolescent girls. Although Wambach (1997) states a high level of internal consistency from the value of Cronbach's alpha based on the results from her sample, this does not discount that there might in fact be more appropriate items to measure this construct available if the modal salient beliefs and attitudes of a sample of the population to be studied had been assessed.

Similarly, Stockdale (2001) based her instrument on that developed by Duckett et al. (1998) with what was described by the researcher as “minimal adaptation” (Stockdale, 2001, p. 331) in order to take into account the characteristics of her sample of Northern Irish mothers, in comparison with Duckett et al.’s sample of North American mothers. However, it is not clear as to the exact nature of these adaptations. Only Janke’s (1994) study of the development of a breastfeeding attrition tool directly utilised the views of mothers in the construction of the items to represent all of the theoretical components through interviews as well information from clinical experience of the researchers, and consultation of the relevant research literature. Overall both Stockdale (2001) and Wambach (1997) found moderate to minimal evidence for the utility of the TPB, whilst Janke (1994) and Duckett et al. (1998) found support for their TPB based studies. However, it is essential, as argued earlier in the discussion of the application of the TRA to infant feeding, and in the meta analysis (refer to chapter 2, section 2.3), that both item generation procedures be carried out methodically for all items to be used in a multifaceted instrument such as those to measure the Theory of Planned Behaviour and the TRA, and also that sufficient information about item generation and scale construction is provided in papers in order that full understanding of the relationships between the theoretical components through the results can be achieved.

Secondly, and most noticeably in reviewing these studies, the behavioural focus of the research is, once again, predominantly breastfeeding. Although, for example, Duckett et al. (1998), measure beliefs and attitudes with regard to bottle-feeding as well as breastfeeding, none of the remaining theoretical components take into account both infant feeding methods. Further, and perhaps rather surprisingly, choice rather than behavioural intention was measured in Wambach’s study. Although subjective norm was also measured with regard to bottle-feeding as well as breastfeeding the remaining predictor variables of attitude and perceived behavioural control were focused specifically on breastfeeding This

issue of behavioural focus can have two implications for applications of the Theory of Planned Behaviour that also relate to applications of the TRA to infant feeding. Firstly, this predominant narrow focus on breastfeeding could limit the understanding of infant feeding choices and subsequent behaviour. Secondly, in addition, if there are differences in the behavioural focus of the theoretical components of the model (as in Wambach's, 1997, study above), then surely adherence to the principle of compatibility, and therefore the relevance of results could be called into question. Furthermore, due to this narrow focus there is no differential examination of the theoretical components (which might aid prediction of behaviour) in any of the applications of the Theory of Planned Behaviour.

The third point to be made about these aforementioned applications of the Theory of Planned Behaviour to infant feeding is the definition and measurement of the theoretical components. Janke (1994), as noted by Duckett et al. (1998) does not differentiate between behavioural beliefs and attitudes, and normative beliefs and subjective norm respectively. Therefore, for example, indirect measurement of subjective norm is made in Janke's (1994) study by assessing a number of individual normative beliefs rather than a direct measurement of subjective norm using a single item. Similarly, Wambach (1997) used normative beliefs and motivation to comply in order to construct an indirect measure of the subjective norm component of the model analogous to that used by Kloeblen et al. (1999; Humphries et al., 1998). As stated in the discussion of the applications of the TRA to infant feeding, it is argued here that it is essential to ensure that optimum measures of components are made to make certain that the measures are reliable and valid. Moreover, without evidence to support the superior predictive capabilities of one form of measurement over another, it is essential that both are made and compared as in the case of Manstead et al.'s (1984) application of the TRA.

In conclusion, although on the whole, the literature supports the application of TRA and TRA based applications to infant feeding, the success of the results of such studies is

possibly undermined by the methodological issues discussed in the above paragraphs. It is therefore argued here that prior to any further applications of modified form of the TRA, it is essential to test the TRA in its purest form in order both to test the utility of the theory, and to investigate and accurately pinpoint where such modifications would be beneficial to the understanding of infant feeding. The following section outlines how the issues raised in this literature review form the basis of the application of the TRA to be made to infant feeding in this thesis.

2.5 Theory of Reasoned Action chapter summary

In summary, this chapter had three aims: to outline the TRA as formulated by Ajzen and Fishbein (1980), to review the recent applications of the TRA to both health and social behaviour, and finally to review the applications of the TRA to infant feeding. The review of the current applications of the TRA to infant feeding, and the preceding meta analysis undertaken in this chapter highlight four points which must be taken into account in the application to be undertaken in this thesis.

Firstly, in a choice situation such as that concerning infant feeding, both possible behaviours (i.e. breastfeeding and bottle-feeding) should be considered equally in any measurement and analysis. Further, the analysis should include assessment of the relationships between the theoretical components of the TRA both for the behaviours individually and differentially.

Secondly, it is essential that scale items used to measure the theoretical components of the TRA are based upon the modal salient beliefs of the population to whom the scale is to be administered. This recommendation was not only maintained by the authors of the theory

themselves (Ajzen and Fishbein, 1980), but also ensures that items are entirely relevant to the sample and behaviour under investigation.

Thirdly, in order to fully understand the determinants of behavioural, differential and choice intention adequate measures of the attitudinal and normative components of the model must be completed. Therefore, if indirect measures of either of these components are to replace direct measures, researchers must be certain that indirect measures provide superior prediction of intention. If such superiority of measures cannot be assured, both direct and indirect measures should be taken and compared in analysis.

The final issue to be taken forward to the application of the TRA to breastfeeding and bottle-feeding to be made in this thesis, embraces the three points made previously in this section. That is, prior to any modification or extension of the TRA in its application to a behaviour, it is essential to apply and understand an unmodified, or as termed in this chapter "orthodox" version of the theory. It is contended here that before any modifications or adaptations are made, the original theory could, or perhaps should be applied in order to highlight any possible modifications that are required to enhance the applicability of the theory.

The application of the TRA to breastfeeding and bottle-feeding introduced in the current chapter concerns the formulation of intentions, and the initiation of infant feeding behaviours. The following chapter introduces Self-Efficacy Theory and Social Support as further theoretical explanations of infant feeding behaviour, and further, the maintenance of this behaviour. Performance of breastfeeding and bottle-feeding, and their consequent durations will also be introduced from the perspective of external variables that are commonly used by the nursing literature in order to explain duration of breastfeeding.

Maintenance Issues: Self-Efficacy, Social Support and External Variables.

The preceding chapters have examined the general context for this thesis and the theoretical framework, which principally informs this work. More specifically, chapter two addressed the application of the Theory of Reasoned Action (Ajzen & Fishbein, 1980) with regard to the formation of intentions to breast or bottle-feed, and the initiation of infant feeding behaviour. Although it is imperative that more understanding is reached concerning the initiation of both infant feeding methods, it is equally important that issues related to the maintenance and duration of breastfeeding and bottle-feeding are thoroughly investigated in order for breastfeeding rates to rise. Therefore, the current chapter seeks to examine theoretical and external issues concerning the performance and maintenance of breastfeeding and bottle-feeding.

3.1 The application of Self-Efficacy Theory to infant feeding

This section seeks to introduce Self-Efficacy Theory (SET) (Bandura, 1977), its origins, determinants, and the importance of self-efficacy in the performance and maintenance of behaviour. A brief review of the recent and varied research literature will be presented with regard to theoretical and measurement issues. Finally, an argument for the usefulness of SET to infant feeding research will be introduced, with reference both to the current situation in the self-efficacy research literature, and the need for knowledge of self-efficacy expectancies in the infant feeding research.

3.1.1 Self-Efficacy Theory

Self-Efficacy Theory (SET) (Bandura, 1977), like the TRA, is a SCM designed to increase the ability to predict behaviour (Conner, 1993; Conner & Norman, 1996). However, unlike the TRA, rather than examining the role of attitudes and norms in the formation of intention and subsequent behaviour, SET concerns, “people’s beliefs about their capabilities to exercise control over events that affect their lives,” (Bandura, 1989, p. 1175). According to SET, individuals’ sense of “personal mastery” (Bandura, 1977, p. 194) in being able to initiate and persist with a given behaviour in varying circumstances or conditions is in itself integral to the instigation and continuance of the behaviour. Further, in forming an intention to carry out a behaviour, individuals evaluate their level of competence with respect to performing the behaviour (acquired through various methods as will be discussed below). Subsequently, on initiation of the behaviour, individuals continually re-evaluate their level of control or self-efficacy in maintaining the behaviour in the face of changing and possibly challenging circumstances.

Many authors stress the importance of differentiating between self-efficacy expectancies and outcome expectancies (Bandura, 1977; Maddux, 1995; Swarzer & Fuchs, 1996). As such, a proportion of research pertaining to examine the effects of self-efficacy on behaviour is in fact focussed not on participants’ self-efficacy expectancies, but on their outcome expectancies. Outcome expectancies concern an individual’s evaluation of the outcome of performing a behaviour. For example, a young woman may expect that using a condom when she has sexual intercourse will prevent her from contracting sexually transmitted diseases (STDs). In this example, the behaviour is using the condom, and the young woman’s outcome expectancy of using condoms is being protected from STDs. However, there may be a number of barriers to using a condom that might render the expectancy of such an important outcome ineffectual in initiating and maintaining the behaviour, in which self-efficacy plays a crucial role.

Keeping Bandura's (1977) notion of personal mastery in mind, for the young woman to successfully carry out the behaviour of using a condom when having sexual intercourse, she must feel competent in both initiating and maintaining the behaviour under whatever circumstances she may be faced with. Initiation and maintenance of a target behaviour may take on very different guises and require different skills in different contexts and at different times. In initiating the behaviour, the young woman in this scenario needs to feel confident in her ability to suggest using a condom to her sexual partner, and in maintaining the behaviour she needs to achieve the same level of confidence in the correct use of the condom. If the young woman does not believe that she could broach the subject of using a condom with her partner when having sex, then despite the serious nature of the consequences of not performing the behaviour, this adverse outcome would not, according to self-efficacy theory, in itself influence the behaviour. In initiating and maintaining a behaviour therefore, what is of importance are the self-efficacy expectancies which provide, "the conviction that one can successfully execute the behaviour required to produce the outcomes," (Bandura 1977, p.193). Consequently, if an individual feels confident in his or her own ability to perform an intended behaviour, they are likely to be successful.

So why do individuals vary in success in both initiation of and continuance with a given behaviour, and moreover, if this is mediated in some way by self-efficacy, what determines an individual's level of self-efficacy? Much of the early work on self-efficacy was accomplished through studies of patients undergoing treatment for phobias (Bandura, 1977; Bandura, Adams & Beyer, 1977). It was recognised early on that patients who overcame a phobia increased in their level of self-efficacy for that behaviour. By observing the success of treatments, and corresponding increased levels of self-efficacy for patients placed under a variety of experimental conditions, researchers could establish not only the sources of self-efficacy, but also the degree of influence of each of these sources.

Six sources or determinants of self-efficacy have been identified (Maddux, 1995). These include performance experience, vicarious experience, imaginal experience, verbal persuasion, physiological states and emotional states (Bandura, 1977; Williams, 1995). In studies with phobic patients, Bandura (1977) found performance experience, vicarious experience, verbal persuasion and physiological states to be the principal determinants of self-efficacy. Although researchers have differing opinions as to the main sources of self-efficacy, they tend to agree that different sources of self-efficacy have varying effects on individuals' self-efficacy expectancies (Maddux, 1995).

Generally, it is agreed, however, that performance or personal experience of performing the target behaviour has the greatest influence on self-efficacy expectancies, particularly if the performance was processed by the individual as unmistakably successful or unsuccessful (Bandura, 1977). Although some of the determinants of self-efficacy listed above may not involve actual practice of the behaviour, all apart from imaginal experience are attributable to actual experience of the target behaviour. In this way individuals are not taking unreasonable chances in basing the decision to initiate a behaviour on such experiences (Swarzer & Fuchs, 1996). Although imaginal experiences themselves are not based directly upon experience with the target behaviour, the images of success or failure in a given behaviour that may be generated by an individual could themselves be generated from direct or vicarious experience with a comparable behaviour or situation (Williams, 1995). Moreover, imaginal experience also shows considerable forethought of performance of the behaviour prior to initiation, maintenance or avoidance, which shows an example of a rational decision-making process consistent with this type of SCM (Conner, 1993; Conner & Norman, 1996). Hence, the further the individual's experience is from the target behaviour, the less impact these determinants have on the individual's level of self-efficacy for that behaviour. Thus, the more direct experience an individual has had in performing a behaviour, the greater the effect that this experience would have on their sense of personal

mastery or self-efficacy of executing the behaviour. Experience (in whichever of the forms listed above) with the target behaviour, however, is not the only influence that self-efficacy expectancies have on the performance and maintenance of behaviour. The generality, magnitude and strength of self-efficacy expectancies influence the degree to which these expectancies effect behaviour. Each of these components will now be discussed in turn with reference to their effect on individuals' self-efficacy expectancies and subsequent behaviour.

Generality of self-efficacy expectancies pertains to the ability of the self-efficacy expectancies of an individual gained from experience of performing one behaviour, being generalised to effect the performance of another behaviour. Individuals do not always have the benefit (or misfortune) to have had experience of every behaviour or circumstance that they will meet prior to its occurrence. For example, consider the following scenario.

Walking into town, a young man witnesses an elderly lady fall whilst crossing the road in front of him. The young man has not met this type of situation before. His decision as to whether or not to help the woman must be instantaneous in order to prevent her from being injured by an approaching vehicle. The young man, therefore, does not have the advantage that even an indirect source such as imaginal experience might afford him. However, he lifts the lady under her arms and pulls her to the side of the road. It could be argued, and it would be correct to suppose, that a host of processes would be involved in the young man's decision to help the elderly lady. Without his help, the lady could be seriously injured or killed, and certainly the knowledge of this, as well as his own attitudes and the reactions of witnesses, would be important in forming an intention to help. Nevertheless, SET argues that it would be the young man's sense of mastery or personal efficacy that would be instrumental in initiating and performing the behaviour rather than the outcome expectancies (as discussed above) of executing the behaviour that he may hold.

But what determines such efficacy when there has been no prior direct experience of the behaviour by the individual? Bandura (1977) noted that in some situations, patients generalised efficacy expectancies from one situation to another. For example, a patient who has undergone therapy to increase mastery over a phobia of a particular animal might generalise the high level of self-efficacy expectancies acquired during therapy to deal with the presence of another animal about which the patient also had a phobia. Hence, referring again to the scenario presented above, in evaluating what would be involved in helping the elderly lady, the young man might believe that he is competent in moving heavy objects due, for example, to having successfully helped a friend move house the week before. Therefore, it is possible that individuals can transfer self-efficacy expectancies from one situation to another. However, it is not only how the individual processes the experience, as either a success or a failure, that affects this generality of expectancies (Bandura, 1977), but also the similarity or context of the behaviour which allows the sense of self-efficacy to be transferred to a new, untried behaviour. Further, the strength and magnitude of the original self-efficacy expectancies that bring an additional component to perceived success and context also effect the generality of expectancies.

Magnitude and strength of self-efficacy expectancies can also effect an individual's performance of different behaviours (Bandura, 1977; 1986), and/or different individuals' performance of the same behaviour. Magnitude of self-efficacy expectancies concerns "the number of 'steps' of increasing difficulty or threat a person believes himself capable of performing," (Maddux, 1995, p. 9). For example, if a behaviour or set of behaviours involves a grading of difficulty, such as abstinence from smoking in differing situations, an individual may feel confident in maintaining her abstinence whilst in her own home, but may not hold such high efficacy expectancies for abstaining whilst socialising after work (DiClemente, 1986). Alternatively, strength of an individual's self-efficacy expectancy "refers to the resoluteness of a person's convictions that he or she can perform a behaviour in question," (Maddux, 1995, p. 9). These two concepts are closely related. Thus,

instruments designed to measure self-efficacy expectancies often measure the magnitude of expectancies using the individual items (often designed to elicit expectancies in differing situations), and strength of expectancies by summation of the individual item scores (for example, Schwarzer & Jerusalem's, 1995, Generalised Self-Efficacy Scale).

Therefore, if self-efficacy expectancies can be used in order to predict the initiation of and/or continuing engagement in behaviour, how is self-efficacy itself of benefit to an individual? From the discussion above it can be deduced that if an individual feels high in self-efficacy or the mastery of a behaviour, s/he is more likely to instigate performance of that behaviour. On the other hand, feelings of low self-efficacy or competence at carrying out a behaviour will lessen the effort exerted, and the likelihood of the individual actually initiating the behaviour. Therefore, self-efficacy expectancies can vary both between different individuals concerning the same behaviour, and between different behaviours performed by the same individual.

The above discussion has focused on the conceptualisation, formulation and dimensions of SET and self-efficacy expectancies. A large proportion of the SET research literature is concerned with understanding and predicting performance and maintenance of *specific* health behaviours through the examination of self-efficacy expectancies (whether general or behaviour-specific). However, a different focus in the literature has uncovered general beneficial / detrimental effects of individuals' general feelings of high/low self-efficacy with respect to health. Therefore, a sense of general self-efficacy can directly effect individuals with regard to their health. A general perception of low self-efficacy can result in depression and feelings of hopelessness and anxiety (Sarafino, 1994; Swarzer & Fuchs, 1996). Hence, although self-efficacy expectancies (whether specific to a behaviour or generalised between related behaviours) can affect an individual's initiation and maintenance of behaviours. The cumulative effect (Bandura, 1977) of the level of self-efficacy expectancies that success or failure experiences convey can have a far-reaching

effect on the health, well-being and aspirations of the individual. This chapter thus far, has provided a general overview of SET, the way in which self-efficacy expectancies are formed and used in the initiation and maintenance of behaviour, and raised the issue of the impact of self-efficacy expectancies on health. The following section focuses on the measurement and theoretical modifications of SET, and continues the above discussion of the effect of self-efficacy expectancies on health by reviewing some of the most recent applications of SET in the research literature.

3.1.2 Review of the Self-Efficacy Theory literature

There is a vast research literature concerning a wide array of applications of SET. In order to adequately review both the literature and the measurement and theoretical issues regarding SET it was necessary to restrict the number of articles to be examined. This review is therefore limited to a selection of the most recently published applications of self-efficacy to health behaviour available to the researcher. Studies cover a wide variety of applications ranging from health enhancing behaviours such as exercise behaviour (Resnick, 2001) and sun protection (Jackson & Aiken, 2000) to behaviours concerning maternity, such as self-efficacy expectancies for childbirth (Lowe, 1993) and choice of location for delivery (Amooti-Kaguna & Nuwaha, 1999). The variety of behaviours investigated in these studies illustrates an advantage of SET in its adaptability in being able to assess self-efficacy expectancies across a range of activities. The research will be discussed in terms of the theoretical issues of generality, magnitude and strength introduced in the previous section.

The main distinction in the applications of SET in the research literature is between the measurement of either general or specific self-efficacy expectancies. Therefore, the first issue to be addressed here is that of general and behaviour-specific self-efficacy expectancies. Broadly, there are three main groups of studies. A proportion of the studies

investigate only general or global self-efficacy expectancies (e.g. Ford-Gilboe, 1997; Gillespie, Peltzer & Maclachlan, 2000; Maciejewski, Prigerson & Mazure 2000). A larger group measure only behaviour-specific self-efficacy expectancies (e.g. Amooti-Kaguna & Nuwaha 1999; Galavotti, Cabral, Lansky, Grimley, Riley & Prochaska, 1995; Jackson & Aiken, 2000; Resnick, 2001; Stuifbergen, Seraphine & Roberts, 2000). Finally, a further group of studies measure both general and behaviour-specific expectancies (Leganger et al., 2000; Lowe, 1993). Each of these groups of studies will now be dealt with in turn.

As discussed in the previous section, self-efficacy expectancies are in some cases generalisable across behaviours. Further, a general sense of self-efficacy that has accumulated over time can have an effect on individuals' psychological well being. Consequently, many researchers have constructed scales designed to capture this general sense of self-efficacy (e.g. Schwarzer & Jerusalem, 1995; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs & Rogers, 1982). By obtaining a measure of an individual's general feeling of personal mastery, researchers usually hope to investigate relationships between general self-efficacy and other outcome measures.

There are a number of general self-efficacy scales that have been shown to be reliable and valid across various populations, and as such are widely used by researchers to achieve a measure of general personal mastery in the sample under investigation. For example, in Gillespie et al.'s (2000) study of returning Malawian refugees, the Generalised Self Efficacy Scale (GSES) (Schwarzer & Jerusalem, 1995) was utilised in order to assess the returnees' general sense of self-efficacy. Alternatively, Ford-Gilboe (1997) administered Sherer et al.'s (1982) Self-Efficacy Scale to her participants in both single and two parent families in order to predict their health promotion behaviour. Although such scales differ in terms of the number and content of the items used, it is necessary for them to share certain characteristics in order for general self-efficacy expectancies to be satisfactorily assessed. In particular, items constituting these scales must tap into individuals' self-efficacy

expectancies, without linking these expectancies to any particular behaviour. That is, the items themselves must be specific with regard to the types of expectancies that they measure (i.e. self-efficacy rather than outcome expectancies), but must be general enough so that participants completing the scale do not attribute any item to a specific behaviour. For example, item five in Schwarzer and Jerusalem's (1995) ten-item GSES, introduced above, is written as, "thanks to my resourcefulness, I know how to handle unforeseen situations." It can be seen that this item achieves the required measure of a sense of personal mastery of handling and dealing with unexpected situations (rather than the outcome expectancy of the results of dealing or not dealing with the situation), whilst keeping the target of the self-efficacy expectancy general by asking about, "unforeseen situations," rather than a specific time when an unexpected circumstance occurred.

As discussed above, scales such as Schwarzer and Jerusalem's (1995) GSES measure a general sense of personal mastery. However, although such measures are not specific to particular behaviours, the general self-efficacy expectancy measures that are assessed by such scales are themselves based on the individual's accumulation of specific expectancies built up by experiences of initiating and performing a range of behaviours. In order to tap into the specific expectancies that underlie these generalised self-efficacy expectancies, researchers often construct scales that are behaviour-specific, that is, scales that measure individuals' self-efficacy expectancies with regard to performing a particular behaviour (e.g. Amooti-Kaguna & Nuwaha 1999; Galavotti et al., 1995; Jackson & Aiken, 2000; Resnick, 2001; Stuijbergen et al., 2000). In common with generalised self-efficacy scales, behaviour-specific scales can measure self-efficacy expectancies for a particular behaviour in different situations or, for example, in the face of particular problems. However, it is essential that each item on such a scale is focussed on the performance of the behaviour in question. An example of an item taken from a behaviour-specific self-efficacy scale about sun protection is, "I could use sun screen in the sun even if I am not going to be out for that

long,” (Jackson & Aiken, 2000, p. 471). It is clear from this item that the behaviour under investigation is the use of sunscreen, and the condition under which the self-efficacy expectancy for this behaviour is being tested is being exposed to the sun for only a brief period of time.

The majority of the studies that investigate only behaviour-specific self-efficacy expectancies in this review used scales in order to achieve a quantitative measurement of each individual's expectancies (Galavotti et al., 1995; Jackson & Aiken, 2000; Resnick, 2001; Stuifbergen et al., 2000). Amooti-Kaguna and Nuwaha's (1999) study of choice of delivery (or birth) site in a sample of Ugandan parents was, in contrast, a purely qualitative study using interviews and focus groups to ascertain not only self-efficacy expectancies with regard to choice of birth location, but also specific attitudes and the role of societal influence on delivery location choice. The studies that utilised quantitative instruments either constructed behaviour-specific scales for the sole purpose of the study (Galavotti et al., 1995) or used existing scales or measures (Jackson & Aiken, 2000; Resnick, 2001; Stuifbergen et al., 2000). Although it is argued here that the construction of behaviour-specific scales for direct use in the study of behaviour is optimal, utilisation of existing scales to measure behaviour specific self-efficacy expectancies is acceptable, and in some cases might be preferable for reasons of time and resources. The point that should be made here is that whatever quantitative instrument is used to measure self-efficacy expectancies, the items and construction of the scale should be reliable, valid and relevant to the population under investigation.

It was discussed in the previous section that an optimal investigation of self-efficacy expectancies would include measurement of generalisability, magnitude and strength of expectancies (Bandura, 1977; Maddux, 1995). The articles reviewed so far in relation to the type of self-efficacy expectancies examined have either focused on the strength and

magnitude of general or behaviour-specific self-efficacy expectancies. In order to fully understand performance of behaviour, it is useful to combine the two approaches by inclusion of both a behaviour-specific and a general self-efficacy scale, which allows the three dimensions of magnitude, strength and generalisability to be assessed and centred on the behaviour under investigation. Both Leganger et al. (2000) and Lowe (1993) used behaviour-specific and general self-efficacy scales in their respective investigations of intention to stop smoking, and maternal confidence for labour. Combined measurement of both behaviour-specific and general self-efficacy expectancies allows both thorough understanding of the effect of self-efficacy expectancies on behaviour, and further, ascertains the existence or degree of generality of expectancies with regard to the behaviour under question. The variation in applications of SET, and the differing interpretations of its concepts have resulted in SET, or certain facets of the theory, being incorporated into other models or theories, which have become established in health and social psychology (Swarzer & Fuchs, 1996). These modifications and integrations of SET will now be discussed below.

The self-efficacy measure used in Galavotti et al.'s (1995) investigation of contraceptive behaviour was itself integrated into an application of the Transtheoretical Model of Behaviour Change (Prochaska & DiClemente, 1983; 1984, cited by Galavotti et al., 1995), which is an amalgamation of several existing theories that allow understanding of change in individuals' behaviour. Although the measures and results of studies of, for example, the Transtheoretical Model of Behaviour Change are based on SET, caution should be taken when interpreting the results from the perspective of understanding self-efficacy expectancies. For example, in Galavotti et al.'s (1995) study the way in which items were initially generated (qualitative interviews), and the wording of the items, gives the impression that the measure is aimed at assessing expectancies specific to contraceptive use. However, the researchers declare that additional researchers who were expert regarding the Transtheoretical Model of Behaviour Change were called upon in order to

choose the final items for the subscale. Therefore, although eight self-efficacy expectancies were used for each contraceptive behaviour on the self-efficacy subscale, care must be taken when interpreting the results from the perspective of SET due to the possible bias that might have occurred when selecting items within an alternative theoretical framework.

One of the most widely tested integrations of SET is the perceived control component in Ajzen's (1988) Theory of Planned Behaviour (e.g. Levin, 1999; Sideridis et al., 1998). Perceived behavioural control draws upon aspects of locus of control and self-efficacy beliefs to understand how individuals' beliefs as to strength of their control over performing a behaviour is attributable to actual performance (Ajzen, 1988). As an extension of the TRA (Ajzen and Fishbein, 1980), the Theory of Planned Behaviour suggests that perceived behavioural control directly influences behaviour (as well as influencing it through the mediating role of intentions). As Ajzen (1988) states, "perceived self-efficacy or perceived control over performance of a behaviour is found to correlate strongly with actual performance," (Ajzen, 1988, p. 107). However, as perceived behavioural control is made up of a combination of SET and locus of control, accurate and independent understanding of self-efficacy expectancies cannot actually be achieved through the application of this component of the Theory of Planned Behaviour.

To reiterate, the above discussion has centred on two broad issues. Firstly, it is recommended by Bandura (1977) and Maddux (1995) that in order to fully understand the effect of self-efficacy expectancies on the performance of behaviour, measures of generality, strength and magnitude of self-efficacy expectancies must be made. Further, it is essential that it is not simply assumed that measurements of general self-efficacy expectancies will suffice in place of behaviour-specific measures, as without both general and behaviour-specific measures, assessment of generality cannot be made. Secondly, it is common for measures or aspects of SET to be incorporated into components of other, often multi-faceted theories. It is important, however, that the analyses resulting from these

derived measures are interpreted within the appropriate context or theoretical framework in which they were set. In applications of SET, therefore, it is essential that measures of self-efficacy expectancies are made without the bias exerted by an alternative theoretical framework.

The issues dealt with so far involving the measurement of self-efficacy, and interpretation of SET research can apply to all of the wide range of applications of SET. The following section examines the existing applications of SET to infant feeding, which is the concern of this thesis. Reference will be made to the recommendations for accurate assessment of self-efficacy expectancies, and a case will be made for the application of SET to infant feeding behaviour in the light of both the current infant feeding climate, and the theoretical and measurement issues raised above.

3.1.3 Self-Efficacy Theory and infant feeding research

Despite the ability of SET to evaluate an important concern in decisions to perform and maintain behaviours, and the impact of self-efficacy on the health and psychological well-being of individuals, very little research has been conducted as to the self-efficacy beliefs of mothers regarding infant feeding. As discussed in chapter one, a substantial proportion of women in the UK (66%) initiate breastfeeding upon the birth of their baby. However, this number drops to 27% at four months postpartum (Foster et al. 1995). It is therefore vital that research is carried out that seeks further understanding of both why some individuals maintain breastfeeding, and conversely, why others do not maintain breastfeeding and change their infant feeding behaviour to bottle-feeding.

At the time of writing, only two articles relating to infant feeding and SET were available. The first of these was Burglehaus, Sheps and Green (1997) paper that focused on physicians' self-efficacy expectancies regarding breastfeeding. One of the main aims of

this paper was to gain “baseline data” (Burglehaus et al., 1997) of physicians’ self-efficacy expectancies regarding breastfeeding counselling, as well as attitudes, beliefs and knowledge. A scale was used to elicit self-efficacy expectancies and the other variables of interest, the items for which were generated from consultation of the research literature. Concerning self-efficacy, the results of the study showed that female physicians had significantly higher self-efficacy expectancies than male physicians, and that, regardless of gender, physicians whose children had been breastfed as infants had greater self-efficacy expectancies for counselling women who experienced difficulties with breastfeeding. Although this study certainly opens up the argument for the role and importance of self-efficacy expectancies in the realm of infant feeding, the focus of this study is limited. As noted by Burglehaus et al. (1997) themselves, the responses of the physicians participating in this study might overestimate the level of support for breastfeeding at the location of the study, and further does not provide any evidence for the effect that physician’s counselling, mediated by self-efficacy, might have on the breastfeeding experience of women. However, the second study to be reviewed here (Dennis & Faux, 1999) actually focuses on breastfeeding mother’s specific self-efficacy expectancies regarding breastfeeding.

Dennis and Faux’s (1999) paper focuses on the development and testing of a scale specifically constructed to understand the behaviour-specific self-efficacy expectancies of mothers who were breastfeeding. Prior to administration to participants, various validity checks were made on the scale. The scale was then piloted by administration to 23 breastfeeding mothers in order to test the reliability of the scale. The validity and reliability analysis yielded a 43-item scale that was distributed to 208 breastfeeding mothers, 175 of whom agreed to participate. Although the paper was primarily concerned with testing and developing the scale, the authors disclose some preliminary findings from the analysis. For example, it was found that women who had previously breastfed had higher self-efficacy expectancies than first time mothers. Further, it was found that the self-efficacy expectancies measured by the scale could significantly predict infant feeding behaviour at

six months postpartum. Therefore, Dennis and Faux's (1999) study shows, not only how breastfeeding self-efficacy expectancies can be measured, but also the importance of these expectancies in relation to subsequent infant feeding behaviour. However, although this study had advantages over Burglehaus et al. (1997) research in the context of this thesis, there remain some limitations.

In developing items for use on the scale, Dennis and Faux (1999) uncovered three sets of problems with breastfeeding from the literature. These broad categories of problems upon which the scale items were based were intrapersonal thoughts, breastfeeding technique and support. Although an expert panel examined the scale items for content validity, the method of item generation can still be called into question, and is the first issue to be addressed here. It was held in chapter two for applications of the TRA (Ajzen & Fishbein, 1980) (refer to chapter 2, section 2.3.1) that in order to identify the issues of relevance to the population under investigation to be used in a scale to measure the components of the TRA, it is necessary to consult a sample of this population. It is further argued here that this recommendation of Ajzen and Fishbein (1980) should not be restricted to the TRA, but should be used in applications of theories such as SET in order to ensure that the items generated are relevant to the population and the behaviour in question. The problems that might be regarded as important to experts concerning breastfeeding self-efficacy might be very different to those of the women to whom the scale will be administered.

The second point to be made here involves the behavioural focus of the research. It was discussed in chapter two (refer to chapter 2, section 2.1) that in order to understand initiation of behaviour in a choice situation such as infant feeding, it is necessary to examine and measure both of the options in that choice, i.e. breastfeeding and bottle-feeding. Accordingly, it is argued here that in order to fully understand and predict performance and maintenance of breastfeeding, it is equally necessary to assess self-efficacy expectancies related to bottle-feeding as well as those related to breastfeeding.

Although Dennis and Faux (1999) make it clear that their scale is solely for the purpose of understanding behaviour-specific self-efficacy expectancies of breastfeeding mothers, in the context of understanding why women cease breastfeeding, it is essential to ascertain expectancies relating to both possible behaviours.

The third issue to be dealt with here moves on from Dennis and Faux's (1999) study, and instead refers back to the main point raised by the review of the SET research literature (refer to chapter 3, section 3.1.2). Although it is noted that it was not in the remit of Dennis and Faux's research, it is claimed here that studies seeking to understand women's infant feeding behaviour through examination of self-efficacy expectancies should assess both behaviour-specific and general self-efficacy expectancies. By including a measure of general self-efficacy expectancies, the theoretical position that assessment of magnitude, strength and generality of expectancies are vital for full appreciation of the effect of self-efficacy to be reached (Bandura, 1977; Maddux, 1995), can be satisfied.

In summary, both theoretical and methodological issues affect the current self-efficacy research literature both with regard to health behaviours in general, and more specifically with regard to infant feeding. Although SET has been shown to be effective in furthering understanding of a variety of health related behaviours, surprisingly little research has been carried out regarding the effect that self-efficacy expectancies have on the performance and maintenance of breastfeeding behaviour, and none has been completed regarding bottle-feeding.

So far the theoretical perspective of this thesis has been the internal processes that contribute to women's initiation and performance of breastfeeding and bottle-feeding, and the maintenance of infant feeding behaviour. The following section focuses on social support as a further theoretical perspective adopted to achieve understanding of the performance and maintenance of breastfeeding and bottle-feeding. The current state of

research related to social support will be discussed and the issues raised by the infant feeding social support literature will be addressed.

3.2 The application of social support to infant feeding

The role and importance of social support to the experience of motherhood cannot be underestimated (Oakley, 1992). More specifically, many researchers have investigated the application of social support to infant feeding, and in particular, breastfeeding. This section will introduce the concept of social support, and its importance in the study of infant feeding. Reference will be made to early work on the conceptualisation and benefits of social support. Finally, the specific application of social support to infant feeding will be addressed, and the theoretical and methodological issues that the relevant literature raises will be discussed in the light of the contextual perspective of this thesis.

3.2.1 The conceptualisation of social support

Unlike the TRA and SET, the notion of social support is not embedded in an encompassing theoretical framework. As such, it is not as straightforward to conceptualise as the SCMs discussed so far in this thesis. Early research related to social support was focused on the debate as to how social support benefits health and well-being (e.g. Cohen & Wills, 1985). This debate concerning the nature of the effect of social support, revolved around two broad models, the Buffering Model (Cohen & Wills, 1985) and the Direct-Effect Model (Cohen & Wills, 1985; Wortman & Dunkel-Schetter, 1987). The Buffering Model or Hypothesis (Sarafino, 1994) stipulates that support provides a protective barrier that prevents effects attributable to stressful events from adversely affecting the individual (Cohen & Wills, 1985). On the other hand, the Direct-Effect Model specifies, as the title suggests, that the positive consequences of social support are due to the, “overall beneficial effect of support,” (Cohen & Wills, 1985, pp. 31).

Throughout the years in which the benefits of social support have been recognised and applied to health and health-related behaviours, researchers have offered definitions of social support in the quest to make sense of its process. As Wortman and Dunkel-Schetter (1987) have noted, definition of social support is important, as the nature of the definition affects the way in which it is measured. It is therefore important that researchers investigating social support offer, or work from, a specific "operational definition," (Wortman & Dunkel-Schetter, 1987, pp. 69) in order that the concept can be accurately and effectively measured, and treated distinctly from other, possibly related concepts. Researchers and authors continue to present or review definitions of social support (e.g. Oakley, 1992; Riffle, Yoho & Sams, 1989; Stansfeld, 1999) in the light of the debates in the social support literature.

However, originating from and related to the debate between the Buffering Hypothesis (Cohen and Wills, 1985) and the Direct-Effect Model (Cohen & Wills, 1985; Wortman & Dunkel-Schetter, 1987), two main conceptualisations of social support have arisen, which affect the way in which social support is viewed, and subsequently operationalised. The first approach, based upon the Direct-Effect model, considers social support in terms of the individual's organisation of his or her social network of support. The second conceptualisation, based upon the Buffering hypothesis, is that of the function or operation of individuals' network of support (Stroebe & Stroebe, 1995). The way in which social support is defined and operationalised in this thesis falls between these two conceptualisations. Therefore, for the purposes of this study, social support with regard to infant feeding is the investigation of first time mothers' perceptions of the composition and manner in which their support networks provide social support with regard to both breast and bottle-feeding.

It is this perspective of examining individuals' perceptions of social support that has divided much of the literature. Although it is essential to build up knowledge and understanding of sources of social support, as in the conceptualisation of social support in this thesis presented above, it is equally important to investigate what the sources actually do to provide support. Researchers (e.g. House, 1981) have posited various types of support, rather than an overall conceptualisation of support determined by the sources. This former view stems from the notion that individuals can perform many different types of act in order to support someone. For example, an elderly woman living in sheltered accommodation may find a relative popping in to tidy the house supportive. Additionally, the elderly woman might find the same relative popping in and listening to her problems equally supportive. However, it is the perception of the individual who is in receipt of the "support" that renders the action of the support source supportive or not. For example, remaining with the example of the woman living in sheltered accommodation introduced above, another woman living in the same accommodation who is very independent might receive the same help around the house, but consider this not to be supportive, but rather interfering.

There are two issues at work here. Firstly, it is essential that the perceptions of the recipient of intended support are examined. Therefore, it is argued here that a subjective rather than an objective measure of social support should be made. Secondly, although it is essential to know the source and the extent of the support supplied, it is equally important to know the type of support provided or required for two reasons. Firstly, two very different actions can be weighted by individuals as equally supportive, which further is something that an objective measure might miss, and secondly, two individuals might subjectively perceive the same action very differently in terms of support. So what are the types of social support available to individuals?

The majority of the literature specifies the existence of four types of social support: emotional support; tangible/practical support; informational support and appraisal support (House, 1981; Stansfeld, 1999; Stroebe & Stroebe, 1995). However, the literature is again divided on this issue. While some authors and researchers do not acknowledge or distinguish appraisal support as a separate category (Oakley, 1992; Matich & Sims, 1992), others have shown appraisal support to be valuable to individuals' health and therefore worthy of separate consideration (e.g. Uchnino, Cacioppo & Malarkey, 1995).

Each type of social support has been broadly defined and generally agreed within the literature. Emotional support involves furnishing an individual with care, empathy and/or love. For example, in the case of a bereaved widow, this might take the form of listening to and showing understanding about her worries. Emotional support is not solely required during times of distress, however, and moreover may be equally required upon the hearing of positive news, or simply day-to-day in the case of new mothers for example (e.g. Oakley, 1992). Tangible support encompasses a wide range of practical help such as financial support, help with household chores, or childcare. Informational support concerns the communication of required or appropriate knowledge, for example a GP providing a young adult patient with information about family planning. Finally, appraisal support is similar to informational support (Stroebe & Stroebe, 1995) in that it too involves the conveyance of information. However, in this case the information is usually evaluation by another individual, specifically designed to convey (usually positive) feedback based on previous or current behaviour. For example, when learning to drive a car, a driving instructor might provide appraisal support to the learner in his charge by using encouraging words and pointing out positive aspects of the learner's driving in order to improve confidence. It is argued there that in order to comprehensively examine social support, it is necessary that within the facet of type of support, emotional, tangible, informational, and appraisal support are all assessed.

This section has concentrated on the conceptualisation of social support, and the operational definition to be adopted in this thesis. It is apparent that the conceptualisations based upon the Direct-Effect and Buffering Hypotheses have focused on the sources and amount of the social support provided by participants. However, it is further apparent that in order to fully understand the impact and nature of social support on individuals, both generally and in relation to specific behaviours, subjective measurement must be made of the types of social support provided by the sources. Therefore, in order to obtain a thorough measure of social support, it is essential that source, amount and type of social support is measured from the perspective of the individual to whom it is intended to be provided.

3.2.2 The application of social support in the infant feeding literature

As introduced above, unlike the TRA and SET there is already a substantial research literature related to infant feeding and social support. The majority of the infant feeding social support literature is contained in nursing or medically based journals, and as such is focused towards health professionals. This work covers many different perspectives. For example, Langer, Campero, Garcia and Reynoso (1998) investigated the effect of support from a doula (birth attendant) on subsequent breastfeeding behaviour, and found that exclusive breastfeeding rates among women who had the support of a doula were significantly higher than those who had not received this support. Other studies have examined influences on breastfeeding practices (e.g. Eriksen, 1996; Holmes, Thorpe & Phillips, 1997), and have found lack of social support to be a contributory factor as to why women cease breastfeeding or supplement with formula. The focus of such studies highlights the importance of social support to breastfeeding. However, this research lacks the theoretical framework of the conceptualisation of social support that would allow

thorough understanding of the nature of this beneficial effect of social support. Therefore, although it is of importance to have evidence of the benefits of social support, in order to further both the conceptualisation and future applications of social support it is essential that research is carried out that is additionally concerned with constructing and furthering the theoretical standpoint of social support.

A further issue that has also been covered in the reviews of the TRA and SET with regard to infant feeding is that of the narrow focus on breastfeeding in the applications of social support to infant feeding. Only one article located for this review (Matich & Sims, 1992) has addressed the issue of comparison between social support for both breastfeeding and bottle-feeding. Matich and Sims (1992) found that there were differences in social support between women who intended to breastfeed their babies and those who intended to bottle-feed. It was found that the level of informational support was higher for intended breastfeeders than bottle-feeders, although both emotional and tangible support were not significantly different between the two groups. As discussed in the previous chapter (refer to chapter 2, section 2.1) and in the first section of the current chapter (refer to chapter 3, section 3.1.3) in order to understand the full range of infant feeding experience, and so to increase breastfeeding rates, it is vital that both breastfeeding and bottle-feeding are equally addressed.

Although Matich and Sims's (1992) study contributes to the understanding of differences between women who intend to breastfeed or those who intend to bottle-feed, it does not take into account the choice decision involved in forming an intention to breast or bottle-feed, or the possible change in infant feeding method following initiation. Without knowledge of the social support available or required by women, and any differences in this support when performing both infant feeding behaviours, it is not possible to understand the effect of social support in the initial decision, and the change from

breastfeeding to bottle-feeding. It is therefore argued here that in order to fully understand both why women intend to breast or bottle-feed, and further, their reasons for changing infant feeding methods, it is necessary to assess social support related to both methods of infant feeding for women who intend to either breastfeed, bottle-feed or who are undecided.

Another noticeable area of difference within studies of social support and infant feeding is the methodology employed in order to investigate social support. Most of the studies in this review use a quantitative instrument to gather information on aspects of social support and breastfeeding (e.g. Baranowski, Bee, Rassin, Richardson, Brown, Guenther & Nader, 1983; Beske & Garvis, 1982; Humphreys, Thompson & Miner, 1998; Langer, Campero, Garcia & Reynoso, 1998; Matich & Sims, 1992; Tarkka, Paunonen & Laippa, 1999; Whelan & Lupton, 1998). However, two of the studies have used qualitative methodology in the form of focus groups (Holmes, Thorpe & Phillips, 1997; McIntyre, Hiller & Turnbull, 1999). Both of these studies were atheoretical and as such concentrated on exploring the infant feeding practices of a specific group (an Aboriginal community and women in a low socio-economic area respectively). It is clear that these studies are exploratory in nature, and therefore contribute both to appreciation of the importance of social support to infant feeding, and the elevation of issues central to the understanding and further research of social support. However, due to the exploratory nature of these studies, they do not specifically address the three facets of social support of source, amount and type that it is argued in this thesis are integral to a full understanding of infant feeding behaviour. Consequently, in order to review the adequacy of the investigation of these facets in the social support literature it is necessary to look to those studies that have employed the use of quantitative methodology.

As mentioned above, by far the most common methodology utilised to measure social support in the infant feeding literature is quantitative, in the form of scales and/or questionnaires. Such studies often concentrate on either type or source of social support. Tarkka et al. (1999) utilised Norbeck's social support questionnaire (Norbeck, Lindsey & Carrieri, 1981;1983, cited by Tarkka et al., 1999), and an instrument that was developed for use in the study, based upon the conceptualisation of social support of Kahn (1979, cited by Tarkka et al., 1999) which views social support as a combination of affirmation, aid and affect. The instrument developed by Tarkka et al. (1999) was based upon the support provided to the breastfeeding mother specifically by the public health nurse in the light of the constituents of Kahn's (1979, cited by Tarkka et al., 1999) conceptualisation. Therefore, although type of support specific to breastfeeding was measured with respect to one support source, the full range of possible sources of breastfeeding social support was not investigated.

Conversely, Baranowski et al. (1983) concentrate on understanding the supportiveness of six main sources of social support regarding breastfeeding. Results showed that Anglo-American mothers cited their partner as their most important source of social support, whereas Black-American mothers saw their own mother as the most important source of social support regarding breastfeeding. Although the effect of ethnicity on the importance of social support sources is important, the measurement of the type and degree of social support afforded by these sources require equal consideration.

Of the studies reviewed here, only Matich and Sims (1992) addressed all three facets of social support, these being source, amount and type. Matich and Sims (1992) assessed tangible, emotional and informational support with regard to both breastfeeding and bottle-feeding mothers. It was argued in the previous section that four types of support should be measured in order to consider the range of support that might be available. As

breastfeeding is a behaviour that needs to be learned, it is possible that appraisal support might play a vital role in the successful maintenance of this behaviour. Assurance that the way in which breastfeeding is being carried out is correct could be crucial to a mother who is unsure as to whether to continue breastfeeding.

It has been argued in chapter two (refer to chapter 2, section 2.3.1) and the current chapter (refer to chapter 3, section 3.1.3) in the case of the TRA and SET, that it is of vital importance that the items used in quantitative instruments are directly relevant to the issues and population under investigation. Therefore, as has been concluded for instruments applying the TRA and SET to infant feeding, it is argued here that it is essential that an instrument designed to investigate social support and infant feeding is constructed with close consultation with a sample of the population to which the finalised scale is to be administered. Without knowledge of the important issues relating to social support and infant feeding, (which the qualitative studies referred to above start to do) it is impossible to know which items to include on a scale. It is common for scales and questionnaires designed to measure aspects of social support with regard to infant feeding to be based on the research literature. For example, Baranowski et al. (1983), who based their scale on the available research literature, listed as one of the “important others” items to which participants could respond as sources of support “my favourite aunt.” It could be argued that making the assumption that a large proportion of participants would have a favourite aunt, and further, by predetermining the range of sources from which participants could choose, the researchers are both making premature assumptions about the results, and additionally, restricting participants’ responses. Consequently, it is proposed here that in order to create a valid instrument that takes into account both theoretical and methodological issues, mixed methodologies should be employed in order to combine the exploratory capability of qualitative research, and the ability of quantitative instruments to systematically measure multiple components of social support within a sample.

In summary, there are a wealth of different approaches to the study of social support and infant feeding. All of these studies make some contribution to furthering the issues of relevance to infant feeding social support, understanding the mechanisms of social support, and recognising the benefits that social support can have on breastfeeding. However, in undertaking a thorough investigation of social support and infant feeding, and advancing knowledge of the conceptualisation of social support, there are both theoretical and methodological concerns that must be addressed. From a theoretical perspective, it is essential that source, frequency and type of support are given equal attention in order that conceptualisation and effect of social support can be sufficiently understood. Additionally, from a methodological perspective, it is essential that instruments used to measure the facets of social support are appropriately constructed to allow for flexibility of expression, and that items are designed to address the issues relevant to the population under investigation. By addressing these theoretical and methodological concerns, a comprehensive investigation of the effect of social support on the performance and maintenance of infant feeding can be achieved.

So far the perspectives of the TRA, SET and social support have been assembled to form the components upon which the intention, initiation and maintenance of infant feeding behaviour can be investigated and understood. The final important issue to be addressed in relation to the performance and maintenance of infant feeding is the external variables that characterise and/or effect behaviour. The following section reviews the current infant feeding research literature concerning the effect of external variables on the performance and maintenance of infant feeding behaviours. The influence of formula supplementation will be addressed, as will sociodemographic variables and the effects of type and experience of delivery.

3.3 The influence of external variables on infant feeding

The influence of external variables on the performance and maintenance of infant feeding behaviours has received a fair amount of attention in the research literature. The investigation of this influence has mainly focused on the initiation of breast and bottle-feeding, and the duration of breastfeeding. In this thesis, external variables are taken as being those that are either characteristic of an individual (for example age or marital status), or which are not constituents of an existing theoretical framework or perspective. However, these external variables might themselves influence theoretical components or concepts (e.g. Ajzen & Fishbein, 1980). Three main types of external variable have been examined in the literature. Researchers have either focused specifically upon or investigated a combination of, the effect of formula supplementation, birth or delivery experience, and demographic variables. Each of these perspectives will now be discussed in turn.

3.3.1 The effect of formula supplementation on infant feeding

The effect of formula supplementation has been central to the debate on the duration of breastfeeding since the beginning of the infant formula controversy in the 1970s and 1980s (Van Esterik, 1989). A central concern of this controversy was the advertisement by infant formula companies of their product, thereby purportedly, encouraging mothers to bottle rather than breastfeed. A number of researchers have investigated this effect with regard to understanding why some women terminate breastfeeding prematurely (e.g. Feinstein, Berkelhamer, Gruszka, Wong & Carey, 1986; Gray-Donald, Kramer, Munday & Leduc, 1985; Loughlin, Clapp-Channing, Gehlbach, Pollard & McCutchen, 1985; Ryan, Wysong, Martinez & Simon, 1990), and overall they have found the distribution of formula and

addition of formula supplementation to infants' diet to be detrimental to the continuance of breastfeeding.

Within this group of studies that investigate the effect of formula supplementation on breastfeeding, there are two issues that are addressed. The first issue, which is addressed by a large proportion of the research literature, focuses on actual infant feeding behaviour, and the effect that supplementation has on breastfeeding (e.g. Feinstein et al., 1986; Gray-Donald et al., 1985; Loughlin et al., 1985; Ryan et al., 1990). The second issue addressed by a minority of studies is the relationship between the distribution of formula samples or packs on discharge (e.g. Feinstein et al., 1986; Ryan et al., 1990) and breastfeeding duration.

Of the first subset of studies, Loughlin et al. (1985) found there to be a negative effect on breastfeeding at eight weeks if formula was introduced to the infant prior to two weeks of age. Therefore, if mothers supplemented their babies' diets with formula before they were two weeks of age, it was likely that breastfeeding would have ceased by the time the infant was eight weeks of age. Similarly, Feinstein et al. (1985) found that supplementation of breastfeeding with at least one bottle of formula each day negatively affected the duration of breastfeeding, and further, Ryan et al. (1990) found a significant effect for the instigation of supplemented breastfeeding or mixed feeding. Conversely, Gray-Donald et al. (1985), in their controlled clinical trial of breastfeeding mothers concluded that formula supplementation did not directly cause cessation of breastfeeding, but rather could be regarded as a precursor or warning of breastfeeding termination. That is, unlike the perceived direct effect of formula supplementation on breastfeeding duration seen in the latter three studies (Feinstein et al., 1985; Loughlin et al., 1985; Ryan et al., 1990), Gray-Donald et al.'s results (1985) suggested that formula supplementation encouraged

behaviour that instigated the change from breastfeeding to bottle-feeding, rather than having a direct effect.

The alternative focus of the distribution of discharge packs containing formula, was common at the height of the infant formula controversy. Although formula is still available to women who choose to feed their babies by this method, under the remit of the Baby Friendly Initiative it must not be on display or advertised in any way on the ward. Feinstein et al. (1985) found that there was no negative effect of obtaining a formula discharge pack on breastfeeding. Conversely, Ryan et al. (1990) found a significant effect of administration of discharge packs containing formula on the cessation of breastfeeding. Although a consensus has not been reached, the results of the above studies that have focused on formula supplementation and/or the administration of formula discharge packs show that, however the effect is achieved (either through a direct or indirect effect), the addition of formula to an infant's diet has consequences for the mother's breastfeeding behaviour and subsequent duration of breastfeeding. This provides further weight to the arguments put forward both in chapter two (refer to chapter 2, section 2.2) and the current chapter (refer to sections 3.1.3 and 3.2.2), that both breastfeeding and bottle-feeding need to be studied if infant feeding is to be comprehensively understood. Without examining bottle-feeding behaviour with the same degree of thoroughness as breastfeeding behaviour, the potential effect that bottle-feeding can have on breastfeeding cannot be scrutinised. A further external influence that has not been sufficiently considered with regard to its effect on breastfeeding is the effect of the birth experience, which is to be reviewed below.

3.3.2 The effect of birth experience on infant feeding

The second category of research to be dealt with here concerning external variables has been less extensively researched than those that focus on supplementation discussed above.

The effect of the birth experience on women both in the short and long term cannot be underestimated (Kitzinger, 1987). Effects of the birth can indirectly affect breastfeeding through the mediating role of conditions upon which the birth has been shown to have a direct affect. For example, the literature suggests that birth experience might indirectly effect breastfeeding through Postnatal Depression (PND) as research has shown that there might be an increased risk of Postnatal Depression (PND) following caesarean section (Edwards, Porter & Stein, 1994), and further that there is a risk of early termination of breastfeeding associated with PND (Cooper et al., 1993).

Direct effects of the birth on breastfeeding duration have had limited investigation. However, Ellis and Hewat's (1984) study examined a number of possible effects related to breastfeeding duration. Factors such as length of hospital stay, admission of infant to an intensive care unit, and high risk deliveries were investigated in relation to infant feeding behaviour at three and six months postpartum. Ellis and Hewat (1984) found that increased hospitalisation of the mother was negatively related to breastfeeding duration (i.e. the longer the hospital stay, the shorter the duration of breastfeeding). Receipt of intensive care and high risk labour (e.g. meconium staining, caesarean delivery) were also related to cessation of breastfeeding at three and six months. Additionally, women who had delivered spontaneously were more likely to be breastfeeding at three months than those that were considered to be high risk. Therefore, although there is a want of research in this area, the results of Ellis and Hewat's (1984) study suggest that circumstances and experiences surrounding the birth as well as the delivery itself may have some effect on the duration of breastfeeding.

With advances in obstetrics and associated procedures, it is essential that up to date infant feeding research takes account of the full range of mothers' experiences both between intention formation and initiation as well as throughout the duration of breastfeeding, in

order to fully understand infant feeding behaviour. While the birth experience has received little attention with regard to infant feeding, sociodemographic variables are commonly measured in the majority of such research. The next section of this review of external variables focuses on the effect of sociodemographic characteristics on mothers' infant feeding behaviour.

3.3.3 The effect of sociodemographic characteristics on infant feeding

Almost all of the studies that investigate the duration of breastfeeding measure some form of demographic information in order to deduce conclusions from their observations (e.g. Cooper et al., 1993; Feinstein et al., 1986; Ryan et al., 1990; Scott, Aiken, Binns & Aroni, 1999). Most research has found that maternal age at the time of delivery is positively related to breastfeeding duration (Cooper et al., 1993; Feinstein et al., 1986; Scott et al., 1999). Therefore, older mothers are more likely to breastfeed for longer than younger mothers. Increased level of education has also been found to have a positive effect on breastfeeding duration (Feinstein et al., 1986; Ryan et al., 1990; Scott et al., 1999). Specifically, Cooper et al. (1993) found for one of the samples that they investigated, that mothers who had received education to 'A' level stage or above were more likely to breastfeed for longer than mothers who had not received this level of education.

Although a range of studies have found similar effects of sociodemographic variables in relation to breastfeeding duration, these effects can vary between samples. For example, Cooper et al. (1993) found that their Oxford sample of mothers' duration of breastfeeding was effected by age, but not education, whereas conversely, their Cambridge sample was effected by education and not by age. It is clear therefore, that caution must be taken in generalising across samples as other factors may be influencing one sample's behaviour that might not be in operation in influencing the behaviour of another sample.

Consequently, it is essential that demographics are measured as to their effect on breastfeeding duration in every study of infant feeding in order to assess their individual impact for the population under investigation.

3.3.4 Summary of external variables

The three types of external variables investigated by the studies presented above illustrate the breadth of the infant feeding experience that should be dealt with in understanding the effect that these variables have on the performance of breast and bottle-feeding behaviour, and the duration and maintenance of breastfeeding. It is apparent from the inconsistency in the results of the infant formula studies and those that included sociodemographic characteristics, that such information should be measured in each new study of infant feeding in order to understand the impact of these variables on the maintenance of infant feeding. The theoretically based recommendations of chapters two and three regarding the applications of the TRA, SET and social support to infant feeding will now be operationalised below in the form of the research questions that will guide the implementation, management and analysis of the longitudinal study at the heart of this thesis.

3.4 Research questions

The thesis thus far has presented the conceptual, contextual and theoretical issues within which the central longitudinal study of women's infant feeding experiences is to be located. Chapter two established social cognitive theory, and in particular the TRA as the predominant framework within which women's infant feeding decisions and the initial infant feeding behaviour could be understood. Chapter three has asserted a combination of the theoretical perspectives of SET and social support, and external variables as a means to

understand the internal and external influences on the performance and maintenance of infant feeding behaviours. The research questions below are formulated from the theoretical needs of the infant feeding research literature, based upon the reviews of related research in chapters two and three, and within the conceptual context of the need for understanding of the infant feeding experience of women. Each set of research questions is governed by one of the theoretical positions outlined above.

3.4.1 Research questions based on the Theory of Reasoned Action

The research questions that are based upon the TRA are intended to provide a thorough test and examination of the theory in relation to infant feeding. Although founded on the theoretical issues discussed in chapter two, the questions are additionally designed to allow practical implications to be achieved from the results.

- i. How do first-time mothers make the choice between breastfeeding and bottle-feeding their babies?
- ii. How do first-time mothers form the intention to breastfeed or not breastfeed their babies?
- iii. How do first-time mothers form the intention to bottle-feed or not bottle-feed their babies?
- iv. What is the immediate determinant of behavioural and choice intention to breastfeed or bottle-feed?
- v. What is the immediate determinant of first-time mothers' infant feeding behaviour?

3.4.2 Research questions based on Self-Efficacy Theory

The main aim of the research questions based on SET is to understand the effect of generalised and behaviour-specific self-efficacy expectancies on the infant feeding behaviour of first time mothers. By establishing this application of SET firmly on the issues of generality, strength and magnitude of self-efficacy expectancies addressed in chapter three, it is proposed that a thorough examination of the effect of self-efficacy expectancies on infant feeding behaviour will be achieved.

- i. Is there a significant difference between the strength and magnitude of first-time mothers' self-efficacy expectancies regarding behaviour-specific and generalised self-efficacy?
- ii. Is there a significant difference between first-time mothers' breastfeeding and bottle-feeding self-efficacy expectancies?
- iii. Do behaviour-specific self-efficacy expectancies change over time/differ according to infant feeding experience?
- iv. Do generalised self-efficacy expectancies change over time/differ according to infant feeding experience?

3.4.3 Research questions based on Social Support

The overall aim of the social support approach of the study is to understand the perceptions of first-time mothers' need for social support in relation to both breastfeeding and bottle-feeding. This aim will be achieved through focusing on the three facets of social support (source, amount and type) that it was argued in chapter three are integral to a

comprehensive understanding of the effect of this concept on the performance and maintenance of infant feeding behaviour.

- i. Do first time mothers require different sources of support for each support type?
- ii. Do first time mothers require different types of support according to infant feeding experience?
- iii. Do first time mothers require different sources of social support according to infant feeding experience?
- iv. Do first time mothers require different levels of social support according to infant feeding experience?

3.4.4 Research questions based on external variables and infant feeding experience

The final set of research questions deal with the external variables of sociodemographic variables, birth experience and infant feeding experience, including formula supplementation as a means of understanding the performance and maintenance of infant feeding behaviour, and in particular breastfeeding duration. Rather than attempting to predict infant feeding behaviour and continuance from these variables, it is intended to form a profile of mothers who engage in certain infant feeding behaviours.

- i. Is there a relationship between age of mother and performance of and duration of breastfeeding or bottle-feeding?
- ii. Is there a relationship between education and performance and duration of breastfeeding or bottle-feeding?

- iii. Is there a relationship between marital status and the performance and duration of breastfeeding and bottle-feeding?
- iv. Is there a relationship between aspects of the birth experience and the initial infant feeding behaviour and/or the duration of breastfeeding?
- v. What is the overall affect of the infant feeding experience on the mother?

3.4.5 Summary of research questions

The above research questions provide a structure from which the longitudinal study of first time mothers at the heart of this thesis can be implemented. The following chapter presents the processes that will be employed in order to operationalise the questions raised by the theoretical and contextual concerns raised by the preceding chapters. These issues will be addressed through the use of qualitative and quantitative methodologies, from which instruments will be developed within the women-centred perspective of this thesis.

Instrument Development

This chapter seeks to lay the foundation of the research in terms of the design and implementation of the research process. It has been argued in the previous chapters that the study must be both women-centred and theoretically informed in order to provide a thorough investigation of the infant feeding experience of first-time mothers which it is proposed will offer a significant contribution to the scientific knowledge of infant feeding. The following pages present the design of both a quantitative study and a qualitative study in response to the main research questions presented in chapter three. Firstly, the development of quantitative instruments in the form of scales and questionnaires designed to measure the theoretical and external variables pertinent to the enquiry will be presented. Secondly, the design and implementation of the qualitative study will be discussed, together with its relevance and applicability to the quantitative study.

4.1 Design

It was proposed that the quantitative study should be of a longitudinal design assessing between eighty and one hundred primigravida women at three stages. The first stage of the study would involve recruitment and assessment during pregnancy. Participants would be assessed for the second stage at six to eight weeks following delivery, and be reassessed for the third stage of the study at six to twelve months postpartum. The choice of a longitudinal design for the study would allow for observation of infant feeding attitudes and behaviour from pregnancy, when infant feeding decisions are often made (Sheridan, 1997), to motherhood, when infant feeding behaviour can be observed. It is essential when using a longitudinal design that each measurement made is as accurate as possible, as it is

not possible to simply replicate measurements when they are being taken across time (Magnusson, Bergman, Rudinger & Törestad, 1991). It is, therefore, vital that instruments designed to measure variables at each stage of the study are carefully designed and constructed for each stage of the study to ensure precision of measurement.

It was intended that both quantitative and qualitative methodologies would be used during the study. Quantitative measurement allows assessment of a large number of participants, enabling trends to be established and comparisons (of both theoretical and external factors) to be made across the sample. Quantitative data would be collected at all three stages of the longitudinal study using scales and questionnaires designed to measure theoretical and external variables. In order to develop the quantitative instruments for use throughout the study, a qualitative study was conducted to elicit themes from the population under investigation for use as items in the scales and questionnaires. Furthermore, it was proposed that a second qualitative study would be carried out during the postnatal stages of the longitudinal study which, in keeping with the women-centred perspective of the research, would give the participants a chance to reflect on their infant feeding experiences. The development of the instrument to be used for this study will be presented at the end of this chapter (refer to chapter 4, section 4.9). By using a combination of both qualitative and quantitative techniques, it is possible to reach and gain a better understanding of infant feeding experiences of a large sample, whilst retaining the focus on individual experiences of women. Further, by taking a pragmatic approach (i.e. using the methodology most appropriate for each stage of the study) to choice and use of research methodology (Tashakkori & Teddlie, 1998), the research questions themselves can be more adequately answered than would be possible through the rigid adherence to one methodology throughout the study.

As has been discussed in the introduction to chapter 1, only 27% of women are still breastfeeding their babies at 4 months postpartum (Foster et al., 1995). Furthermore, according to the TRA, in order to understand a choice decision such as that between breastfeeding and bottle-feeding, it is necessary to investigate both behaviours equally (Ajzen & Fishbein, 1980). By simply investigating breastfeeding, not only would the research exclude the majority of participants by the second stage of the longitudinal study, but also potentially valuable data would be ignored, and the infant feeding decisions and experiences of women could not be adequately understood. Consequently, it was proposed that both breastfeeding and bottle-feeding should be adequately represented, both in terms of scale and questionnaire items, and in the qualitative studies at the scale development and postnatal stages of the study. Therefore for the theoretically based scales, and for the questionnaires designed to measure external variables, items would measure variables pertaining to both breastfeeding and bottle-feeding. Further, interview schedules would contain questions asking for participants' views and experiences (where appropriate) of both breastfeeding and bottle-feeding.

Unfortunately, no standardised scales exist that are designed to measure the theoretical components of the TRA, SET and Social Support, or external variables related to infant feeding (refer to chapters 2 and 3). Hence it was necessary to develop these instruments for the purpose of this research. Details of the scales and questionnaires to be developed in this study, and the stages of the study at which they are to be administered are provided in Table two below. The following section presents the scale development study.

Table 2: Scales and questionnaires to be administered at each stage of the study

Stage 1: Pregnancy	Stage 2: 6-8 weeks postpartum	Stage 3: 6-12 months postpartum
Sociodemographic variable questionnaire	Sociodemographic variables questionnaire	Sociodemographic variables questionnaire
Breast and bottle-feeding attitude scale.	Breast and bottle-feeding social support scale	Breast and bottle-feeding social support scale
Breast and bottle-feeding social support scale	Breast and bottle-feeding self-efficacy scale	Breast and bottle-feeding self-efficacy scale
Breast and bottle-feeding self-efficacy scale	Infant feeding problems scale	Infant feeding problems scale
GSES*	GSES*	GSES*
	Details of birth questionnaire	Details of birth questionnaire
	Infant feeding details questionnaire	Infant feeding details questionnaire

* The Generalised Self-Efficacy Scale (Schwarzer and Jerusalem, 1995) is the only standardised scale to be used in the study.

4.2 Scale development study

In keeping with the women-centred perspective of the research and the theoretical recommendations discussed in chapter two (Ajzen & Fishbein, 1980), it was asserted that items to be used in the theoretically based scales would be generated with reference to a sample of the population to be assessed in the longitudinal study. In order to accomplish this, a qualitative study was conducted in order that all of the theoretical strands of the research could be addressed, allowing relevant items to be generated from the data. It is crucial that items chosen for use in the resulting scales are relevant to the population under investigation to prevent issues that may be pertinent to the enquiry from being missed, and equally to avoid participants being requested to respond to beliefs that are not applicable to their breast or bottle-feeding experience.

In order to achieve the most abundant amount of data, it was proposed that focus group interviews of primigravida women should be conducted. The synergistic effect of focus group discussions (Basch, 1987) allows individual's ideas to snowball, and so permit further exploration of issues related to the topic in question (i.e. infant feeding) other than

those in the interview schedule. The camaraderie that focus groups afford can also allow participants, "full and open expression of perceptions, experiences, attitudes etc." (Byers & Wilcox, 1991, p.66). Focus groups have been widely and successfully used in psychology, and in particular in research dealing with some sensitive subjects including infant feeding (e.g. Scott, Binns & Arnold, 1997). It was felt particularly that interviewing primigravidas in groups rather than singly would encourage greater disclosure of ideas to the researcher during the interview, as Jourard (1964, p.15, cited by Krueger & Casey, 2000) wrote of his participants, "subjects tended to disclose more about themselves to people who differ from them." Therefore, it was felt that the first-time pregnant women to be recruited for these interviews would be more forthcoming with how they really felt about infant feeding among other first-time pregnant women rather than simply on their own with the researcher (who was herself, at that time pregnant with her second child).

An interview schedule (appendix 1) was written and discussed with a researcher with extensive experience of running focus groups. The questions used on the schedule were divided into four main categories as follows: introductory questions that were aimed at creating a relaxed atmosphere and encouraging participants to speak; connecting questions which were intended to introduce participants to the topic in question and encourage thought about infant feeding; main questions, that were specifically designed to generate items for use in the theoretically based scales, and finally the closing question that was designed not only to bring the discussion to a close, but also to allow participants to talk about aspects of the topic that they felt had been overlooked (Krueger, 1994).

The interview schedule was piloted in an interview with a primigravida woman in the third trimester of pregnancy. Although the schedule was ultimately to be used in focus group interviews, as the main aim of the pilot was to check that the questions used could be understood effectively, it was considered that a single participant interview would be

sufficient for this purpose. By running this interview, it was found that the above concern was satisfied and the interview schedule was suitable for use in this stage of the research.

4.2.1 Recruitment

Access to primigravida women with singleton pregnancies who were attending or who had attended NHS antenatal classes was sought in order to fulfil the requirements of the focus group study. On receiving ethical approval for the study from the University Human-Ethics Sub-Committee, a local midwife known to the researcher was contacted. The midwife was fully informed of the aims of the study, and subsequently agreed to allow participants to be recruited for the study during NHS antenatal classes run by herself and a team of community midwives. The classes took place every week for a period of six weeks, with a new intake every three weeks. On the fourth week of the course, each group was to be given a session solely concerning infant feeding. It was agreed, therefore, that potential participants would be asked to take part in the study immediately after the infant feeding session whilst the topic was still foremost in their minds.

The first recruitment session at the antenatal classes was unsuccessful. After a short presentation about the study by the researcher, the first time mothers either appeared uninterested in the study, or indicated that they did not wish to travel to the University. As a consequence, the possibility of conducting a focus group at the venue where the antenatal classes were held (a church hall) was explored. However, this possibility was halted as the discussions could not be held before or after the class as it was considered that this would be too tiring for the women. The classes involved an hour with the midwife discussing relevant issues, and then an hour exercising with the physiotherapist. It was therefore decided that a further attempt at recruitment at the antenatal class would be made, and depending on the outcome, other avenues of recruitment may have to be explored.

At the second recruitment session, of the twenty potential participants who fitted the criteria (presented above), three women agreed to take part in a focus group at the University. As ethical guidelines state that participants have the right to withdraw from the study at any time and without providing an explanation, it was not possible to assess the reasons for the low recruitment rate. Rather, the researcher asked the midwives running the classes as to their opinion regarding the lack of participation. They suggested that in their experience, pregnant women are apathetic about doing anything that does not directly concern their baby and are almost solely concerned with their growing baby and the impending birth.

Due to the disappointing number of positive responses, and the increasing constraints of time, it was decided to consider other methods of recruitment in order to increase the number of participants. Emails were sent to mailing lists within the University, and friends and family of the researcher were asked if they knew of anyone who fitted the study criteria, and who would be interested in participating in a focus group. Further, a press release (appendix 2) was made through the Public Relations Department of the University asking first time pregnant mothers if they would be interested in taking part in a study about infant feeding. Despite interest from both local and regional newspapers, and a local radio interview with the researcher, only one participant was recruited using this method (who took part in the second focus group presented below).

To increase the recruitment rate, it was also decided to amend the inclusion criteria, to allow a greater variation in characteristics of participants. Although pregnant women were to complete the scales and questionnaires in the first stage of the study, the final two stages of the study are postnatal. Consequently, in order to alleviate some of the problem of recruitment which might be partially due to the narrow inclusion criteria, it was decided to

recruit primiparous women to the scale development study who had babies no older than twelve months of age at the time of interview. Not only was this felt to be an appropriate step to take to solve the recruitment problem discussed above, but also in continuing to endorse the women-centred perspective of the research process through the continued focus on women's experience. It was also decided that due to difficulties experienced with the logistics of organising focus group interviews, single participant interviews would be conducted where there was trouble organising focus groups, and the interview schedule would be adapted accordingly. This would be particularly appropriate in the case of primiparous women, who may need to either organise childcare, or bring their baby with them to the interview. Further, it was also felt that single participant interviews would be particularly appropriate for primiparous women for two reasons. Firstly, every woman's infant feeding experiences are unique, and it was thought that some of these experiences might not be heard in a group interview. Also, as infant feeding can be an emotive subject among new mothers, if women who were able to breastfeed are in discussion with women who found that they could not breastfeed, this may cause the latter group of women to view themselves as failures. Such segregation within a focus group might not only result in a restricted collection of data, but also cause distress to the participants, and so in this case single participant interviews were considered more appropriate for these particular participants (Michell, 1999).

Despite the changes both in recruitment methods and the inclusion criteria for the scale development study, recruitment was still slow. Consequently, it was becoming clear that other appropriate sources of information would need to be tapped for the full range of items required for the scales to be found, and, without losing sight of the women-centred approach advocated by this research. It was found in the first focus group (details of which are presented below), that the participants learned a great deal of information about infant feeding from leaflets and other forms of lay literature (for example, pregnancy and birth

magazines and books). In keeping with the proposition that the experiences of women should be heard in both the findings of the study and the research process itself, it was decided that a second method of dealing with the lack of information upon which to base scale items would be to examine the infant feeding lay literature. Therefore, a collection of lay literature was made by gathering up to date leaflets concerning infant feeding from the local Health Promotion Unit attached to the local hospital at which the longitudinal study was to be based, as well as from local baby care shops. A note was also made to ask each future participant as to the literature that she had read concerning infant feeding, and to follow up all references provided.

By changing both recruitment procedure and criteria, as well as examining the available lay literature, sufficient data was produced to generate items for the theoretically based scales, whilst still upholding the women-centred principles of the research. Further, by making these changes, it is possible that a superior source of scale items was achieved representing a full range of issues, due to the variation in sources and the differing experiences and attitudes of primigravida and primiparous women. On completion of the scale development study, eight participants had been interviewed either in focus group or single participant discussions. The following section provides details of the characteristics of participants, and the procedure used for each type of interview. Details of the lay literature are also presented.

4.2.2 Participants and procedure

The data collection stage of the scale development study consisted of two focus groups, three single participant interviews, and the collection of relevant lay literature. The characteristics and allocation of the focus group and interview participants can be examined in Table three (below). Two participants took part in the first focus group, both

of whom were recruited from the antenatal classes. Although three women originally expressed an interest in taking part in the discussion, one did not attend the session. The discussion took part in a social psychology laboratory at the University. Three women took part in the second focus group, which took place in an office in the psychology department at the University. Two of these participants were recruited by word of mouth, and the third from reading about the study in a local newspaper. All participants taking part in the focus group interviews were primigravida.

On arriving at the location of the focus group, participants were offered a drink and reminded of the aims of the study. Participants were advised that the interview would be tape recorded with their permission, that they could withdraw from the study at any time, and that all information provided by them would remain entirely confidential. All participants were asked to complete and sign a consent form stating that they were happy to participate. At the end of each interview, participants were debriefed as to how the data they had provided would be used, and asked if they had any further questions about the study. It is possible that the small number of participants in each focus group may have given confidence to the participants, as they felt comfortable discussing quite personal aspects of infant feeding with each other, and appeared to enjoy participating.

All participants taking part in the single participant interviews were recruited by word of mouth. One participant was primigravida and in the third trimester of pregnancy, and two of the participants were primiparous. Although it would have been optimal for the primigravida participant to take part in a focus group rather than a single participant interview, due to logistics and time, this was not possible. The same interview schedule used for the focus group interviews was used for the single participant interviews, and briefing and debriefing took place as in the focus groups above. All participants participated voluntarily and had approached the researcher of their own accord on hearing

about the study. The lay literature collected for use in the scale development study consisted of eight leaflets collected from the Health Promotion Unit and from baby care shops, and three books recommended by focus group and interview participants. All leaflets and relevant sections of books were photocopied in order that they might be easily coded by the researcher.

Table 3: Demographic characteristics of scale development study participants

Participant	Interview	Age	Occupation	Marital Status	Education/ age left education	Gestation (weeks) Age of baby (months)
P1	Focus group 1	35	School teacher	Married	22	35 weeks
P2	Focus group 1	33	Psychologist	Married	31 (Ph.D. as mature student)	35 weeks
P3	Focus group 2	31	Research assistant	Cohabiting	30 (BSc.) as mature student	28 weeks
P4	Focus group 2	33	Clerical assistant	Married	17	22 weeks
P5	Focus group 2	25	Bank supervisor	Married	18	22 weeks
P6	Interview 1	24	Research assistant	Married	20 years full time currently part time Ph.D.	6 months
P7	Interview 2	27	Full-time mother	Single	25 (B.A. as mature student)	9 months
P8	Interview 3	25	Full-time student	Cohabiting	Still in full- time education (BSc.)	39 weeks

4.2.3 Analysis

All interview and focus group recordings were transcribed verbatim and analysed using Thematic Content Analysis (TCA) (Smith, 1992). TCA has the ability to analyse both written and interview data, enabling both the interview transcripts and lay literature to be analysed using the same method. Although there is no set method for using TCA, usually, data is coded and themes emerge from the data through these codes (Di Bolla, De Joseph,

Norbeck & Smith, 1996). However, as the purpose of this study was to generate items for the theoretically based scales, the researcher asked specific questions of the data according to the items required for each scale. The results of the TCA, and the items generated for each scale will now be presented in turn.

4.3 The Breast and Bottle-feeding Attitude Scale

The format of this scale was to follow that prescribed by Ajzen and Fishbein (1980). Therefore, a scale needed to be constructed that would contain subscales to represent each of the theoretical constructs of attitudes, behavioural beliefs and normative beliefs (refer to chapter 2, section 2.2). Items did not need to be generated for either behavioural intention or subjective norm as, in line with the theory, they consisted only of one item each, and only differed according whether they were measuring breastfeeding or bottle-feeding beliefs (e.g. I intend to breastfeed/bottle-feed my baby when it is born). As suspected, it became apparent that it would be necessary to construct two scales, one for breastfeeding and one for bottle-feeding, due to the markedly different beliefs that participants held about the two feeding methods. Each of the theoretical components for which items needed to be generated will now be dealt with in turn.

4.3.1 Attitudes

Due to the format of the scale to be used, (Ajzen & Fishbein, 1980, recommend the use of semantic differential scales), it was necessary that the attitudes measured in the scale were dichotomous in order that participants could state their attitudes accurately. Four broad themes emerged from the data, and interestingly, it was found that these themes covered both breast and bottle-feeding. The themes themselves were natural/unnatural; beneficial/harmful; healthy/unhealthy and rewarding/unrewarding. All of these themes

featured in all of the participant interviews, and in most of the lay literature. Interestingly, most of the positive attitudes were usually attributed to breastfeeding, whereas most of the negative attitudes usually characterised bottle-feeding. These themes, therefore, formed the scale items for attitudes toward breast and bottle-feeding on the TRA scales (see items 1-4 below). As both scales would also contain the same subjective norm item (except for the obvious difference in the target behaviour of either breastfeeding or bottle-feeding), this would enable direct comparison of these constructs between the two infant feeding behaviours under investigation.

Items 1-4: Attitude items used in breastfeeding and bottle-feeding TRA scales

My breastfeeding / bottle-feeding my baby when it is born would be

natural _____ : _____ : _____ : _____ : _____ : _____ : _____ unnatural
extremely quite slightly neither slightly quite extremely

beneficial _____ : _____ : _____ : _____ : _____ : _____ : _____ harmful
extremely quite slightly neither slightly quite extremely

healthy _____ : _____ : _____ : _____ : _____ : _____ : _____ unhealthy
extremely quite slightly neither slightly quite extremely

rewarding _____ : _____ : _____ : _____ : _____ : _____ : _____ unrewarding
extremely quite slightly neither slightly quite extremely

4.3.2 Behavioural beliefs

Behavioural beliefs concern an individual's belief that performing a behaviour is likely to result in a particular outcome, as noted earlier (refer to chapter two section 2.2.2). In order to assemble the modal salient beliefs of pregnant and new mothers, participants were asked what they believed to be the advantages and disadvantages of both breastfeeding and

bottle-feeding. The coverage of the advantages and disadvantages of both of these methods in the lay literature was also examined.

In total, seventeen advantages and thirteen disadvantages of breastfeeding emerged from the data, together with eleven advantages and twelve disadvantages of bottle-feeding. In order that the most common of these beliefs were used in the final scale, and to ensure that the breast and bottle-feeding scales contained equal numbers of items, criteria were devised for the selection of items. These were that beliefs were selected only if they were elicited either from at least two interview sources, or from one interview source and at least one lay literature source. As a result, eight advantages and eight disadvantages of breastfeeding, and eight advantages and eight disadvantages of bottle-feeding were considered. Therefore, the remaining sixteen beliefs elicited for both breastfeeding and bottle-feeding were included in the scale (refer to appendix 3).

The process of eliciting modal beliefs from the lay literature revealed a bias within this material. The lay literature tends to report disadvantages of bottle-feeding and advantages of breastfeeding rather than any advantages of bottle-feeding or disadvantages of breastfeeding. Further, it is apparent when examining the bottle-feeding beliefs, that the majority of advantages of bottle-feeding are based upon disadvantages of breastfeeding, and equally many of the disadvantages of bottle-feeding are based on advantages of breastfeeding. This confirms the need to research both methods of infant feeding, rather than concentrating solely on breastfeeding.

As it was intended to use the standard TRA in this study (Ajzen & Fishbein, 1980), it was necessary that each behavioural belief item also had a corresponding outcome evaluation in order that participants could state both the strength of their belief and evaluate the

likelihood of the belief occurring. An example of a positive breastfeeding belief and a corresponding outcome evaluation is provided below (items 5 and 6).

Item 5: Positive breastfeeding behavioural belief

My breastfeeding my baby when it is born will be convenient.

likely : : : : : : unlikely
extremely quite slightly neither slightly quite extremely

Item 6: Positive breastfeeding outcome evaluation

Convenience is

good : : : : : : bad
extremely quite slightly neither slightly quite extremely

4.3.3 Normative beliefs

Modal salient referents were elicited from the interview data rather than the lay literature, as it was felt that in order to achieve a women-centred perspective, only referents who women themselves believed would be important to them in making an infant feeding decision should be included in the scale. In both the focus group and single participant interviews, the questions were asked, “From your own experience, has anyone in particular influenced your choice of infant feeding method?”, and “Where or from whom will you be able to find the help and support you feel you need to breastfeed/bottle-feed your baby?” Details of referents supplied by participants, and the sources of referents are presented in the appendix (appendix 4). Overall, six referents were elicited from the data. These were, partner; parents, friends; midwife; health visitor and doctor. Hence, these were the modal salient referents used in the scale. One of the categories that emerged from the data, “other mums” was incorporated with “friends” while the categories “mum” and “dad” were combined to form a “parent” category. It was, therefore, possible to have equal numbers of

health professionals, and referents personally known to the participants. By having equal numbers of lay and professional referents, it was possible to determine the type of referent that has most influence over participants' infant feeding decisions.

For each referent, both a normative belief and a motivation to comply item would be required (as discussed in chapter two). Examples of both types of item for the referent "partner" are provided below (items 7 and 8). The normative belief item (item 7 below) gives participants the opportunity to state their belief that their partner feels that they should or should not breastfeed. The motivation to comply item (item 8 below) on the other hand allows participants to indicate the strength of their partner's influence on them in general terms.

Item 7: Normative belief item for referent 'partner'

My partner thinks
I should _____ I should not
breastfeed my baby when it is born.

Item 8: Motivation to comply item for referent 'partner'

Generally speaking, how much do you want to do what your partner thinks you should do?

Not at all _____ Very much

4.3.4 Summary of the development of the Breast and Bottle-feeding Attitude Scale

The exploratory stage interviews, and the analysis of lay literature were successful in providing items for use in the TRA scale. However, as discussed in chapter two, according to the Principle of Compatibility (Ajzen, 1988; Ajzen & Fishbein, 1980) it is essential that all items representing the theoretical components of the TRA corresponded with respect to

the behavioural elements of action, target, context and time in order that the theory is tested to full effect. Behavioural intention, attitude, subjective norm, behavioural belief and normative belief items used in the scale were standardised according to these behavioural criterion. This was achieved by the wording used in the items as illustrated in items 9-13 below. The behavioural criterion ‘action’ was standardised by ensuring that each item specified the action i.e. breastfeeding or bottle-feeding. The element ‘target’ was “my baby” throughout all relevant items. ‘Context’ and ‘time’ can be viewed together as the context is “I” breastfeeding or bottle-feeding or “my” breastfeeding or bottle-feeding, and the time is “when my baby is born.” The items measuring outcome evaluations and motivation to comply did not need to be standardised in this way as they concerned the general rating of specific beliefs and referents (see items 6 and 8 above). The finalised Breast and Bottle-feeding Attitude Scale can be observed in the appendix (refer to appendix 5).

Item 9: Behavioural intention

I intend to breastfeed my baby when it is born.

likely : : : : unlikely
 extremely quite slightly neither slightly quite extremely

Item 10: Attitude

My breastfeeding my baby when it is born would be

natural : : : : unnatural
 extremely quite slightly neither slightly quite extremely

Item 11: Subjective norm

Most people who are important to me think

I should : : : : I should not
 breastfeed my baby when it is born.

Item 12: Behavioural belief

My breastfeeding my baby when it is born will cause my breasts to leak milk on my clothes.

likely : : : : : unlikely
extremely quite slightly neither slightly quite extremely

Item 13: Normative belief

My parents think

I should : : : : : : I should not

breastfeed my baby when it is born.

4.4 The Breast and Bottle-feeding Self-Efficacy Scale

Although there is no specific recommendation as to how items should be generated for self-efficacy scales, it was determined that in order for results to be compared between the self-efficacy and TRA scales, and principally, to maintain the women-centred perspective of the study, items for the self-efficacy scale would also be generated from TCA of the interview data and lay literature. The structure of the breast and bottle-feeding self-efficacy scale, the development of which is to be described here, is based upon the Generalised Self-Efficacy Scale (GSES) (Schwarzer & Jerusalem, 1995). As discussed in chapter 3 (refer to chapter 3, section 3.1.1), researchers recommend that as well as strength and magnitude of self-efficacy expectancies, generality of expectancies should also be measured (Bandura, 1977; Maddux, 1995). It was therefore decided that not only would the behaviour-specific self-efficacy scale to be included in the study be based on the GSES in order to provide a guideline for the types of items and scales used, but the GSES would also be included to allow generality of self-efficacy expectancies to be assessed.

Items on the GSES assess respondent's belief in their ability to either avoid difficult

situations or problems, or deal with problems once they have occurred. As was the case with the TRA scale, it was vital that beliefs that participants held about both breastfeeding and bottle-feeding were obtained. Therefore, participants were asked about the types of problems that they thought they might encounter when either breastfeeding or bottle-feeding. The lay literature was also examined to see if it highlighted any problems concerning either method of feeding. Consequently, items to be included in the scale (as in the GSES) concerned both avoiding and coping with problems regarding both breast and bottle-feeding. The criteria for choosing problems generated from the interviews and lay literature were those situations or occurrences that could be applied to both breastfeeding and bottle-feeding, and which it could be possible to avoid. The themes attained using the above criteria for breastfeeding were nipple pain; positioning; mastitis; abscess and refusing breast. Problems indicated by participants for bottle-feeding were overfeeding; heating milk to the correct temperature; mixing formula correctly, planning making bottles and refusing the bottle. Fortunately, equal numbers of breastfeeding and bottle-feeding problems that fitted the criteria emerged from the data which, despite being specific to only breast or bottle-feeding, would aid comparison of participant's scores for the two feeding methods.

As mentioned above, as the scale was based on the GSES, it would contain both avoidance and coping items. Consequently, in order for the themes chosen to be included as items in the breast and bottle-feeding scale, it was necessary to write two items per theme, thereby allowing respondents to indicate the strength of their expectancies that they could both avoid and cope with a problem or circumstance if it arose. For example for the theme 'nipple pain', the items would be as follows:

Item 14: Avoidance item example:

I will be able to avoid nipple pain when breastfeeding my baby.

Item 15: Coping item example:

If I get sore nipples, it will not prevent me from breastfeeding my baby.

Subsequently, a 20-item scale was constructed incorporating avoidance and coping items of the final five breastfeeding and five bottle-feeding themes listed above. In keeping with the GSES (refer to appendix 6), a 4-point Likert-type scale was used to enable participants to indicate the strength of each expectancy. Avoidance and coping items were placed in separate sections of the scale, to avoid confusion due to different types of item measuring different facets of the same theme.

Unlike the TRA scale, the self-efficacy scale would be administered to participants at all stages of the study. At the first stage of the study, participants would be asked about their self-efficacy expectancies regarding both breastfeeding and bottle-feeding prior to having performed either behaviour. The antenatal scale would contain both breast and bottle-feeding avoidance items randomly ordered (using a random number table, Stoker, 1981) on one page, and the breast and bottle-feeding coping items, again in random order, on the other page (refer to appendix 7 for Antenatal Self-Efficacy Scale)

At both postnatal stages of the study (stages two and three), it was intended that participants would answer certain items according to the infant feeding behaviours that they had performed. If participants had both breast and bottle-fed their babies, they would be asked to complete breast and bottle-feeding items based on their experience of these methods. Participants who had solely breastfed since birth would also be requested to answer both breast and bottle-feeding items due to their experience of breastfeeding, and due also to the possibility that they could change from breastfeeding to bottle-feeding in the future. Participants who had solely bottle-fed since birth, on the other hand would only

be asked to complete bottle-feeding items due to their sole experience of this method, and the fact that they would not be breastfeeding their baby in the future. The final postnatal self-efficacy scale (appendix 8) was therefore divided into four sections (breastfeeding avoidance, breastfeeding coping; bottle-feeding avoidance; bottle-feeding coping) to allow participants to follow instructions as to the items that they should complete.

In order to ascertain which of the problems participants actually encountered during the study, the Problems with Infant Feeding Scale was constructed (appendix 9). This scale was based on each of the problems with breast and bottle-feeding presented to participants in the self-efficacy scale, and allowed each participant to state whether or not she had experienced the problems and how well she felt that she had coped with each problem met. In keeping with the women-centred methodology endorsed by this study, space was also provided for participants to add any other problems that they had encountered with either feeding method that was not assessed on the scale. The final theoretically based scale, the Breast and Bottle-feeding Social Support Scale, like the self-efficacy scale, was also administered at all three stages of the study, the construction of which is presented below.

4.5 The Breast and Bottle-feeding Social Support Scale

As there was no model or existing scale upon which to base a breast and bottle-feeding social support scale, it was necessary to develop a totally novel scale. As discussed in chapter 3 (refer to chapter 3, section 3.2.1), in order to sufficiently understand the role of social support in infant feeding, it is crucial that the source, type and frequency of support are measured for both breast and bottle-feeding. As is the case with the SCMs upon which the previous scales are based (TRA and SET), the elements of social support measured above would necessarily be subjective, and as such are entirely based upon the mother's experience as she perceives it. To provide a framework from which to construct the scale,

it was decided to focus on four types of support that are well established in the literature (refer to chapter three, section 3.2.1): appraisal support, tangible support, informational support and emotional support (Stroebe & Stroebe, 1995).

As was the case with SET, there is no recommended method of item generation for social support scales. Therefore, in order to maintain the women-centred perspective of the research and to achieve appropriate items for the scale, the interview data and lay literature were used to generate items. Participants in the scale development study were consequently asked as to the types of support that they felt they might need both in establishing and maintaining breastfeeding and bottle-feeding. In response to this question, participants gave a number of examples as to when such support might be required. To allow social support for breastfeeding and bottle-feeding to be directly compared, examples of support were not divided by feeding method (i.e. not specified solely for breastfeeding or solely for bottle-feeding).

Two of the examples provided by participants were hospital based (for example, midwives are a key source of support in hospital and providing hands on help with latching on in hospital). As it could not be assumed that participants taking part in the longitudinal study would all deliver in hospital, it was important that support situations used in the scale were not specific to hospital. Also, some of the situations were too specific to a particular method (e.g. latching on), to enable the situation to be used in both the breastfeeding and bottle-feeding sections of the scale which, as discussed above, would be vital for comparison across methods. Eight situations where support might be required, and which could be generalised to both breast and bottle-feeding were chosen, and are presented in Table four below. Two support situations represented one type of support (appraisal, informational, tangible and emotional).

Table 4: Examples and types of support used in social support scale.

Situation	Type of Support
Someone to call on when alone with the baby during the months that you are breastfeeding/bottle-feeding.	Emotional
A shoulder to cry on when having problems with breastfeeding/bottle-feeding.	Emotional
Having someone to make you a cup of tea, make dinner, go shopping etc. for you in order that you can devote the necessary time breastfeeding/bottle-feeding.	Tangible
Someone to keep things in order (e.g. laundry/general routine) during the months that you are breastfeeding/bottle-feeding.	Tangible
Someone to give you advice as to what to do if experiencing problems with breastfeeding/bottle-feeding.	Informational
Someone to give you advice concerning breastfeeding / bottle-feeding methods and techniques.	Informational
Someone to reassure you when you are worrying about breastfeeding/bottle-feeding.	Appraisal
Someone to reassure you that you are not doing anything wrong when breastfeeding/bottle-feeding.	Appraisal

To ensure that each of the eight support situations was representative of the type of support it was designed to measure (i.e. that the potential scale items had face validity), a sheet containing the items was distributed to colleagues of the researcher together with definitions of each type of support. Each colleague was asked to state which type of support the examples represented. All but one of the returned sheets indicated agreement with the researcher, and so it was therefore established that the eight examples provided in Table four should be included in the scale, and were representative of the correct types of support.

Prior to the final construction of the scale, each item was allocated a number, and a random number table (Stoker, 1981) was used to ascertain the order in which items would appear on the scale. The order of items was identical for both the breast and bottle-feeding sections of the scale. As mentioned above, akin to the breast and bottle-feeding self-efficacy scale, the social support scale was intended to be administered to longitudinal study participants at all three stages of the study. It was therefore essential that clear instructions were given to participants according to their infant feeding experience. As the aim of the antenatal stage of the study was to determine differences between perceived

social support required by participants who were yet to have experience of infant feeding, participants would be requested to respond to all items on the antenatal social support scale (appendix 10). Responses at the postnatal stages of the study (stages two and three) however, as was the case with the self-efficacy scale, were determined by the infant feeding experience of the participants.

At both postnatal stages, if participants were currently breastfeeding or had breastfed at any time, they were asked to complete breast and bottle-feeding items. However, participants who had not breastfed and were therefore currently bottle-feeding would be directed only to complete the bottle-feeding items due to their lack of experience of breastfeeding. Unlike the self-efficacy scale, it was not necessary to change the format of the social support scale between those administered antenatally and those distributed after birth. Instead, clear instructions were added to the postnatal scale in order to make clear to participants which section(s) of the scale they should complete (appendix 11).

The breast and bottle-feeding social support scale is the last of the theoretically based scales to be used in the study. The remaining scales are designed to measure 'external variables' (Ajzen & Fishbein, 1980); that is, variables external to the individual, which may effect both the theoretical variables and infant feeding outcome. The following pages provide details as to the construction of the sociodemographic variables questionnaire, the details of birth questionnaire, and the infant feeding details questionnaire, all of which measure external variables that could affect the infant feeding experience of participants.

4.6 Sociodemographic Variables Questionnaire

The antenatal sociodemographic variables questionnaire was designed to elicit both sociodemographic information about participants and their partners (if applicable), and

information relating to their pregnancies. Concerning the meaning of this information to the study, the aim of this scale is twofold. Firstly, as discussed in chapter three, several of the variables measured by this scale, have been found to have an effect on both women's choice of feeding method, and duration of breastfeeding (e.g. age; marital status; education; socio-economic status). Secondly, information relating to pregnancy and attendance at antenatal and postnatal classes provides a clearer picture of the sample in relation to their pregnancies than simple sociodemographic information.

Sociodemographic questions on the questionnaire related to participants' age, marital status, qualifications held by participant and partner, and their respective occupations. Pregnancy related questions referred to stage of gestation, satisfaction with pregnancy (of both the participant and how she perceives that her partner feels about the pregnancy), type of antenatal classes attended or planned, and any problems that they might have had with the pregnancy to date (e.g. morning sickness or pre eclampsia). Two questions also introduced participants to infant feeding, by asking which infant feeding method they were intending to use, and if intending to breastfeed, how long they hoped to use this method. As far as possible, the questionnaire was formatted to allow participants to make most of their responses with a tick or a cross in a box, rather than requiring long written answers. The finalised version of the Antenatal Sociodemographic Variables Questionnaire can be observed in the appendix (refer to appendix 12).

The postnatal sociodemographic variables questionnaire required less information than the questionnaire administered at the antenatal stage of the study (appendix 13). The information required at both postnatal stages was participant's age, age of baby, attendance and type of postnatal class attended, and whether there had been any health problems for the mother and/or infant since the birth. Further external variables that needed to be measured at the first postnatal stage (six to eight weeks postpartum) are assessed by the

details of birth questionnaire discussed below.

4.7 Details of Birth Questionnaire

The details of birth questionnaire (appendix 14), was designed to assess the circumstances of each participant's delivery in order to determine the effect that these might have had on infant feeding decision and duration of breastfeeding. Variables measured included location of delivery; type of delivery (e.g. vaginal; elective caesarean; emergency caesarean); whether delivery was assisted, and if so by which method (e.g. forceps or ventouse); length of labour; whether or not an episiotomy and/or stitches was required after delivery and details of individuals who attended the birth. Pain relief administered to participants was assessed, and perceived effectiveness of each type used by the participant was measured. As was the case with the sociodemographic variables questionnaires, it was important that questions were presented in a format that would enable a quick response from participants in the form of a cross or a tick. This was particularly important at the first postnatal stage when the details of birth questionnaire was to be administered as participants would be tired and busy looking after their new babies. The final questionnaire to be developed for use in the study, the infant feeding details questionnaire, was designed to assess participant's infant feeding experiences after the birth, and is presented below.

4.8 Infant Feeding Details Questionnaire

The infant feeding details questionnaire required two versions that could be administered at both postnatal stages (6-8 weeks and 4-7 months) (appendix 15). The questionnaire to be administered at the second stage of the study required details of the infant feeding method currently being used by the participant; whether she had breastfed at all since the birth, and if so for how long; how long after delivery she had been able to breastfeed; and satisfaction

with care received for both breastfeeding and bottle-feeding. At the end of the questionnaire, space was provided for participants to indicate why they had changed from breastfeeding to bottle-feeding (if applicable). Space was also provided for participants who had not breastfed at all to state their reasons for this.

The questionnaire to be administered at the final stage of the study asked for similar information. Additional questions about weaning were included due to the age of the infants at this stage of the study. These included: care received regarding weaning; age of baby when solids introduced and reasons for weaning. The answers obtained from this questionnaire at both stages of administration were anticipated to provide a broad picture of participant's infant feeding experience both currently and retrospectively. On conclusion of the development of the quantitative instruments it was necessary to develop the qualitative study interview schedule in order that postnatal interviews could be carried out with a subsection of the women taking part in the quantitative study. The details of the development of this qualitative instrument are presented below.

4.9 Development of the Qualitative Study Interview Schedule

The aim of the qualitative study was twofold. Firstly, it was proposed that by asking women about their infant feeding experiences using qualitative methodology, the resulting data would enhance and bring further understanding to the quantitative results acquired from the longitudinal study. Secondly, it was further intended that the qualitative study would permit women, not only to comment on how they felt about taking part in the longitudinal and qualitative studies, but also provide their own opinions about who should be informed of the results of the study. It is therefore anticipated that this study will not only allow the unique infant feeding experiences and views of women taking part in the quantitative study to permeate the results, but also influence the process and distribution of

the subsequent results.

The qualitative study was to consist of eight to ten interviews of longitudinal study participants who had experienced at least six weeks of infant feeding. This time scale was chosen because it has been found that most mothers are bottle-feeding their babies by six weeks postpartum (Foster et al., 1995), and one of the aims of this study was to capture a broad experience of infant feeding. As a further aim of the study was to understand women's unique experiences, women who had had any type of infant feeding experience would be invited to take part in the study. As discussed earlier in this chapter in relation to the primiparous participants in the scale development study (refer to chapter four, section 4.2.1), single participant interviews were used for the primiparous participants in the qualitative study, both to reflect the individuality of their infant feeding experiences, and to ensure that all viewpoints were heard, no matter whether they fitted the expectations and experiences of the rest of the group (Michell, 1999). Prior to recruitment, an interview schedule was written based upon both the theoretical bases of the longitudinal study, and the aims of the qualitative study (above). The schedule itself (appendix 16) contained seven core questions asking about aspects of infant feeding decisions and experience as well as how the participant felt about taking part in the research. It was decided that as the researcher had already met all of the participants at stage one of the longitudinal study, it would not be necessary to include introductory questions on the schedule itself, as the researcher would be talking to the participant and her baby whilst setting up the recording equipment. Subsequent to collection of data for the qualitative study, it was further decided that the schedule should be piloted to ensure that the questions could be understood and that the data achieved was sufficient for the needs of the study. Details of the pilot of the schedule are provided in the pilot studies (refer to appendix 6).

4.10 Instrument Development Summary

At the conclusion of the scale development study, three theoretically based scales had been constructed: the Breast and Bottle-feeding Attitude scale, the Breast and Bottle-feeding Self-Efficacy Scale and the Breast and Bottle-feeding Social Support scale. The GSES (Schwarzer & Jerusalem, 1995) was also to be administered at all three stages of the study. Four further scales and questionnaires had also been written: the Sociodemographic Variables Questionnaire, the Details of Birth Questionnaire, the Problems with Infant Feeding Scale, and the Infant Feeding Details Questionnaire, in order to measure external variables that could not be directly observed by the researcher. The stages at which the scales and questionnaires were to be administered are shown in Table two (refer to chapter 4, section 4.2).

Regarding the qualitative study, the methodological choices and decisions taken in this study by mixing qualitative and quantitative methods could be considered pragmatic in response to the requirements of the research questions presented in chapter 3 (refer to chapter 3, section 3.4), (Tashakkori & Teddlie, 1998). This study is also in a unique position of incorporating these methodologies to form both a two-phase study (the scale development and longitudinal studies, Creswell, 1995), and a study with the longitudinal study being dominant to the investigation, and the qualitative study presented above being less dominant (Creswell, 1995). However, although it might appear that both the scale development study and the qualitative studies play minor roles in the overall design of the study in terms of time and resources, it is expected that the roles of these studies will have a significant impact on the results of the study. Only by maintaining a women-centred focus can this research accurately measure and understand the infant feeding decisions and experiences of women.

The next phase in operationalising the longitudinal study was to pilot the scales and questionnaires. Due to time constraints, it would not be possible to carry out a longitudinal pilot study in order to test the scales and questionnaires. Consequently, it was decided to run both an antenatal and a postnatal pilot study to ensure adequate assessment of the instruments. A single postnatal interview will also be presented as a pilot of the qualitative instrument in order to assess the utility of the interview schedule developed for the qualitative study. Both the quantitative and qualitative pilot studies can be observed in the appendix (appendix 17). The following chapter presents the results relating to the application of the TRA to breastfeeding and bottle-feeding in the longitudinal study.

From belief to behaviour?

This chapter presents the first results obtained from the main longitudinal study that is at the centre of this thesis. Although there are three main theoretical strands in the study (TRA, SET and social support), this chapter is directed at the results concerning the TRA, which it is proposed, will allow a deeper understanding of the processes involved in the decision-making period and the initiation of breast and/or bottle-feeding. The results of the antenatal pilot study, which tested the reliability and validity of the instrument used to measure the components of the TRA, is contained in the appendices (refer to appendix 17). Details and initial results of the quantitative longitudinal study from the Breast and Bottle-feeding Attitude Scale, and the initial infant feeding behaviour of participants will be presented below. Sociodemographic variables will also be discussed in order to provide details of the characteristics of the sample. However, sociodemographic variables will not be analysed as external variables here, but will be examined from this perspective in chapter six (refer to chapter 6, section 6.1). The results presented will take the form of models to illustrate the relationships between the components of the TRA, and to allow the process of the belief-attitude-intention-behaviour relationship to be understood in terms of both breastfeeding and bottle-feeding, and the choice decision between the two methods of infant feeding.

5.1 Method

5.1.1 Recruitment.

Between eighty and one hundred primigravida women with singleton pregnancies were to be recruited for this study. Three methods of recruitment were used: word of mouth; in the antenatal clinic following routine ultrasound examination (as in the antenatal pilot study), and at tours of the maternity unit of a local regional hospital. The recruitment period for this study lasted ten months. Initially, the researcher spent many days in the antenatal clinic asking potential participants if they would like to take part in the study. It was initially hoped that recruitment of participants in the antenatal clinic would suffice. However, as uptake on the offer of taking part was very slow, it was decided to look at other ways of gaining access to pregnant women that would speed up recruitment. As was the case throughout the scale development and pilot stages of the research, it was necessary to access a series of “gatekeepers” (Burgess, 1991) in order to find an effective method of recruitment.

Midwives known to run antenatal classes were contacted with a view to distributing sets of questionnaires at their classes, but unfortunately none of the midwives responded to these requests. In discussion with the Head of Midwifery at the hospital where the antenatal clinic recruitment had taken place, it was decided that the researcher would recruit participants at tours of the maternity unit at the hospital. Tours are conducted for pregnant women who were usually in the third trimester of pregnancy and were either planning, or considering delivering in hospital. The tours usually take place during Sunday afternoons, and on three to four evenings during the week. A leaflet was designed inviting first-time pregnant women to take part in the study. This leaflet would be handed out to potential

participants together with the leaflet about the tours by the receptionist in the entrance to the unit (refer to appendix 18).

The hospital had suggested to the researcher that she should not directly approach women concerning participation in the study. Consequently, the researcher simply sat in the café and set up a sign displaying her name, in order that potential participants who had read the leaflet could approach her if interested in the study. It soon became apparent to the researcher, however, that she would need to approach the women due to the few women that approached her while they were waiting for their tours. This was made additionally necessary as women and their partners were often only seated in the cafe for a short period before the midwife arrived to take them on their tour, and so time could not be wasted. Therefore, with the permission of the hospital, once each woman had sat down at a table, the researcher approached her and asked if this was her first pregnancy, and if so, whether she would be interested in taking part in the research.

Each woman was given an information sheet (appendix 19) containing details about the study, contact details of the researcher, and a set of questionnaires to look at to help decide whether or not she wanted to take part. The researcher then spoke to the woman about the study and answered any questions that she had about participating. If the woman was willing to take part, the researcher asked her to read and sign the consent form (see appendix 20). Apart from providing the participants' consent to take part in the study, the consent form also requested the name and address of participants' GP, midwife and consultant in order that the researcher could write to these health professionals and inform them of their patients' involvement in the study. It was stressed to all potential participants that they were under no obligation to take part in the study, and if they were not interested in participating for whatever reason they should leave the consent form and questionnaires on the table when leaving for their tours. After talking to each woman who expressed

initial interest in the study, the researcher returned to her own table to allow each woman to come to her own decision as to whether or not to participate without any pressure from the researcher.

This method of recruitment at the tours of the maternity department was far more profitable than recruitment in the antenatal clinic. In the antenatal clinic, during a whole day (from 8.30 a.m. – 5.30 p.m.), the researcher might only come into contact with three primigravidas. However, during thirty minutes at the tours of the maternity unit, the researcher might approach between three and ten primigravidas, which increased the likelihood of receiving completed sets of questionnaires considerably. Although this recruitment method was more profitable, it did, however, take some time for the researcher to establish herself at the tours, which hindered the recruitment process somewhat. As tours took place both during the day and on some evenings, there was a change over of staff on the reception desk on the unit. This meant that for the first few months of recruitment, the researcher had to introduce herself and explain that she had received permission for the study to a number of different staff who, understandably, needed to be sure of the researcher's intentions. These repeated introductions often impeded on the contact time the researcher had with potential participants, and did not appear professional as women arrived for their tours.

Further, it was soon evident to the researcher that there were different "types" of tour: tours run for women under consultant-led care; midwifery-led tours, and tours specific to a particular community. As there were so many types of tour, it was not always possible for the researcher to introduce herself to every midwife taking the tours. In the majority of cases, the midwives arrived to take women on the tours once the researcher had finished administering the questionnaires. However, if it was a particularly large group, this was not always possible as the researcher had not had time to speak to all potential participants. In

this situation, some midwives would allow the researcher a further five minutes in which to talk to the women prior to the tour, but some, unfortunately, requested that the researcher talk to the women after the tour. The researcher, however, found that unless she had spoken to the women prior to the tour, they rarely approached her once it had finished which meant that potential participants were missed.

Despite the problems of recruitment, the researcher attended three to six tours each week (depending on how many were being run) for most weeks of the ten month recruitment period. As stated above, for each participant who consented to take part in the study (one hundred and thirty-seven women completed the consent form), a letter was sent to their GP, midwife and consultant. Often, women could not remember the address of their GP, which meant that the researcher was required to investigate using telephone directories and the Internet. Further, as there were only a small number of consultant obstetricians under which women could be booked, the researcher waited until a number of participants with the same consultant could be grouped onto one letter to reduce the number of letters that the consultants would receive. Despite this, the researcher received a telephone call from the secretary of one of the consultants asking why she was sending letters about patients' participation in the study. Although the researcher made it clear that it was a regulation of the NHS Local Research Ethics Committee that consultants must be told of their patients' participation in research, the secretary told the researcher that the consultant would not be interested in the letters! In spite of this, the researcher continued to send letters to health professionals about their patients in accordance with the ethical guidelines.

Women and their partners, or the person accompanying them, who were attending the tours were generally favourable in attitude towards the researcher. Some of the women's partners displayed interest in the study, and even answered for the women when asked if they were interested in participating! The researcher, however, always ensured that the

woman answered the question herself. Mothers accompanying their young pregnant daughters actively encouraged their daughters to participate, and so the researcher made certain that these potential participants were fully aware that it was their decision. However, a number of women said that they were not interested in taking part in the study when approached. The researcher became aware of the "signs" of a woman who was not interested in taking part in the study, as they talked avidly to their partner, and avoided making eye contact with the researcher. Some of the older mothers appeared sceptical about the research, and the researcher herself was asked about her qualifications for carrying out the research and whether or not she was herself a mother (despite this being made clear on the leaflet) on several occasions. Often, even the most sceptical were, however, placated by the promise of the gift pack on completion of the questionnaires.

On agreeing to take part in the study, participants were briefed as to the aims of the study and what participation would involve. In order to thank women for their participation in the study, several appropriate product companies were contacted to request product samples with a view to making up small gift packs of samples to give to participants. Several companies responded positively to this request, and as a result, participants were offered gift packs on completion and return of the questionnaire sets to the researcher at each stage of the study.

As previously stated (refer to chapter 4, section 4.1), it would be necessary to initiate further contact with participants at 6-8 weeks postpartum, and 4-6 months postpartum. It was therefore essential that the researcher should be aware of the health status of participants and their babies prior to further contact. Subsequently, the Child Health Information Department attached to the hospital at which the study was taking place was contacted. This department holds information concerning the health of mothers and their infants in electronic form. Following preliminary difficulties in pinpointing an individual

within the department who would be the main point of contact, it was agreed that the Child Health Information Department would provide the required information concerning the health status of participants and their babies at each postnatal stage of the study. On receipt of a copy of the consent form signed by each participant, which also stated consent to allow the researcher to assess health status in this manner, it was agreed that the Child Health Information Department would inform the researcher as to the health status of both mother and child, and any ongoing/recent in-patient or out-patient appointments. Once this method of health assessment had been approved and organised, administration of the stage two questionnaires could begin.

5.1.2 Participants and Procedure

One hundred and thirty-seven primigravidas agreed to take part in this study, and completed a consent form. Eighty-five participants returned completed sets of stage one questionnaires. Of these 85, three were recruited by word of mouth, eight were recruited in the antenatal clinic, and seventy-four were recruited at tours of the maternity unit. All participants were primigravida, and had singleton pregnancies. As required by the NHS ethical committee, all participants were sixteen years of age or older. The mean age of participants taking part in the longitudinal study was 27.4 years with a range of 23 years (i.e. from 16-39 years). Of the intended breastfeeders, 62.5% had achieved A level standard or higher education, whereas only 27.3% of intended bottle-feeders achieved this level of educational attainment. The mean stage of pregnancy of participants was 34.19 weeks with a range of 24 weeks (i.e. from 15 to 39 weeks). The participants recruited from the antenatal clinic were all of 20 weeks gestation or less. Although it is unusual for a woman to have a scan at this particular hospital at less than 18-19 weeks, this usually occurs due to confusion with dates, which is then rectified by the ultrasound examination.

The majority (59%) of participants were married, 10.5% ($n = 9$) were single, 27% ($n = 23$) were cohabiting and 3.5% were of "other" marital status and added that they were engaged.

Regarding infant feeding decisions, 11 participants stated that they intended to bottle-feed, 72 declared that they intended to breastfeed and one indicated that she could not decide which infant feeding method to use. Unfortunately, one participant did not state a chosen method. Of the participants who stated an intention to breastfeed, 67% ($n = 48$) had not decided the length of time for which they would breastfeed. Of the participants who had stated an intended duration of breastfeeding, the range of duration was from 3 months to twelve months, with one participant stating that she wished to breastfeed for as long as possible. Twenty pregnancies were unplanned (one participant added that her pregnancy was a "big shock"), 64 were planned, and one participant did not indicate whether her pregnancy was planned or unplanned. On a scale of 1-7, most participants stated that they were happy with their pregnancy (mean = 6.7). The lowest score was 4 (indicating that they were neither happy nor unhappy with the pregnancy), and the highest was 7, indicating that the participant was extremely happy with the pregnancy. The mean score for participants who expressed their perception of their partner's happiness with the pregnancy was also high (mean = 6.66). Seventy-eight participants indicated a partner's happiness with the pregnancy, which suggests that even though 9 participants stated that they were single, two of these single mothers still felt it appropriate to indicate the father's reaction to the pregnancy.

Eleven participants indicated that they had been unwell during their pregnancies. Illnesses were varied and included morning sickness, back ache/pain, Carpal Tunnel Syndrome, headaches, kidney infection, pilonidal abscess, undiagnosed chest pain, sciatica, early bleeding, and exhaustion. Most of the participants who indicated that they had been unwell

during pregnancy reported multiple complaints, with the majority reporting morning/severe sickness.

In summary, the sample recruited for this study varied considerably in terms of the sociodemographic variables measured in the questionnaire. In terms of both age and marital status, there is a bias towards older, married mothers. However, on talking to hospital staff, it is often younger mothers who tend to miss ultrasound appointments and do not attend hospital tours as, some staff believe, these younger mothers do not understand the importance of appointments. The following section provides the results obtained from the sample presented above, for the Breast and Bottle-feeding Attitude Scale, which was designed to test the TRA (refer to chapter 4, section 4.3).

All participants who were taking part in the study were asked to complete both the breastfeeding and bottle-feeding sections of the Breast and Bottle-feeding Attitude Scale, regardless of their intended method of infant feeding. The results from the responses to the scale are presented below, and are divided into four sections. The first results section focuses on the relative importance of attitude and subjective norm in predicting intention, and the mediating role of intention with respect to both breast and bottle-feeding. The second results section concerns the comparison of direct and indirect measures of attitude and subjective norm with respect to the ability of these measures to predict behavioural intention. The third section of results for the TRA study centres on the determinants of the attitudinal and normative components of the model, by assessing the behavioural and normative beliefs that contribute to attitude and subjective norm respectively. Finally, the fourth results section concentrates on understanding the choice made by participants in deciding whether to breastfeed or bottle-feed their babies in the light of their subsequent behaviour. By carrying out such analyses, according to the TRA it would be possible to pinpoint specific beliefs or referents that make up attitude and subjective norm, which in

turn predict intention, and subsequently determine behaviour. All statistical analyses were performed using SPSS, and include both bivariate and multivariate statistics.

5.2 Individual Analyses of the Breast and Bottle-feeding sections of the Attitude Scale

5.2.1 The relative importance of the attitudinal and normative components in the prediction of behavioural intention

According to the TRA, the attitudinal and normative components (made up of attitude and subjective norm respectively) are the immediate determinants of behavioural intention (Ajzen and Fishbein, 1980). Therefore, provided that the principle of compatibility is observed, attitude and subjective norm should predict intention. In order to assess the predictive ability of the theoretical components for each infant feeding method, the results of the breastfeeding and bottle-feeding sections of the Breastfeeding and Bottle-feeding Attitude Scale will be dealt with separately.

5.2.1.1 Predicting intention to breastfeed

All longitudinal study participants (N=85) completed the breastfeeding section of the Breast and Bottle-feeding Attitude Scale. However, 15 participants omitted items from the scale. It became apparent that the items concerning participants' "partner" in the normative belief and motivation to comply sections of the scale were being consistently missed by certain participants. On closer examination, it was clear that all but one of these participants had indicated in the Sociodemographic Variables Questionnaire that they were single. It was therefore decided that these items should be scored with a zero, as these participants did not have the normative referent to influence their breastfeeding decision that this item was measuring. For the items that were not consistently missed by

participants (i.e. missed by error), it was decided to deal with this missing data using the method discussed in the pilot study (refer to appendix 17). Therefore, missing items were given the average score of the sample as a whole for that item. Two participants provided two answers for an item. As the researcher could not be sure as to whether the participants had meant to do this, or if it had been a mistake, this data was treated using the same method as that used for missing data (i.e. given the average of the sample). Once all of the missing and erroneous data had been dealt with, the data could then be analysed.

The bivariate analyses conducted between the theoretical components represented by their respective sections of the scale can be observed in figure 2 (below). Pearson Product Moment correlations showed there to be a significant positive correlation between behavioural beliefs and attitude ($r = .788, p < 0.01$) and between normative beliefs and subjective norm ($r = .677, p < 0.01$). Further, there were also significant positive correlations between attitude and intention to breastfeed ($r = .907, p < 0.01$) and subjective norm and intention to breastfeed ($r = .550, p < 0.01$). As the Pearson Product Moment correlations showed there to be such a strong relationship between both attitude and subjective norm and intention to breastfeed, it was considered appropriate to examine these relationships more closely using multivariate statistics.

Figure 2: Relationship between the components of the TRA regarding first time mothers' decision to breastfeed
N=85

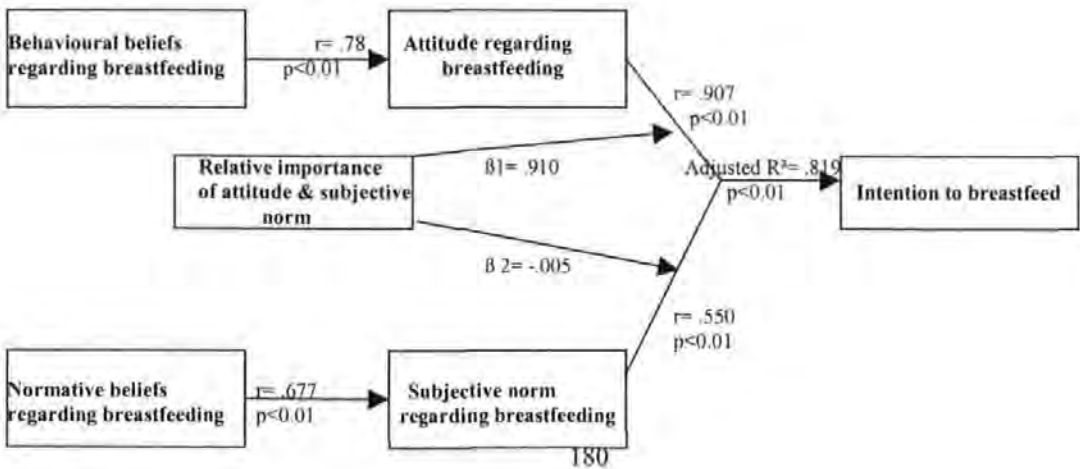


Figure 2 shows the results of the multivariate analysis for the breastfeeding section of the scale. Multiple Linear Regression was used to examine the relationship between attitude and subjective norm as independent or predictor variables, and intention to breastfeed as the dependent variable. Prior to carrying out the analysis, it was necessary to test the assumptions of Multiple Linear Regression to ensure that they were not violated by the data. A normal probability plot of the residuals of the independent variables and the dependent variable was also produced. Although the plot showed deviation from the normal distribution (appendix 21) due to the large sample size, this was not considered a problem for the analysis. Further, as Multiple Linear Regression is thought to be a robust test, and even, "rather substantial departures from multivariate normal distribution are likely to be tolerable," (Howell, 2002, p. 545), it was considered appropriate to use Multiple Linear Regression to analyse the data. It was also necessary to check the independence of residuals using the Durbin-Watson (DW) statistic. A DW statistic of less than one and greater than three would suggest that there was lack of independence among the residuals (S. Shaw, handout, 2001). In the case of the breastfeeding data, the DW statistic = 1.99, showing independence of residuals.

Before calculating the Multiple Linear Regression, a Pearson Product Moment correlation analysis was carried out between attitude and subjective norm. The result showed that there was a significant positive correlation between the two variables ($r = .609$, $p < 0.01$). Though it is expected (although not ideal) that variables will be correlated to some extent (Stevens, 1996), and the large sample size would increase the likelihood of achieving a significant result, it was deemed necessary to perform a multicollinearity diagnostic to check that the relationship between the two independent variables would not impede the results. The tolerance value for both attitude and subjective norm (tolerance = .629) were considered to

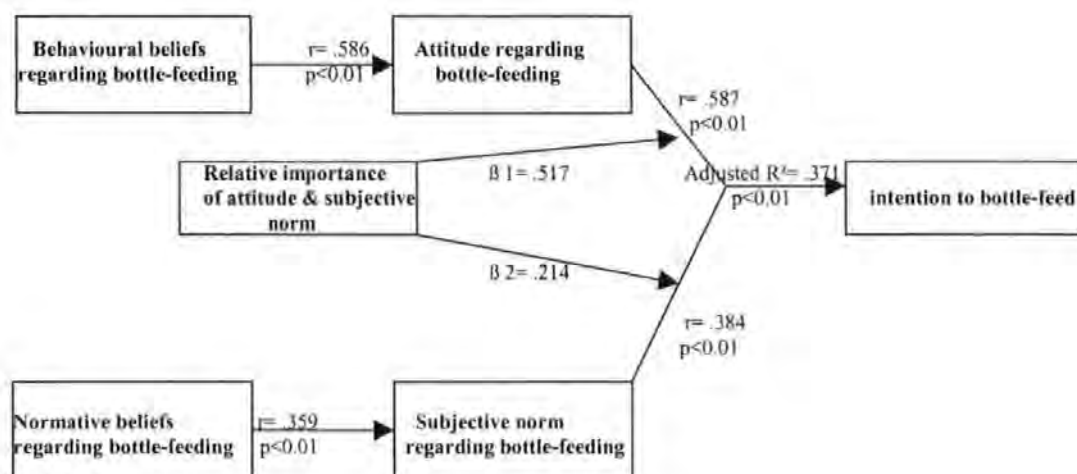
be substantially closer to one than zero (Brace, Kemp & Snelgar, 2000), meaning that multicollinearity did not pose a problem for this analysis.

As can be seen in figure 2, the results of the Multiple Linear Regression for breastfeeding showed the model with attitude and subjective norm as the independent variables, and intention as the dependent variable to be significant (Adjusted $R^2 = .819$, $F_{2, 84} = 191.266$, $p < 0.01$). Therefore, attitude and subjective norm predict 81% of the variance in intention. Now that it has been ascertained that the model containing both attitude and subjective norm is statistically significant in predicting intention to breastfeed, the next task in this analysis is to examine the relative importance of the attitudinal and normative components with regard to the prediction of intention. That is, do attitude and subjective norm equally predict intention to breastfeed, or does one variable have a more prominent role to play in accounting for variance in intention than the other? It is important to carry out this investigation in order to understand the determinants of participants' intention to breastfeed their babies. In figure 1, the labels $\beta 1$ and $\beta 2$ show the Standardised Beta Coefficients (β) of attitude and subjective norm respectively. It can be seen that attitude has a large significant β coefficient ($\beta = .910$, $p < 0.01$). The value of subjective norm's β coefficient ($\beta = -.005$, $p = .934$) is conversely very small and not statistically significant. Therefore, attitude plays a significant contribution to the variance in intention, whereas subjective norm does not significantly contribute to its prediction. As such, it can be concluded that it is participant's attitude toward breastfeeding rather than the influence of normative referents that is important in making a decision as to whether or not to breastfeed their baby.

5.2.1.2 Predicting Intention to Bottle-feed

All participants apart from one completed the bottle-feeding section of the Breast and Bottle-feeding Attitude Scale (N=84). Missing data was dealt with as for the breastfeeding section of the scale (refer to previous section). Figure 3 (below) shows the results of the bivariate analyses performed between the appropriate theoretical components. Pearson Product Moment correlations showed there to be significant positive correlations between behavioural beliefs and attitude ($r = .586$, $p < 0.01$); normative beliefs and subjective norm ($r = .359$, $p < 0.01$); attitude and intention ($r = .587$, $p < 0.01$), and between subjective norm and intention ($r = .384$, $p < 0.01$). As had been the case with the bivariate analyses of the breastfeeding data, the significant results of the bottle-feeding data stimulated the multivariate analysis of the data to discover the ability of attitude and subjective norm in predicting intention to bottle-feed.

Figure 3: Relationship between the components of the TRA regarding first time mothers' decision to bottle-feed
N=84.



A Pearson Product Moment correlation was carried out between attitude and subjective norm. The result ($r = .329$, $p < 0.01$), although not as strong a correlation as that between

breastfeeding attitude and subjective norm, was statistically significant, and therefore, a multicollinearity diagnostic was performed on the data. The tolerance values for attitude and subjective norm for the bottle-feeding data were high (tolerance = .892), showing that despite the significant relationship between attitude and subjective norm multicollinearity would not pose a problem in interpreting the results. The DW statistic was also calculated and provided evidence of the independence of residuals (DW = 2.184). A normal probability plot of residuals was also made, and although the plot showed slight deviance from the norm, it was not considered a problem for this analysis (appendix 22). On completion and checking of assumptions and potential problems, the Multiple Linear Regression was performed.

The model tested by the Multiple Linear Regression contained attitude and subjective norm as the independent variables, and intention to bottle-feed as the dependent variable (refer to figure 3, above). The model was shown to be statistically significant (Adjusted $R^2 = .37.1$, $F_{2, 83} = 25.441$, $p < 0.01$). Therefore, attitude and subjective norm account for 37% of the variance in intention. The standardized beta coefficients were consulted in order to determine the relative importance of the attitudinal and normative components in predicting intention. The β coefficient of attitude was highly significant ($\beta = .517$, $p < 0.01$), whereas the β coefficient of subjective norm was only moderately significant ($\beta = .214$, $p < 0.05$). Therefore, although both attitude and subjective norm significantly contribute to the variance in participant's intention to bottle-feed, attitude is significantly more important in predicting intention than subjective norm.

5.2.2 The mediating role of behavioural intention

As discussed in chapter 2, although attitude and subjective norm may predict intention, according to the TRA, it is behavioural intention that is the principal predictor of behaviour

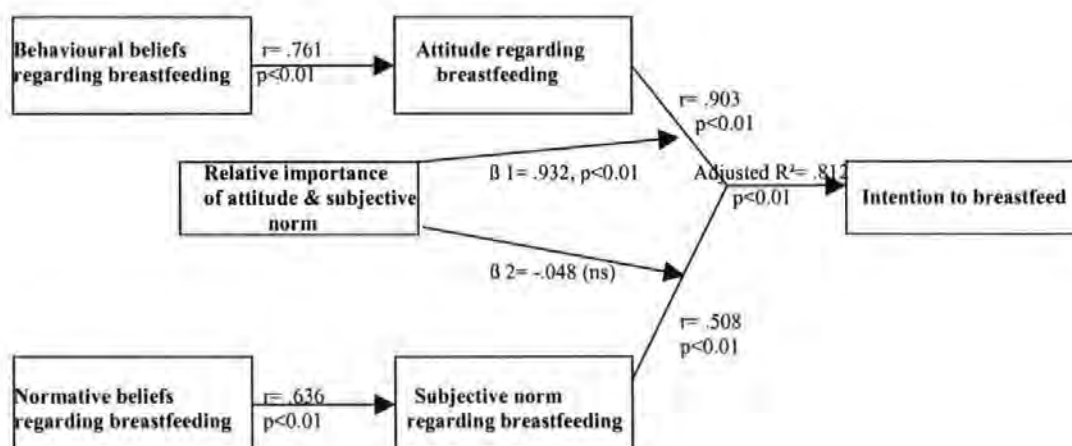
(Ajzen and Fishbein, 1980). In order to test this central concept of the TRA, it was necessary to perform a Multiple Linear Regression to test and compare the predictive ability of attitude, subjective norm and intention regarding both breastfeeding and bottle-feeding. The behaviour chosen to be measured was the infant feeding behaviour first performed by participants following birth. Therefore, the first postnatal set of questionnaires needed to be administered to participants and returned to the researcher before this analysis could proceed. Seventy-one of the original 85 participants returned the stage two questionnaire set (response rate = 83.5%). Although many of the participants had by this stage changed to bottle-feeding, they indicated that they had breastfed, if only for a short while at birth. It is this initial infant feeding behaviour following delivery that is of interest here. As the Breast and Bottle-feeding Attitude Scale was designed to illicit beliefs, attitudes and intentions regarding the infant feeding behaviour of participants when their baby was born, it was this immediate behaviour that was recorded. Of the 71 participants who returned the stage two questionnaires, 62 (87%) had breastfed either immediately or very soon after giving birth, whereas 9 (13%) participants had bottle-fed their babies since delivery and stated that they had not breastfed at all. The results of the Multiple Linear Regression for both breastfeeding and bottle-feeding will be presented in turn below.

5.2.2.1 The mediating role of behavioural intention regarding breastfeeding behaviour

The data from the 71 participants who returned both the stage one and stage two questionnaires was entered into the analysis. Before analysis was carried out to determine whether intention does mediate breastfeeding behaviour, the Multiple Linear Regression performed in the previous section (refer to 5.2.1.1.) was replicated with the data of the 71 participants to be examined in this section. This replication of the previous analysis was

deemed necessary to ensure that the data of the 71 participants to be analysed in this section of the results did not deviate from those of the 85 participants in the sample as a whole. Pearson Product Moment correlations carried out between the appropriate theoretical component are shown in figure 4 (below), and it can be seen that the results are similar to those obtained in the previous breastfeeding analysis (refer to section 5.2.1.1, figure 2). Prior to performing the Multiple Linear Regression, a normal probability plot of residuals was made. Although deviation from the norm was evident, it was not considered sufficient to be a problem for this analysis due to the large number of participants in the sample. The multicollinearity diagnostic was also used, and as in the previous breastfeeding analysis, the tolerance level was sufficiently high for multicollinearity to not be considered a problem for the results of the regression analysis (tolerance = .645). The DW statistic was also consulted, and was deemed satisfactory to illustrate independence of residuals (DW statistic = 2.079). The result of the Multiple Linear Regression analysis showed attitude and subjective norm to predict 81% of the variance in intention (Adjusted $R^2 = .812$, $F_{2,70} = 152.508$, $p < 0.01$), as in the previous analysis. Results were also similar for the relative contribution of attitude and subjective norm with β coefficients of $\beta = .932$ ($p < 0.01$) and $\beta = -.048$ ($p = .462$) respectively. Now that it had been ascertained that the results of analysis of the data from the 71 participants who returned the stage two questionnaires were comparable to the results from the overall sample ($N=85$), the analysis to test the mediating role of intention could be undertaken.

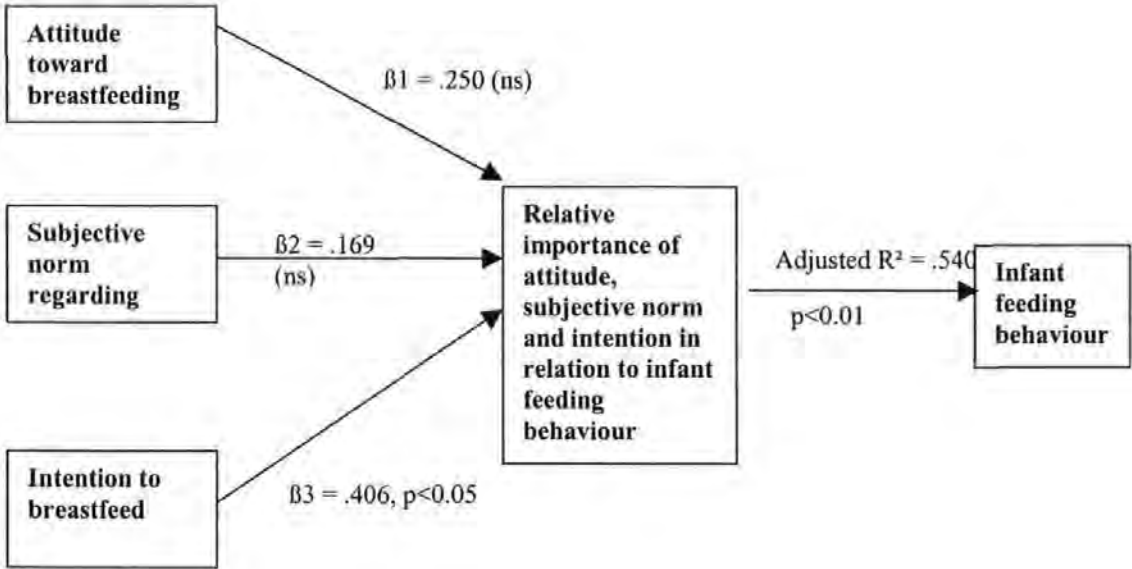
Figure 4: Relationship between the components of the TRA regarding first time mothers' decision to breastfeed
N=71



Separate bivariate correlations were carried out between the independent variables and behaviour to ensure that a Multiple Linear Regression analysis was appropriate. The results showed significant correlations between attitude and behaviour ($r = .718$, $p < 0.01$); subjective norm and behaviour ($r = .524$, $p < 0.01$), and intention and behaviour ($r = .718$, $p < 0.01$). The strong relationships between these variables illustrated by these results suggest that further multivariate analysis of the data would be appropriate.

A Multiple Linear Regression analysis was performed with attitude, subjective norm and behavioural intention as independent variables, and infant feeding behaviour as the dependent variable. A normal probability plot of residuals was observed, and although deviation from the norm was observed, it was not considered to be sufficient to be a problem for this analysis. As it was known from the previous analysis that attitude and subjective norm were highly correlated, and both attitude and subjective norm were correlated with behavioural intention, it was necessary to carry out the multicollinearity diagnostic. The tolerance values for the independent variables (attitude tolerance = .158; subjective norm tolerance = .640; intention tolerance = .182) were considered sufficient (Brace et al., 2000, suggest a tolerance threshold of 0.01) for the analysis to proceed. The DW statistic was also consulted, and showed independence of residuals (DW statistic = 2.316).

Figure 5: The mediating role of behavioural intention to breastfeed regarding infant feeding behaviour

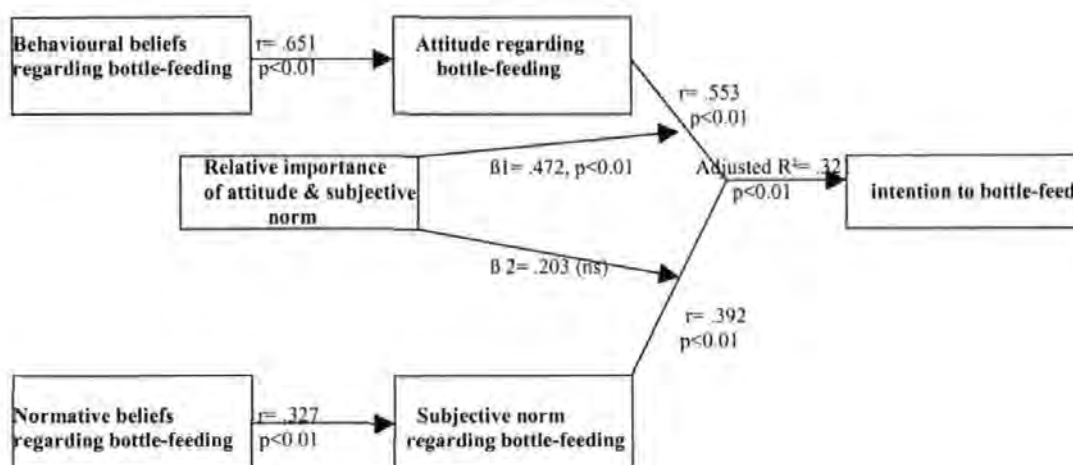


The results of the regression analysis (shown in figure 5, above) show attitude, subjective norm and intention to account for 54% of the variance in behaviour (Adjusted $R^2 = .540$, $F_{3,70} = 28.433$, $p < 0.01$). The β coefficients were consulted, and are as follows for each of the independent variables: attitude ($\beta = .250$, $p = .224$); subjective norm ($\beta = .169$, $p = .100$); intention ($\beta = .406$, $p < 0.05$). It can be seen that the only variable to contribute significantly to the variance in behaviour is intention. Therefore although both attitude and subjective norm are significantly related to behaviour, as shown by the results of the Pearson Product Moment correlations above, it is behavioural intention that contributes most significantly to behaviour. Subsequently, it can be concluded that behavioural intention to breastfeed does mediate between the components of attitude and subjective norm, and infant feeding behaviour, upholding this central concept of the TRA.

5.2.2.2 The mediating role of behavioural intention regarding bottle-feeding behaviour

Seventy participants completed both the bottle-feeding section of the Breast and Bottle-feeding Attitude Scale and returned the stage two questionnaires. Both bivariate and multivariate analysis was again carried out to determine consistency of results of the 70 participants to be examined in relation to infant feeding behaviour and those of the 84 participants who completed the bottle-feeding section of the Attitude Scale at stage one of the study. As shown in figure 6 below, the results of the Pearson Product Moment correlations and the regression analysis are consistent with the results in the previous section (refer to 5.2.1.2). All Pearson Product Moment correlations between appropriate theoretical components were found to be statistically significant. Prior to carrying out the Multiple Linear Regression analysis, the normal probability plot of residuals was checked and found to show only slight deviance from the normal distribution. The DW statistic was also consulted and indicated independence of residuals (DW statistic = 2.052). Due to the strong relationship found between attitude and subjective norm ($r = .40, p < 0.01$), the multicollinearity diagnostic was performed, and it was found that the tolerance level was sufficient for this potential confound not to be considered a problem (tolerance = .840). Attitude and subjective norm accounted for 32% of the variance in intention to bottle-feed (Adjusted $R^2 = .321$, $F_{2,69} = 17.281, p < 0.01$). Attitude contributed significantly to this variance ($\beta = .472, p < 0.01$), whereas subjective norm contributed only moderately, and was not statistically significant ($\beta = .203, p = .065$). Although the standardized Beta coefficient was significant in the results of the 84 participants in the stage one data (refer to section 5.2.1.2, figure 3), the values of Beta for subjective norm were close to the same level, and therefore show that for both data sets, subjective norm only contributed moderately toward the variance in intention to bottle-feed.

Figure 6: Relationship between the components of the TRA regarding first time mothers' decision to bottle-feed
N=70.

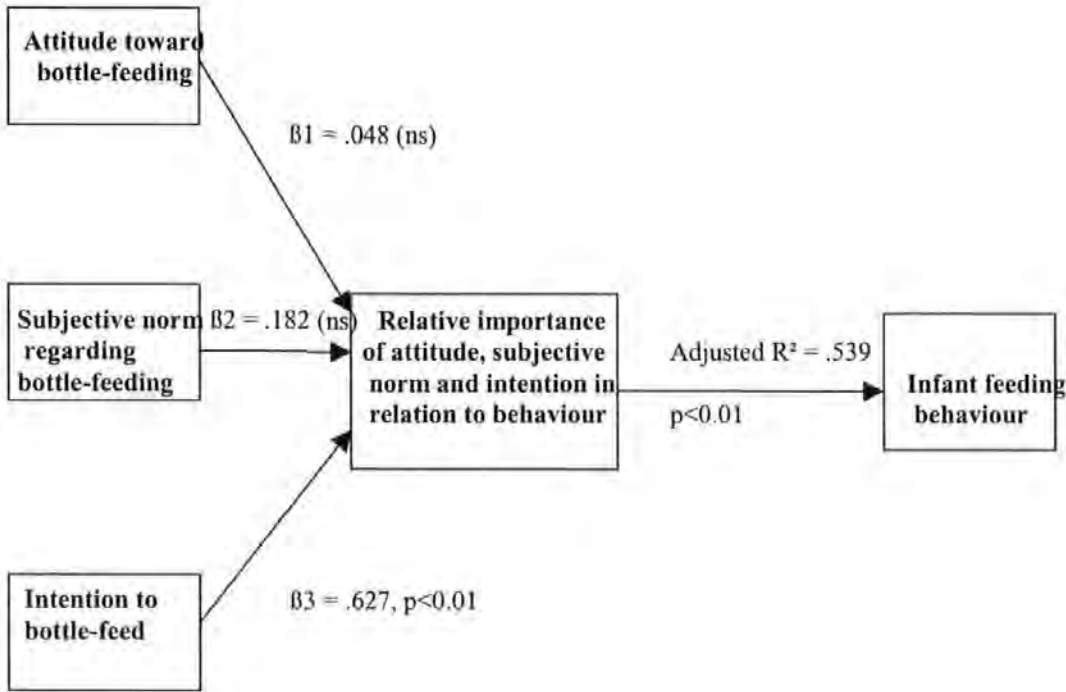


To examine the importance of behavioural intention in the prediction of behaviour as compared to attitude and subjective norm, a Multiple Linear Regression analysis was carried out with attitude, behavioural intention and subjective norm as the independent variables, and behaviour as the dependent variable. The plot of residuals was observed, and showed only slight deviance from the normal distribution. Further, the DW statistic (DW statistic = 2.084) provided assured independence of residuals. The multicollinearity diagnostic again supplied high tolerance values for each of the independent variables as follows: attitude tolerance = .654; subjective norm tolerance = .798; intention tolerance = .660. These high tolerance values illustrated the independence of the predictor (or independent) variables, and therefore multicollinearity was not considered a problem for interpretation of the results despite the strong correlations between the variables.

The result of the regression analysis (see figure 7 below) showed attitude, subjective norm and behavioural intention to account for 53% of the variance in behaviour (Adjusted R² = .539, F_{2, 69} = 27.863, p < 0.01). By examining the standardized β coefficients it is clear that intention is by far the most important predictor of behaviour with the β coefficients of the independent variables as follows: β1 (attitude) = .048, p = .640; β2 (subjective norm) =

.182, $p = .050$; β_3 (intention) = .627, $p < 0.01$. Therefore, as was the case with the breastfeeding results (refer to chapter 5, section 5.2.2.1.), and in strong support of the TRA, it can be concluded that although attitude and subjective norm predict intention, and are also significantly related to behaviour, it is intention that is most predictive of behaviour and, therefore, mediates between attitude and subjective norm, and subsequent behaviour.

Figure 7: The mediating role of behavioural intention to bottle-feed regarding infant feeding behaviour.



5.3 Direct versus indirect measures of attitude and subjective norm

It was discussed earlier in chapter 2 (refer to chapter 2, section 2.3.2) that Ajzen and Fishbein (1980) recommend that attitude and subjective norm should be measured directly in order to best predict behavioural intention. However, some researchers (e.g. Bosompra, 2001; Evers & Kamilowicz, 1996; Steen et al., 1998 ; Sutton et al, 1999) use an indirect measurement of attitude (using the product of behavioural beliefs and outcome

evaluations) and subjective norm (using the product of normative beliefs and motivation to comply) to prediction intention, and further understanding of the determinants of intention, as opposed to direct measurement of these components. A further debate in the literature concerns the “multiplicative assumption” (Sutton et al., 1999, p.73) that assumes that the products of, for example, behavioural beliefs and outcome evaluations should be used as the indirect measures rather than simply the sums of the scores of behavioural beliefs to form an indirect measure of attitude, and normative beliefs to form an indirect measure of subjective norm. Both of these issues will now be explored in relation to the antenatal data used earlier in this chapter (refer to section 5.2.1).

It was shown earlier in the chapter that the direct measurements of attitude and subjective norm were significantly correlated with behavioural intention at the 0.01 level for both breastfeeding and bottle-feeding (refer to sections 5.2.1.1 and 5.2.1.2). Therefore, in order to determine whether indirect measurements of attitude (i.e. both cross products of behavioural beliefs and outcome evaluations, and sums of behavioural beliefs) and subjective norm (i.e. both cross products of normative beliefs and motivation to comply, and sums of normative beliefs) are significantly related to intention, Pearson Product Moment correlations were carried out for both forms of the indirect measures. The cross products form of indirect attitude was significantly related to intention for both breastfeeding ($r = .738, p < 0.01$) and bottle-feeding ($r = .301, p < 0.01$). The cross products form of subjective norm was also significantly related to intention for both breastfeeding ($r = .492, p < 0.01$) and bottle-feeding ($r = .331, p < 0.01$). There were also significant correlations between sums of behavioural beliefs and intention for breastfeeding ($r = .477, p < 0.01$) and bottle-feeding ($r = -.220, p < 0.05$), and also between sums of normative beliefs and intention for both breastfeeding ($r = .509, p < 0.01$) and bottle-feeding ($r = .387, p < 0.01$). Once it had been established that all forms of attitude and subjective norm were significantly related to behavioural intention, Multiple Linear Regression analyses were

performed to determine which form of these theoretical components best predicted intention. Each form of attitude and subjective norm will now be dealt with respect to both breastfeeding and bottle-feeding.

5.3.1 Comparison of direct and indirect measures of attitude and subjective norm in predicting breastfeeding intention

The regression analysis performed earlier in the chapter concerning the ability of the direct measurement of attitude and subjective norm to predict behavioural intention to breastfeed is replicated below for comparison with the indirect forms of the theoretical components (figure 8.1 below). The checks of assumptions made prior to this analysis can be consulted earlier in the chapter (refer to section 5.2.1.1). Figure 8.1 (below) shows that direct attitude and subjective norm account for 81.9% of the variance in behavioural intention to breastfeed (Adjusted $R^2 = .819$, $F_{2, 84} = 191.266$, $p < 0.01$), with attitude accounting for significantly more of the variance ($\beta_1 = .910$, $p < 0.01$) than subjective norm ($\beta_2 = -.005$, $p = .934$).

Figure 8.1 Ability of direct measure of attitude and subjective norm to predict behavioural intention to breastfeed

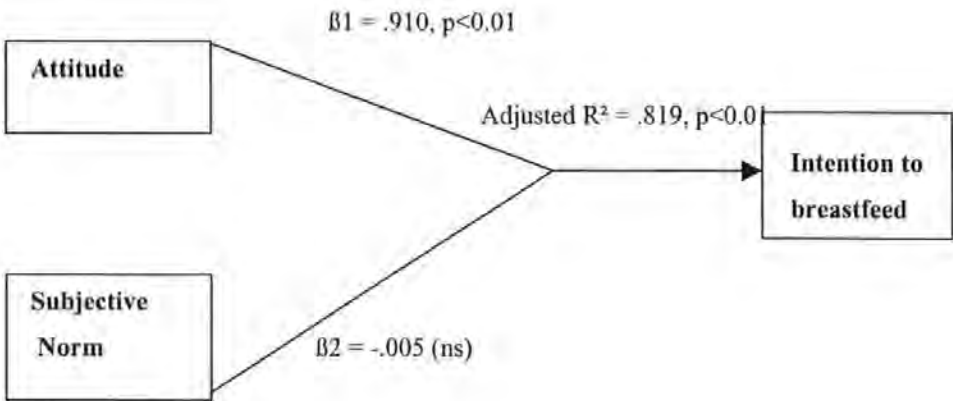
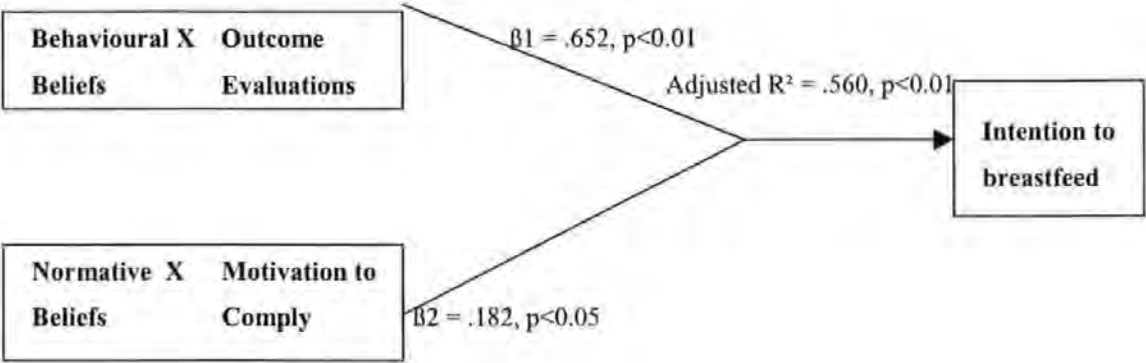


Figure 18.2 Ability of cross products measurement of indirect attitude and subjective norm to predict behavioural intention to breastfeed

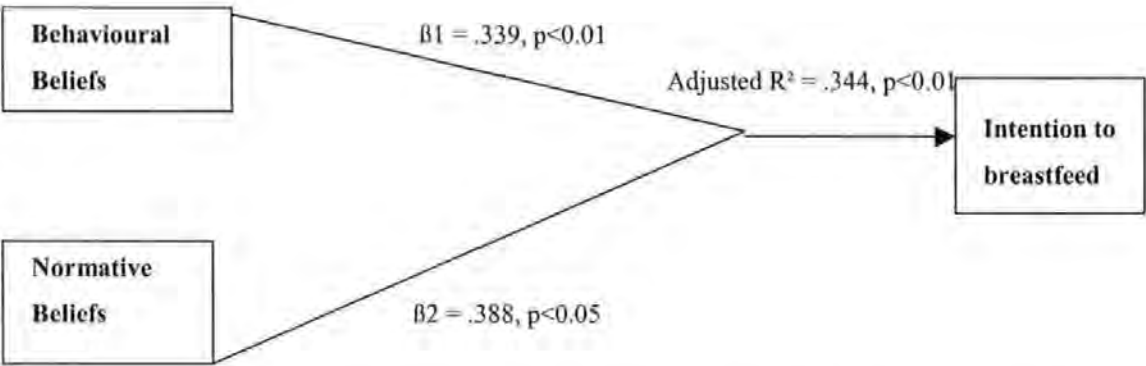


Figures 8.2 (above) and 8.3 (below) show the Multiple Linear Regression analyses carried out to determine the ability of the two forms of indirect measurement of attitude and subjective norm to predict intention to breastfeed. For both analyses, plots of residuals were completed to determine if the residuals are normally distributed. Although in both analyses, the residuals deviate slightly from the norm, it was not considered to be a problem for the analysis due to the large sample size. DW statistics for both cross products (DW statistic = 2.087) and sums (DW statistic = 2.047) indicate independence of residuals. Finally, prior to interpretation of analyses, tolerance levels were consulted and showed that for both cross products (tolerance = .774) and sums (tolerance = .873), multicollinearity would not affect the results of the analysis.

As can be seen in figure 8.2, the cross products method of indirect attitude and subjective norm accounts for 56% of the variance in intention (Adjusted $R^2 = .560$, $F_{2, 84} = 54.445$, $p < 0.01$). Cross products of behavioural beliefs and outcome evaluations accounted for more of the variance in intention ($\beta_1 = .652$, $p < 0.01$) than cross products of normative beliefs and outcome evaluations ($\beta_2 = .182$, $p < 0.05$). Figure 8.3 (below) shows that the sums method of indirect attitude and subjective norm account for 34% of the variance in

intention ($\text{Adjusted } R^2 = .344, F_{2, 84} = 22.982, p < 0.01$). Sums of behavioural beliefs ($\beta_1 = .339, p < 0.01$) accounted for a similar proportion of the variance in intention as sums of normative beliefs ($\beta_2 = .338, p < 0.01$).

Figure 8.3 Ability of sums of belief measurement of indirect attitude and subjective norm to predict behavioural intention to breastfeed



The analyses thus far have shown direct measures of attitude and subjective norm to account for more of the variance in intention to breastfeed than either of the indirect measures of these components. F-tests were carried out to determine whether the direct measures were significantly better predictors of intention than either of the indirect measures. Results showed that the direct measures of attitude and subjective norm were significantly more predictive of intention than either the cross products method ($F = 2.43, p < 0.01$) or the sums method ($F = .576, p < 0.05$). Therefore, it can be concluded that the direct measures of attitude and subjective norm are significantly better at predicting intention to breastfeed than either the cross products or sums method of forming indirect attitude and subjective norm.

As shown in figures 8.2 and 8.3 (above), the cross products indirect measurement of attitude and subjective norm accounted for more of the variance in intention (56%) than the sums method (34%). Therefore, an F-test was performed to determine if the cross products

method significantly improves the prediction of intention in comparison with the sums method. The result showed that although the regression analysis shows the cross products method to account for more of the variance in intention than sums, this difference is not significant ($F = 1.49$, ns). Therefore, for breastfeeding, although there is no significant improvement in predicting intention using the cross products method, this method does increase understanding of the determinants of intention compared to sums of behavioural and normative beliefs. However, the analysis illustrated by figure 8.1 (above) shows that the direct measurement of attitude and subjective norm is superior to either of the indirect measurements of the theoretical components in predicting intention.

5.3.2 Comparison of direct and indirect measures of attitude and subjective norm in predicting bottle-feeding intention

Figure 9.1 (below) is a replication of the regression analysis of the ability of the direct measurement of attitude and subjective norm to predict intention to bottle-feed.

Assumptions and checks carried out on the data prior to interpretation of results can be consulted earlier in the chapter (refer to section 5.2.1.1). The regression analysis showed that direct attitude and subjective norm accounted for 37% of the variance in intention ($\text{Adjusted } R^2 = .371$, $F_{2, 83} = 25.441$, $p < 0.01$) with attitude ($\beta_1 = .517$, $p < 0.01$) accounting for a larger proportion of the variance in intention than subjective norm ($\beta_2 = .214$, $p < 0.05$).

Figure 9.1 Ability of direct measure of attitude and subjective norm to predict behavioural intention to bottle-feed

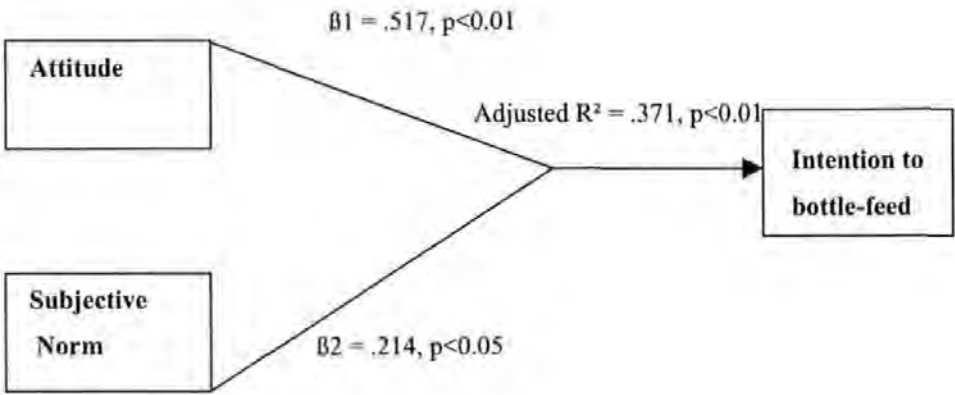
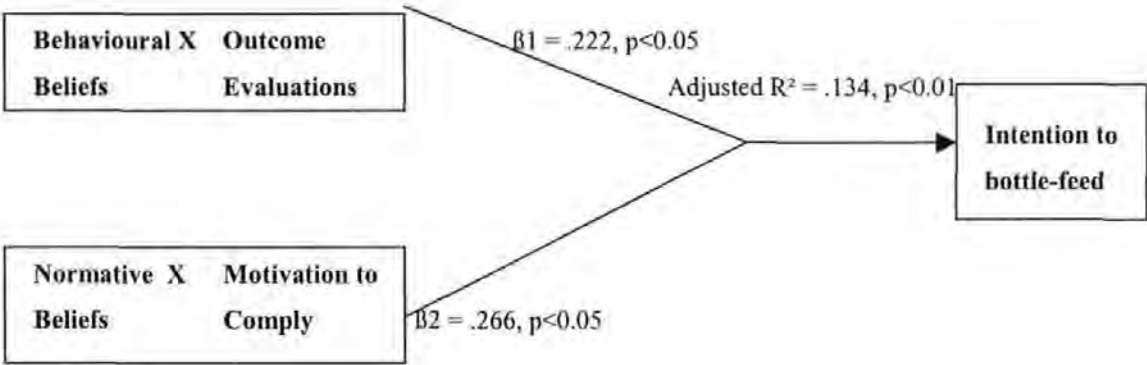


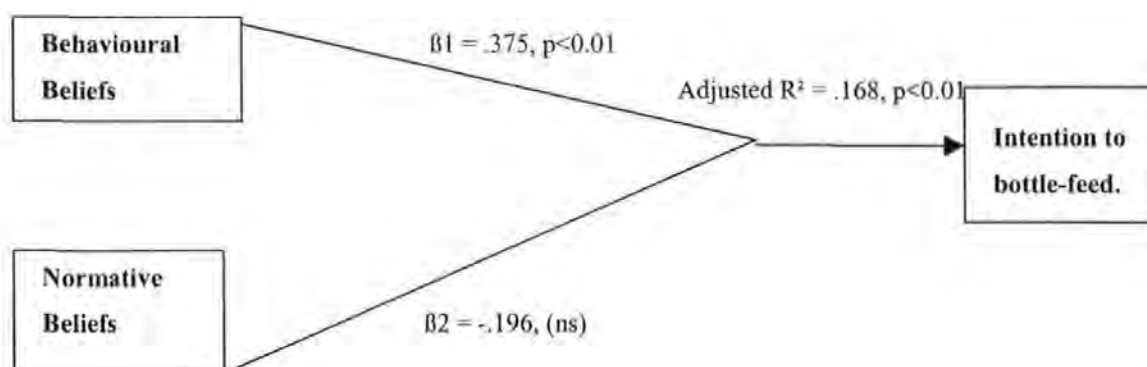
Figure 9.2 Ability of cross products measurement of indirect attitude and subjective norm to predict behavioural intention to bottle-feed



Further Multiple Linear Regression analyses were carried out to determine the predictive ability of the indirect measures of the attitudinal and normative components (figure 9.2, above, and 9.3, below). Plots of residuals were consulted, and similar to the breastfeeding results, although the plots showed slight deviance from the normal distribution, due to the size of the sample, this would not hinder the analysis. DW statistics for both cross products (DW statistic = 1.929) and sums (DW statistic = 1.889) indicated independence of residuals. Tolerance levels for both cross products (tolerance = .912) and sums (tolerance = .996) were sufficient to ensure that multicollinearity would not pose a problem for the analysis.

Figure 9.2 (above) shows that the cross products measurement of indirect attitude and subjective norm accounts for 13 % of the variance in intention to bottle-feed (Adjusted $R^2 = .134$, $F_{2, 83} = 7.414$, $p < 0.01$). The cross product of behavioural beliefs and outcome evaluations accounted for a similar proportion of the variance ($\beta_1 = .222$, $p < 0.05$) to the cross product of normative beliefs and motivations to comply ($\beta_2 = .266$, $p < 0.05$). Figure 9.3 (below) shows the results for the regression analysis with the sums of behavioural beliefs and normative beliefs as the IVs and intention to bottle-feed as the DV. The results show that the sums measurement of indirect attitude and subjective norm account for 16% of the variance in intention (Adjusted $R^2 = .168$, $F_{2, 83} = 9.386$, $p < 0.01$) with normative beliefs ($\beta_1 = .375$, $p < 0.01$) accounting for a larger proportion of the variance in intention than behavioural beliefs ($\beta_2 = -.196$, $p = .054$).

Figure 9.3 Ability of sums of belief measurement of indirect attitude and subjective norm to predict behavioural intention to bottle-feed



The above analyses have shown that the direct measures of attitude and subjective norm predict more of the variance in intention to bottle-feed than either of the indirect measures. F-tests were carried out to determine whether the difference between the predictive ability of direct and indirect measures was significant, as for the breastfeeding data (refer to

section 5.3.1 above). Analyses showed that there was no significant difference between either direct measurement or cross products ($F = 1.38$, ns) or direct measurement and the sums method of indirect measurement ($F = 1.32$, ns). Although the regression analyses showed that direct measurement of attitude and subjective norm accounted for more variance in intention to bottle-feed than either of the indirect measurements, this difference was not significant. Hence, unlike the breastfeeding results, the direct measurements of the attitudinal and normative components cannot be regarded as significantly superior predictors of intention to bottle-feed than the indirect measures.

Another difference between the breastfeeding results and the current analysis is that the sums of behavioural beliefs and outcome evaluations account for more of the variance in intention to bottle-feed than the cross products measurement. An F-test was again carried out to determine whether this difference was significant. The result showed that the difference between the ability of the sums and cross products methods of indirect measurement of attitude and subjective norm was not significant ($F = 1.04$, ns).

In summary, it can be seen that the breastfeeding and bottle-feeding sections of the Attitude Scale have yielded quite different results with respect to the ability of direct and indirect measures of attitude and subjective to predict behavioural intention to breast or bottle-feed. The results show, however, that although the direct measures of bottle-feeding attitude and subjective norm are not statistically significantly better predictors of intention than the indirect measures, the regression analyses for direct measures of attitude and subjective norm for both breastfeeding and bottle-feeding generated greater scores of Adjusted R^2 than the direct measures. Therefore, although the differences between the bottle-feeding Multiple Linear Regression analyses were not significantly different, the above results show that, in line with Ajzen and Fishbein (1980), direct measures of attitude and subjective norm do provide superior prediction of intention than indirect measures.

5.4 The Determinants of Attitude and Subjective Norm

The original version of the TRA (Ajzen and Fishbein, 1980) discussed in chapter two, presented attitude and subjective norm as determinants of intention. Further, the model proposes that the direct measurement of attitude (discussed in the previous section) is directly determined by the indirect measure of attitude comprised of the cross products of behavioural beliefs and outcome evaluations. Likewise, the TRA asserts that the direct measure of subjective norm is determined by the indirect measure comprised of normative beliefs and motivations to comply. The analyses at the beginning of these results (refer to section 5.2.1) showed strong statistically significant relationships between attitude and subjective norm and their proposed respective determinants. In order to determine whether behavioural beliefs and outcome evaluations predict attitude, and normative beliefs and motivations to comply predict subjective norm, Simple Linear Regression analyses were carried out for both the breastfeeding and bottle-feeding data. Prior to interpretation of results, the DW statistics were checked to ensure independence of residuals. For the breastfeeding data, the DW statistic for both the behavioural belief model (DW statistic = 1.758) and the normative belief model (DW = 1.911) indicated independence of residuals. This was also the case for the bottle-feeding data with the results for both behavioural beliefs (DW statistic = 1.961) and normative beliefs (DW statistic = 1.855) showing independence of residuals. Plots of residuals showed slight deviance from the normal distribution, but due to the large sample size this was not considered problematic for the analysis.

It was found that for both breastfeeding and bottle-feeding, behavioural beliefs significantly predicted attitude and normative beliefs significantly predicted subjective norm. Breastfeeding behavioural beliefs predicted 61% of the variance in attitude

(Adjusted $R^2 = .616$, $F_{1,84} = 135.891$, $p < 0.01$), and breastfeeding normative beliefs predicted 45% of variance in subjective norm (Adjusted $R^2 = .452$, $F_{1,84} = 70.189$, $p < 0.01$). In the case of bottle-feeding, behavioural beliefs accounted for 33% of the variance in attitude (Adjusted $R^2 = .336$, $F_{1,83} = 42.920$, $p < 0.01$), and normative beliefs accounted for 11% of the variance in subjective norm (Adjusted $R^2 = .118$, $F_{1,83} = 12.126$, $p < 0.01$). Due to the significance of behavioural beliefs and normative beliefs in predicting attitude and subjective norm respectively with regard to both breast and bottle-feeding, it was decided to analyse the separate behavioural beliefs and corresponding outcome evaluations with respect to their role in determining attitude, and to analyse the separate normative beliefs and corresponding motivations to comply regarding their role in determining subjective norm. The analysis will be presented below, taking breastfeeding and bottle-feeding in turn through each stage.

5.4.1 Determinants of breastfeeding attitude and subjective norm

The TRA proposes that the sums of the cross products of behavioural beliefs and outcome evaluation determine attitude and the sums of the cross products of normative beliefs and motivations to comply determine subjective norm. Therefore, in order to ascertain which specific behavioural belief/outcome evaluation and normative belief/motivation to comply cross products most strongly determined attitude and subjective norm respectively, the analysis had to be carried out in stages. The first stage in this analysis was to carry out a series of Pearson Product Moment correlations to calculate the relationship between each product of behavioural beliefs and outcome evaluations with attitude, and between each product of normative beliefs and motivations to comply with subjective norm. In the case of breastfeeding, 13 behavioural belief/outcome evaluation cross products correlated significantly with attitude, and three normative belief/motivation to comply cross products

correlated significantly with subjective normative norm. These beliefs and their respective correlation coefficients are presented in table 4 (below).

Table 4: Significant correlations of behavioural beliefs and attitude, and normative beliefs and subjective norm for breastfeeding

Behavioural belief Breastfeeding will:	Correlation coefficient	Normative belief	Correlation coefficient
benefit my health later in life.	$r = .419, p<0.01$	My midwife thinks I should/should not breastfeed my baby when it is born.	$r = .466, p<0.01$
help me to lose weight.	$r = .394, p<0.01$	My doctor thinks I should/should not breastfeed my baby when it is born.	$r = .425, p<0.01$
provide my baby with antibodies to help fight infection.	$r = .685, p<0.01$	My parents think I should/should not breastfeed my baby when it is born.	$r = .677, p<0.01$
help to create a very close bond between the baby and myself.	$r = .611, p<0.01$	My partner thinks I should/should not breastfeed my baby when it is born.	$r = .576, p<0.01$
cause less expense.	$r = .335, p<0.01$	My friends think I should/should not breastfeed my baby when it is born.	$r = .405, p<0.01$
take some time to establish a good technique.	$r = .330, p<0.01$		
help my uterus to contract.	$r = .495, p<0.01$		
restrict my freedom	$r = .351, p<0.01$		
be convenient.	$r = .464, p<0.01$		
give my baby a healthier start for its growth and development.	$r = .668, p<0.01$		
make my partner feel excluded.	$r = .304, p<0.01$		
make me feel uncomfortable in front of other people.	$r = .491, p<0.01$		
make my nipples sore.	$r = .267, p<0.05$		

All behavioural beliefs contained in table 4 (above) were entered into a Multiple Linear Regression analysis as IVs with attitude as the DV, and all normative beliefs were entered into a separate regression analysis as IVs, with subjective norm as the DV. The backward elimination method was used in order to find the best model or combination of beliefs to predict attitude and subjective norm. Multiple Linear Regression was used instead of

comparison of separate Simple Linear Regression analyses as the TRA does expect beliefs to collectively predict attitude or subjective norm (refer to chapter 2, section 2.2).

Prior to interpretation of both analyses, plots of residuals were consulted, and despite showing minor deviance from the normal distribution, these were considered adequate to proceed with the analysis. The DW statistics showed independence of residuals for both behavioural beliefs and attitudes (DW statistic = 1.970) and normative beliefs and subjective norm (DW statistic = 1.841). Tolerance levels were checked, and all were sufficient to indicate that multicollinearity would not pose a problem for either analysis. The model selected for behavioural beliefs and attitude contained five of the original 13 behavioural beliefs that were significantly related to attitude in the correlation analysis (see table 12, above). This model accounted for 72% of the variance in attitude (Adjusted $R^2 = .724$, $F_{5,84} = 45.135$, $p < 0.01$). Figure 14.1 shows the proportion of the variance in attitude attributable to each behavioural belief. Interestingly, the model containing all 13 behavioural beliefs accounted for 73% of the variance in attitude (Adjusted $R^2 = .732$, $F_{13,84} = 18.687$, $p < 0.01$). Hence, the model shown in figure 10.1 (below) is more parsimonious, without significantly reducing predictive ability.

The five normative beliefs that were found to have a significant relationship with subjective norm in the Pearson Product Moment correlations (above) were entered into a Multiple Linear Regression analysis as IVs with subjective norm as the DV. The model selected by the backward elimination method consisted of two normative beliefs and accounted for 53.8% of the variance in subjective norm (Adjusted $R^2 = .538$, $F_{2,84} = 49.917$, $p < 0.01$).

Figure 10.1 Model proposed by backward elimination method to contain behavioural beliefs that are most predictive of attitude

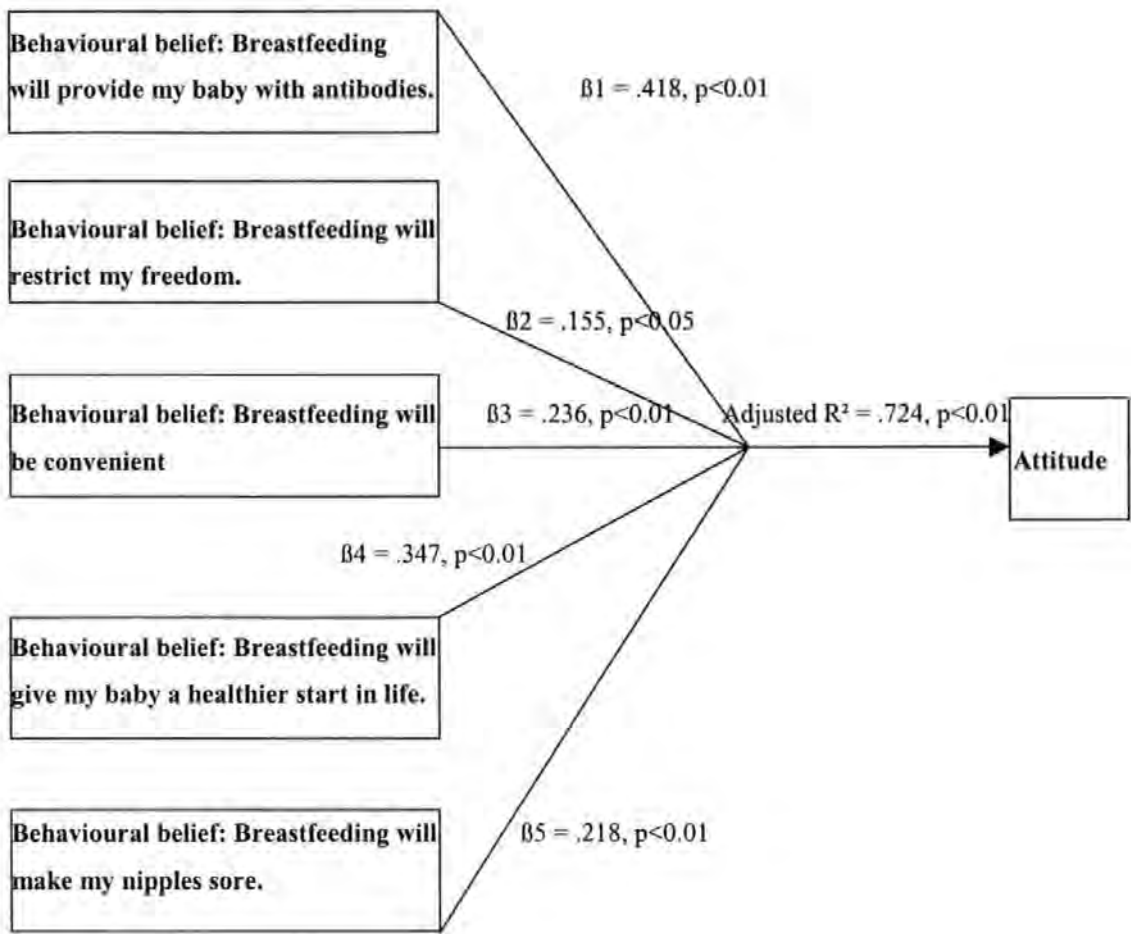


Figure 10.2 Model proposed by backward elimination method to contain normative beliefs that are most predictive of subjective norm

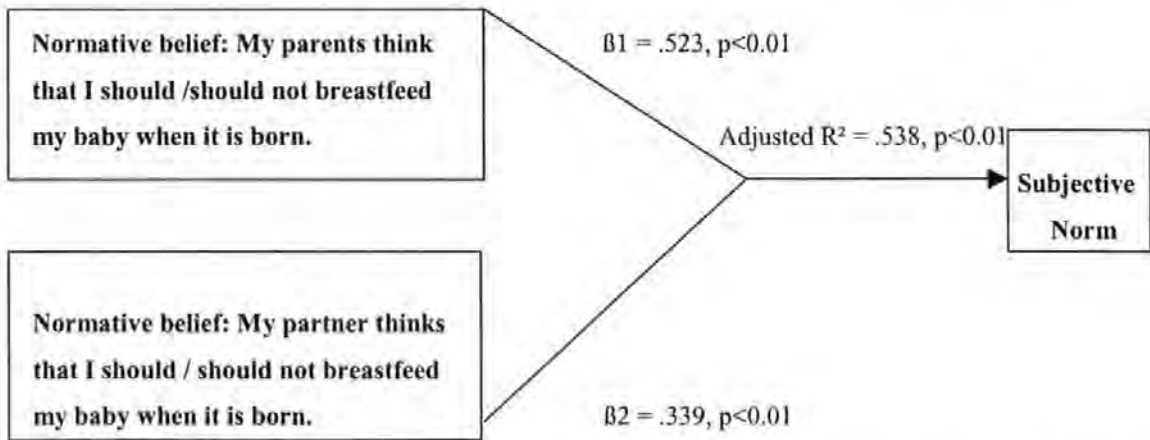


Figure 10.2 (above) shows the proportion of the variance in subjective norm attributable to the IVs. The results of the analysis of the determinants of breastfeeding attitude and subjective norm show that there are specific beliefs that determine each of these theoretical

components of the TRA. Further, in the case of both attitude and subjective norm, the separate regression analyses of beliefs using the backward elimination method afforded greater prediction of both attitude and subjective norm than the Simple Linear Regression analysis using the sums of the cross products of behavioural beliefs/outcome evaluations and normative beliefs/motivation to comply.

5.4.2 Determinants of bottle-feeding attitude and subjective norm

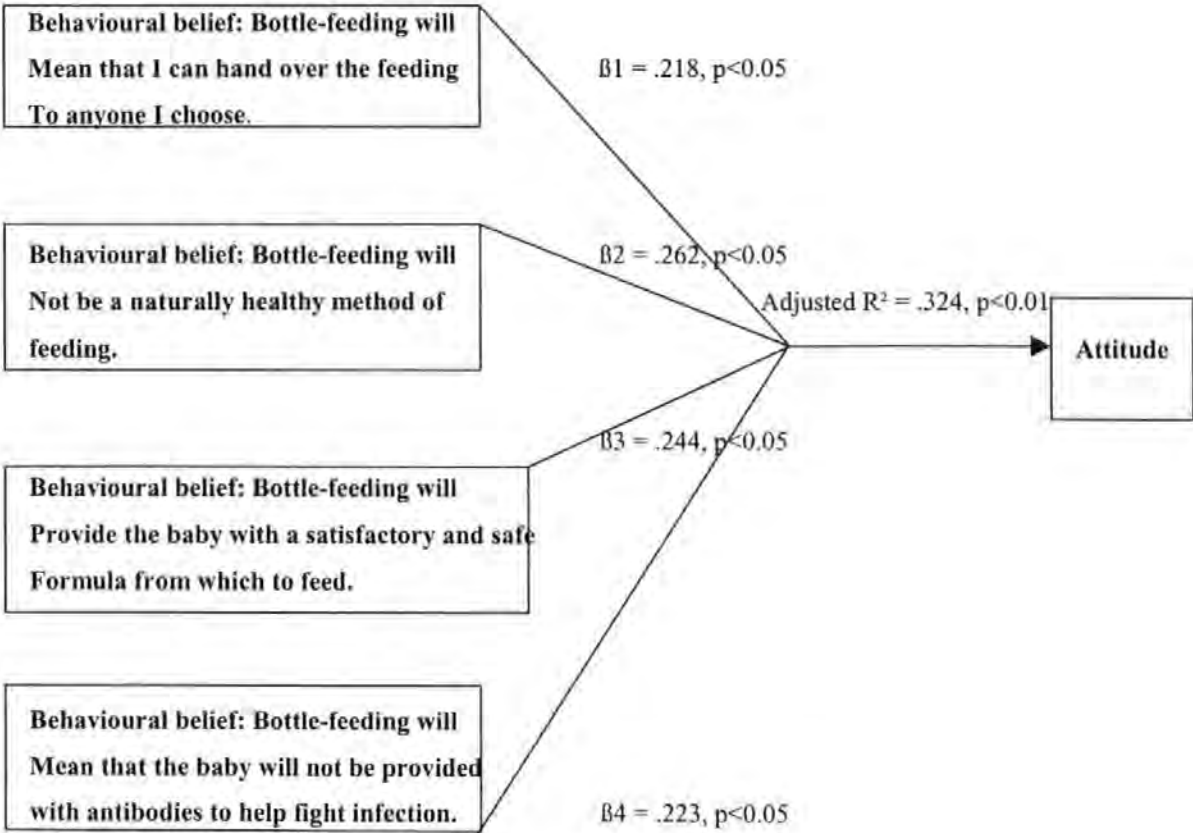
Pearson Product Moment correlations were carried out between the bottle-feeding behavioural beliefs and bottle-feeding attitude, and between bottle-feeding normative beliefs and bottle-feeding attitude. Analysis showed that seven behavioural beliefs correlated significantly with attitude, and three normative beliefs correlated with subjective norm. Table 5 (below) provides details of these beliefs, and their related correlation coefficients.

Table 5: Significant correlations of behavioural beliefs and attitude, and normative beliefs and subjective norm for bottle-feeding

Behavioural belief Bottle-feeding will:	Correlation coefficient	Normative belief	Correlation coefficient
allow me to plan my time effectively,	$r = .394, p < 0.01$	My parents think I should/should not bottle-feed my baby when it is born.	$r = .368, p < 0.01$
make me nervous about sterilizing bottles and heating milk.	$r = .228, p < 0.05$	My partner thinks I should/should not bottle-feed my baby when it is born	$r = .385, p < 0.01$
include my partner with feeding.	$r = .250, p < 0.05$	My friends think I should/should not bottle-feed my baby when it is born	$r = .310, p < 0.01$
mean that I can hand over the feeding to anyone I choose.	$r = .320, p < 0.01$		
not be a naturally healthy method of feeding.	$r = .407, p < 0.01$		
provide the baby with a satisfactory and safe formula from which to feed.	$r = .439, p < 0.01$		
mean that the baby will not be provided with antibodies to help fight infection.	$r = .331, p < 0.01$		

As for breastfeeding, all significantly correlating behavioural beliefs and normative beliefs were placed into two separate analyses as IVs, with attitude and subjective norm as DVs respectively using the backward elimination method of selection. Residual plots were checked, but the slight deviance from the normal distribution was not considered a problem for the analysis due to the large sample size. DW statistics were consulted and showed independence of residuals for both behavioural beliefs and attitude (DW statistic = 1.997) and normative beliefs and subjective norm (DW statistic = 1.869). Tolerance values were sufficiently high for it to be assured that multicollinearity would not pose a problem for the analyses. The model selected by the backward elimination process for the analysis of behavioural beliefs and attitude contained four behavioural beliefs. This model predicted 32% of the variance in attitude (Adjusted $R^2 = .324$, $F_{4,83} = 10.965$, $p < 0.01$). Figure 11.1 (below) illustrates the proportion of the variance that is attributable to each behavioural belief.

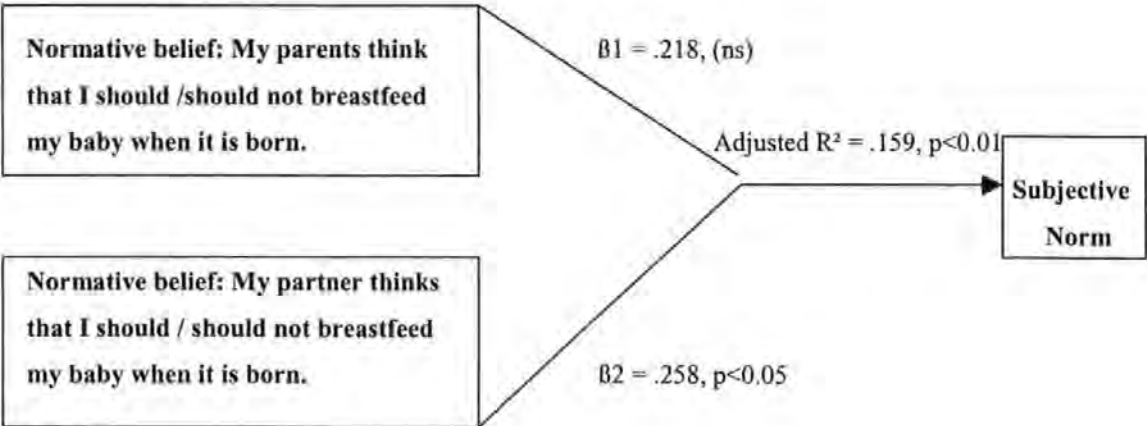
Figure 11.1 Model proposed by backward elimination method to contain behavioural beliefs that are most predictive of attitude.



The model chosen by the backward elimination method to be the strongest and most simple predictor of subjective norm for bottle-feeding contained two of the three normative beliefs shown to significantly correlate with subjective norm (see table 5 above). Interestingly, the referents to which these normative belief relate (partner and parents) are identical to those selected by the backward elimination for the breastfeeding results (refer to figure 10.2, above). The model accounted for 15.9% of the variance in subjective norm (Adjusted $R^2 = .159$, $F_{2,83} = 8.869$, $p < 0.01$). Figure 11.2 (below) shows the proportion of the variance to which each of the IVs contributed.

Similar to the breastfeeding model (see figure 10.1), the Multiple Linear Regression analysis for bottle-feeding behavioural beliefs/outcome evaluations and attitude shows both positive and negative beliefs about performing the behaviour of bottle-feeding to be important in forming an attitude toward performing the behaviour (as proposed by Ajzen & Fishbein, 1980). Additionally, it is interesting, and it is proposed important, to note that equivalent normative beliefs (representing the same referents of parents and partner) were selected by the backward elimination method of the regression to be most predictive of subjective norm for both breastfeeding and bottle-feeding.

Figure 11.2 Model proposed by backward elimination method to contain normative beliefs that are most predictive of subjective norm



The analysis thus far has shown the individual beliefs that most strongly predict attitude and subjective norm from those that were shown by Pearson Product Moment correlations to be most strongly related to these theoretical components. In order to determine whether there is a significant difference between the predictive ability of the models produced by the regression in the analyses above and the Simple Linear Regression analyses performed earlier in this section, F-tests were carried out. Table 6 (below) contains the results of the F-tests between the results of the analyses. The results of the F-tests show that there are no significant differences between any of the models that either use total scores of behavioural beliefs and outcome evaluations, and normative beliefs and motivation to comply or the individual cross products of beliefs to predict attitude and subjective norm.

Table 6: Results of the F-tests between results of the Simple Linear Regression and comparative Multiple Linear Regression analyses

Models compared	F-test result
Breastfeeding Simple Linear Regression: IV = behavioural beliefs and outcome evaluations total. DV = attitude Breastfeeding Multiple Linear Regression: IV = individual behavioural beliefs and outcome evaluations cross products selected by backward elimination. DV = attitude	F = 1.392 (ns)
Breastfeeding Simple Linear Regression: IV = Normative beliefs and motivation to comply total. DV = subjective norm Breastfeeding Multiple Linear Regression: IV = individual normative beliefs and motivation to comply cross products selected by backward elimination. DV = subjective norm	F = 1.187 (ns)
Bottle-feeding Simple Linear Regression: IV = behavioural beliefs and outcome evaluations total. DV = attitude Bottle-feeding Multiple Linear Regression: IV = individual behavioural beliefs and outcome evaluations cross products selected by backward elimination. DV = attitude	F = 1.017 (ns)

From a practical point of view, it would appear that using the individual beliefs would reduce the need for measurement of a large number of beliefs, and so would reduce the size of scales to be used to obtain participants' responses. If prediction of attitude and subjective norm is not improved by the addition of a larger number of measurements of beliefs, it would appear that further measurement of beliefs would be wasteful of time and resources. However, from a theoretical perspective, giving participants the opportunity to respond to a large number of belief allows freedom of response, and also permits exploration of beliefs thought to be commonly held concerning each infant feeding method. Subsequently, it is dependent upon the reasons for the administration of the questionnaire, and the research questions underpinning the study as to whether the full range of beliefs or a concise version of such a scale is used. Therefore, as the purpose of this study is both to test the TRA and also to explore its components, the above results do not support a reformat of the constituents of the theoretical components of the model.

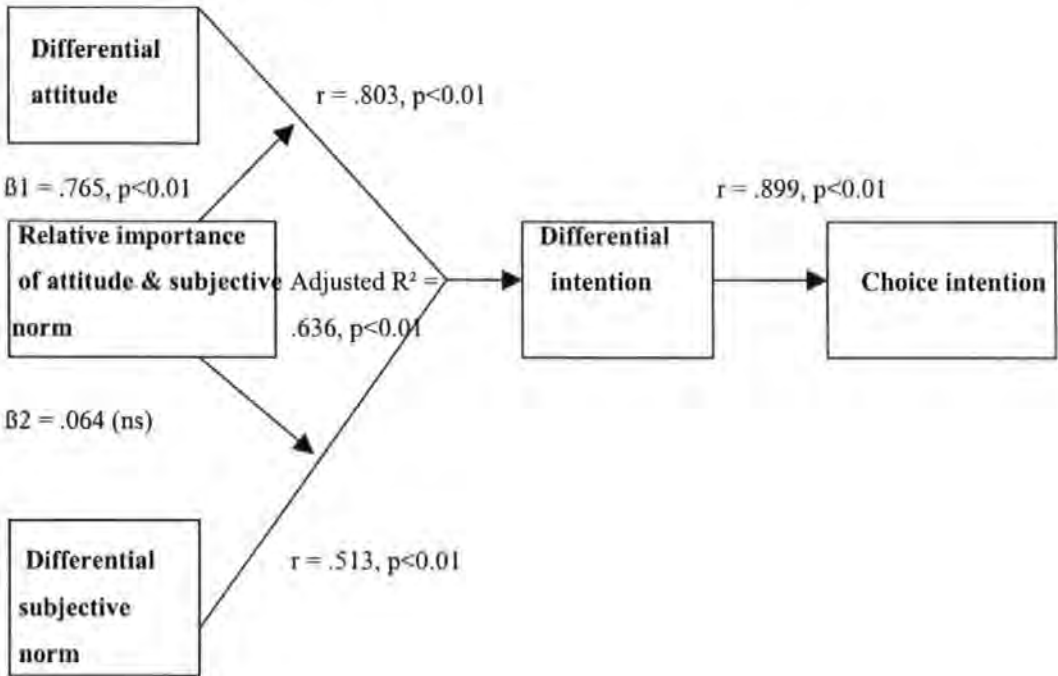
5.5 Understanding infant feeding decisions

The results thus far have dealt with the relationships between the theoretical components of the TRA with respect to the individual infant feeding behaviours of both breastfeeding and bottle-feeding. However, what is central to this study is the understanding of the processes involved in primigravidas' decision to breastfeed or bottle-feed in terms of their feelings and beliefs about both methods of infant feeding, and subsequent behaviour. As discussed in chapter 2, the TRA suggests that in the case of a choice decision such as that between breast and bottle-feeding, the measurement of choice intention is more predictive of subsequent behaviour than separate measures of behavioural intention. The TRA also proposes that differential intention provides accurate prediction of choice intention (Ajzen & Fishbein, 1980), and furthermore, in order to fully understand the basis of the choice between the two infant feeding methods, and subsequent behaviour it is necessary to assess

attitude, subjective norm and intention differentially. To recap, choice intention is the measurement provided by participants in response to their preference toward breastfeeding or bottle-feeding, whereas differential intention is the difference between participants' behavioural intention to breastfeed and behavioural intention to bottle-feed.

Of the 71 participants who completed the Attitude Scale and returned the stage two questionnaires, 70 indicated their choice intention between breast and bottle-feeding. It was therefore the results for these 70 participants that were used in the following analysis. Figure 12 (below) shows the results of the differential model and choice intention as suggested by the TRA. Pearson Product Moment correlations showed strong relationships between differential attitude and differential intention ($r = .803, p < 0.01$); differential subjective norm and differential intention ($r = .513, p < 0.01$) and differential intention and choice intention ($r = .899, p < 0.01$).

Figure12. Differential Model and the relationship with Choice Intention



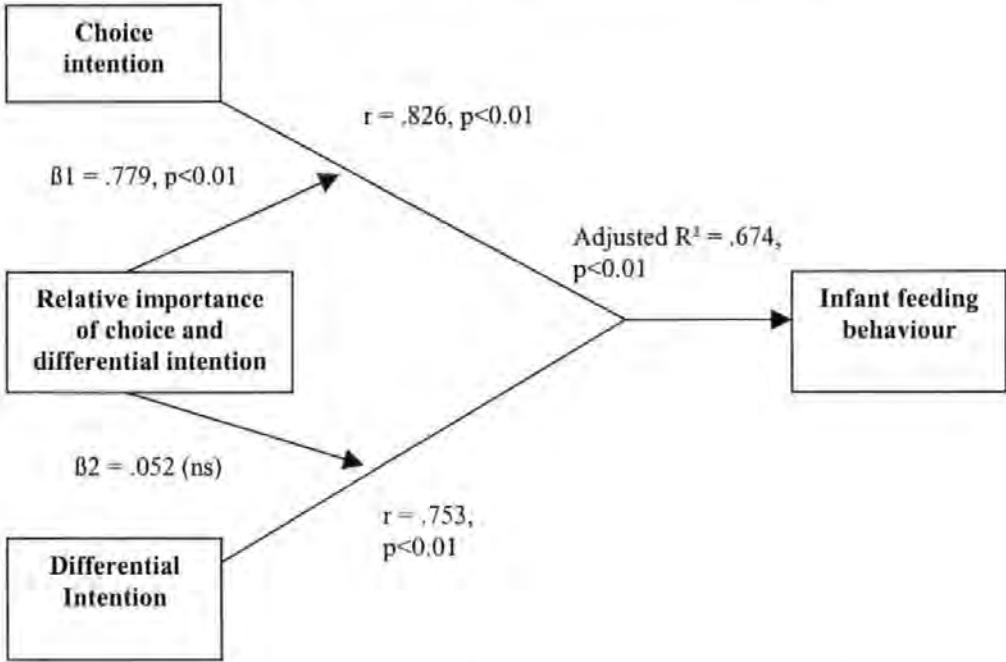
Multiple Linear Regression analysis was also carried out to determine the ability of differential attitude and subjective norm to predict differential intention (see figure 12,

above). The normal probability plot of residuals showed deviation from the normal distribution, but this was not considered a problem for the continuance of the analysis. Further, the DW statistic indicated independence of residuals (DW statistic = 2.385). The multicollinearity diagnostic provided tolerance levels (tolerance = .655) for the independent variables that were sufficient to indicate that multicollinearity should not be considered a problem for the analysis. The results of the regression analysis showed differential attitude and differential subjective norm to account for 63.6% of the variance in differential intention (Adjusted $R^2 = .636$, $F_{2, 69} = 61.374$, $p < 0.01$). Differential attitude was seen to predict more of the variance ($\beta_1 = .765$, $p < 0.01$) than differential subjective norm ($\beta_2 = .064$, $p = .712$).

In order to determine whether differential intention or choice intention was more strongly related to behaviour, Pearson Product Moment correlations were carried out between the two intention types and behaviour. Differential intention and behaviour were found to be strongly related ($r = .753$, $p < 0.01$). Choice intention and behaviour were more strongly related, although at the same level of significance ($r = .826$, $p < 0.01$). This would suggest that although both choice intention and differential intention were strongly related to behaviour, choice intention may be a better predictor of behaviour. In order to test this a Multiple Linear Regression analysis was performed with choice intention and differential intention as the independent variables, and behaviour as the independent variable (see figure 17, below). The normal probability plot was checked and accepted, and the DW statistic indicated independence of residuals (DW statistic = 1.927). The multicollinearity diagnostic provided sufficiently high tolerance levels for the two independent variables for multicollinearity not to be considered a problem (tolerance = .192). Differential intention and choice intention contributed to 67% of the variance in behaviour (Adjusted $R^2 = .674$, $F_{2, 69} = 72.249$, $p < 0.01$). As expected from the Pearson Product Moment correlations

above, choice intention contributed significantly to the variance in behaviour ($\beta_1 = .779$, $p < 0.01$) compared to differential intention ($\beta_2 = .052$, $p = .741$).

Figure 13. The ability of choice intention and differential intention to predict behaviour



These results, illustrated by figure 13 above, raised the following question. If choice intention is a better predictor of behaviour than differential intention, is there any need to measure differential intention, or could it be that like behavioural intention, differential intention plays a mediating role between the differential components of attitude and subjective norm, and choice intention? In order to test this, a series of bivariate and multivariate analyses were carried out. Firstly, Pearson Product Moment correlations were calculated and showed strong relationships between differential attitude and choice intention ($r = .806$, $p < 0.01$), and differential subjective norm and choice intention ($r = .576$, $p < 0.01$). Secondly, as previous analysis had shown a strong correlation between differential intention and choice intention ($r = .899$, $p < 0.01$), a Multiple Linear Regression analysis was carried out with differential attitude, differential subjective norm, and differential intention as the independent variables, and choice intention as the dependent variable in order to determine whether differential intention did mediate between the

differential components of attitude and subjective norm, and choice intention. The normal probability plot showed a normal distribution of residuals, and the DW statistic show independence of residuals (DW statistic = 1.990). Multicollinearity was not considered a problem for the results of this analysis (differential attitude tolerance value = .341; differential subjective norm tolerance value = .650; differential intention tolerance value = .353).

The independent variables accounted for 82.9% of the variance in choice intention (Adjusted $R^2 = .829$, $F_{2, 69} = 112.158$, $p < 0.01$). Differential attitude contributed moderately significantly to the variance in choice intention ($\beta_1 = .181$, $p < 0.05$), whereas the contribution of differential subjective norm was not significant ($\beta_2 = .133$, $p = .072$). However, differential intention's contribution to the variance in choice intention was highly significant ($\beta_3 = .696$, $p < 0.01$). Therefore, differential intention is more strongly predictive of choice intention than either differential attitude or differential subjective norm. Further, stepwise regression analysis did not recommend the addition of any independent variable apart from differential intention in the model. This conclusion is confirmed by simple linear regression of differential intention as the independent variable, and choice intention as the dependent variable, as differential intention alone accounts for 80% of the variance in choice intention (Adjusted $R^2 = .805$, $F_{1, 69} = 285.828$, $p < 0.01$).

Figure 14. Finalised differential model

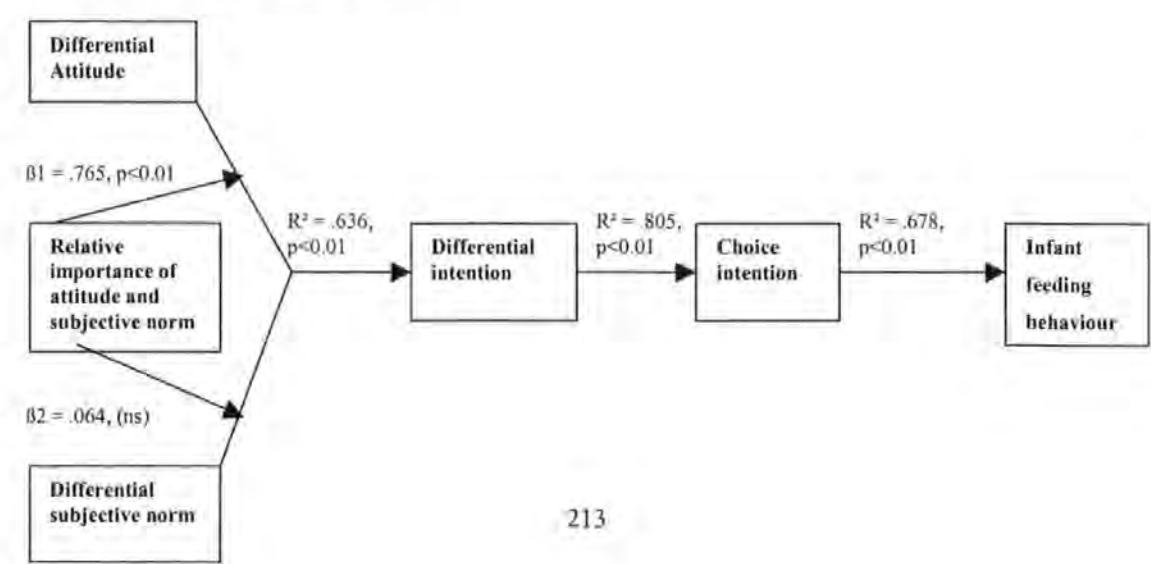


Figure 14.(above) illustrates the relationships between the theoretical components of the differential model. The analyses above have not only demonstrated the need for measurement of differential intention to predict choice intention, but also that of choice intention in the prediction of behaviour. The measurement of differential attitude and subjective norm are also necessary in order to understand the determinants of differential intention, and so the basis for the differential intention–choice intention–behaviour relation. Furthermore, the TRA does not specify that differential intention should predict choice intention, which itself predicts behaviour, but instead postulates that there should be a relationship between the components. However, the results of the simple linear regression analyses (shown in figure 14) show firstly that the measurement of the theoretical components correspond according to the principle of compatibility, secondly, that the TRA provides excellent understanding of the belief-intention-behaviour relationship in respect to infant feeding decisions, and thirdly that the infant feeding behaviour immediately following birth is under women's volitional control. In the following section, issues raised by results sections 5.2-5.5 will be discussed in relation to their implications for the TRA and relevance to the infant feeding experiences of the women participating in this study.

5.6 Discussion

The overriding message of the results presented in this chapter is that of support for the orthodox TRA upheld by Ajzen and Fishbein (1980). Firstly, in the separate analyses of the infant feeding behaviours, it was shown that behavioural intention holds a pivotal role in the theory as a mediating component between those of attitude and subjective norm, and that of infant feeding behaviour. Secondly, the direct measures of attitude and subjective norm were seen to be superior predictors (and for breastfeeding, significantly superior predictors) of behavioural intention, contrary to other researchers' findings that indirect

measures provide satisfactory measurement of these components (e.g. Bosompra, 2001; Evers & Kamilowicz, 1996; Steen et al., 1998; Sutton et al., 1999). Thirdly, the analysis of the determinants of attitude and subjective norm showed that attitude toward breast and bottle-feeding is indeed made up of both positive and negative beliefs (as proposed by Ajzen and Fishbein, 1980). Further, the results also showed that using either a concise or wider range of modal salient behavioural and normative beliefs (and therefore either a smaller or larger number of scale items) is dependent upon the aims of the research, and in either case would not significantly reduce the ability to predict intention. Therefore, if one of the central aims of the research is to develop a broad understanding of infant feeding beliefs, a larger pool of beliefs could be used without reducing the quality of the analysis. On the other hand, if the predictability of intention is the central issue, and time and resources are limited, the more concise pool of beliefs could be used just as effectively. Finally, the differential analysis demonstrated that differential intention is significantly and highly predictive of choice intention to breast or bottle-feed, and further that choice intention can predict 67% of the variance in choice of infant feeding behaviour. The results presented in this chapter have therefore upheld not only the components and principles of the TRA as recommended by Ajzen and Fishbein (1980) in the orthodox version of the theory, but also the usefulness of the theory in understanding behaviours both individually and as part of a choice decision.

Another noticeable outcome of the results of the TRA analyses is that the results for the multivariate analysis of the bottle-feeding data were almost consistently weaker, either in relation to the score of the Adjusted R^2 or the level of significance attained compared to the breastfeeding analyses. Although it is not possible to accurately determine the reasons for this disparity, two possible explanations are proposed here. Firstly, the measures used in the bottle-feeding section of the Attitude Scale might not have been as precise for measuring beliefs and attitudes regarding bottle-feeding as those used in the breastfeeding

section of the scale. This difference could be due to the majority of participants in the scale development study either having breastfed themselves, or planning to breastfeed, and also the favouring of breastfeeding over bottle-feeding in the lay literature. However, the reliability analyses carried out during the scale development phase (refer to chapter 4, section 4.3) lend more weight to the account regarding the numbers of participants in the longitudinal study who actually breastfed, or who had formed an intention to breastfeed. The second explanation is that the decision to bottle-feed and the social cognitive processes involved in this decision, might be more complex than the decision to breastfeed. The results presented regarding the determinants of breast and bottle-feeding attitudes provide apparent illustration of this point. As mentioned earlier in this discussion, it is expected that individuals hold both positive and negative beliefs about performing a behaviour which in turn constitute attitude. However, it can be seen in figure 10.1 that it is the three positive beliefs about breastfeeding in the model that make the greatest contribution to the variance in breastfeeding attitude. In contrast figure 11.1 shows that both positive and negative beliefs about bottle-feeding contribute relatively equally to the variance in bottle-feeding attitude. Therefore, whereas it appears to be positive beliefs that most strongly influence breastfeeding attitude, it is an even combination of both positive and negative beliefs that most strongly determine primigravidas' attitude toward bottle-feeding. Subsequently, although direct comparison cannot be made between the multivariate results of this study (i.e. the relationships between the components for breastfeeding being stronger than those for bottle-feeding), the results of the individual beliefs underlying the attitudinal component of the bottle-feeding model might provide a degree of understanding for this difference.

The statistical significance of the results adds to the usefulness of the application of the TRA in understanding breastfeeding and bottle-feeding beliefs, intentions and behaviour, both as individual behaviours, and in the choice decision that inevitably needs to be made

by all primigravidas. It must be remembered, however, that the infant feeding behaviour measured in the above analysis is the first infant feeding behaviour performed by the primigravidas participating in this study immediately following birth. The analysis presented in this chapter goes a step further than that proposed by Ajzen and Fishbein (1980) in that Simple Linear Regression analysis is introduced in some instances (for example, section 6.5) to show the predictive ability of components (e.g. intention) rather than simply the strength of the relationship between, for example, intention and behaviour. Although this is not directly proposed by the theory the ability of, for example, differential intention to significantly predict choice intention, or choice intention to significantly predict infant feeding behaviour, is exceptionally important to the understanding of the social cognitive process involved in making the decision to breast or bottle-feed. It is these theoretical explanations which provide clarification as to why primigravidas form intentions to breast or bottle-feed, and consequently perform each behaviour on the birth of their baby. Therefore, by examining the components and component-relationships within each theoretical model (breastfeeding, bottle-feeding and differential) but maintaining an orthodox approach to the construction and interaction among components it has been possible in this study to provide significant understanding of primigravida's experience of the intention formation and instigation of infant feeding behaviours.

To recap, the principle of compatibility (Ajzen, 1988; Ajzen & Fishbein, 1980) states that the theoretical components must correspond with regard to the behavioural elements of time, target, action and context. As participants were asked to respond to items measuring behavioural and normative beliefs, attitudes, subjective norm and intention regarding breastfeeding or bottle-feeding "when your baby is born", it was essential that it was this *initial* behaviour that was recorded and used in the analyses above in order to satisfy the principle of compatibility. Therefore, although the results presented in this chapter have shown the TRA to be invaluable in understanding the social cognitive processes

underpinning infant feeding decisions, and the prediction of infant feeding behaviour, it is only the primary infant feeding behaviour that is examined here.

As has been discussed in previous chapters, although many mothers might breastfeed their babies at the outset (as the majority have done in this study), this number rapidly declines shortly after the birth (Foster et al., 1995). The following chapter moves on from the intention forming and initial behaviour phase to examine social cognitive processes (in the form of self-efficacy expectancies) and perceived social support in order to understand the changes in and maintenance of infant feeding behaviour in the first six months postpartum. Reference will also be made to the sociodemographic characteristics and the infant feeding and birth experience of participants in relation to their current infant feeding method at stages two and three of the study.

Theoretical explanations for the maintenance of infant feeding: Application of Self-Efficacy Theory and Social Support to Breast and Bottle-feeding.

In the previous chapter the results of the analysis of the longitudinal data relating to the TRA were presented. Analysis uncovered the principal processes involved in the formulation of intention to breast or bottle-feed, and the initiation of the first infant feeding behaviour undertaken by participants following delivery of their infants. The current chapter seeks to develop understanding of the performance of infant feeding behaviours through analysis of the theoretical concepts reviewed in chapter three, namely, SET and Social Support. The antenatal and postnatal pilot studies that first tested the scales used to measure self-efficacy and social support in relation to infant feeding can be observed in the appendix (refer to appendix 17). The results to be presented here cover all three stages of the longitudinal study, from pregnancy, until four to seven months postpartum. Prior to presenting the analysis, the recruitment and procedures involved in collecting data for the three stages of the longitudinal study will be discussed.

6.1 Recruitment and Procedure

The initial recruitment of participants during pregnancy was discussed in chapter five (refer to chapter 5, section 5.1.1). To recap, 85 participants were ultimately recruited to the first stage of the study through a variety of methods such as at hospital tours, antenatal clinics, and by word of mouth. On receiving the first completed questionnaire pack from the participants, the researcher sent a gift pack of products to show appreciation for the woman's participation in the study. According to the due dates provided by participants at the first stage of the study, the researcher contacted the Child Health Information

Department attached to the hospital at which the participants were recruited at six weeks after the due date to ensure that the infant had been successfully delivered, had returned home, and that there had been no further admissions. On receipt of confirmation of positive health status of mother and infant, the researcher sent the second set of questionnaires to the participants. Again, on receipt of completed questionnaire packs, the researcher sent a further gift as thanks for having taken part in the study. The process of checking health status was repeated for stage three of the study at four to seven months postpartum, and once more participants were sent a gift on receipt of completed questionnaires.

At the end of this period of data collection across the three stages of the longitudinal study, there were 85 participants in stage one, 71 participants in stage two and 57 participants in stage three. Therefore, of the original 85 participants who made up the sample, 83% took part in the second stage of the study, and 67% completed the stage three questionnaire pack. Characteristics of participants who did not complete stages two and three were compared with those who completed these stages, and no major differences were found. The characteristics of the sample that was initially recruited at stage one were presented in the preceding chapter (refer to chapter 5, section 5.1.2).

The following section explores the application of SET to infant feeding. As discussed in chapter three, individuals high in self-efficacy expectancies for performing a particular behaviour, or, it has been argued, high in general self-efficacy expectancies are more likely to perform the behaviour. It is the generality, strength and magnitude of these self-efficacy expectancies that are of interest here with regard to the maintenance of infant feeding behaviour.

6.2 Self-Efficacy Analysis

The behaviour-specific Breast and Bottle-feeding Self-Efficacy Scale and the GSES were administered to participants at all three stages of the longitudinal study. All participants were asked to complete all items on the self-efficacy scales at stage one. Clear instructions were provided to participants concerning which items should be completed at stages two and three. Participants who had breastfed at some time since birth were requested to complete the GSES, and all items on the Breast and Bottle-feeding Scale, while participants who had only bottle-fed their babies since birth were asked to complete the GSES and only those items on the behaviour-specific scale relating to bottle-feeding.

Much of the analysis to be undertaken here involves investigation between pregnancy, the early postpartum period and the late postpartum period. For the purposes of this study, the early postpartum period was designated as between 0-12 weeks. Unfortunately, at stage two, eight participants had returned the questionnaire set after 12 weeks postpartum. In order to ensure that the groups that would be compared in the analysis between the stages of the study could be accurately defined, the scores of the eight participants who were late in returning their sets of questionnaires were excluded from the analysis of the second stage of the study.

There were three phases of data analysis that were designed to respond to the SET research questions presented in chapter three (refer to chapter 3, section 3.4.2). The first phase involved assessment of the means for generalised, breastfeeding and bottle-feeding self-efficacy at each stage of the analysis in order to determine both whether there was any significant difference between behaviour-specific and generalised self-efficacy expectancies, and further between breastfeeding and bottle-feeding self-efficacy expectancies. The second phase of the analysis examined any differences in the scores for

each of the scales, over the three stages of the study. The third stage of analysis undertaken here, was concerned with examination of participants' antenatal self-efficacy scores in the light of their subsequent infant feeding behaviour, with a view to differentiating between infant feeding groups at the antenatal stage. The final phase of analysis explored the effect of infant feeding experience (either sole breastfeeding, sole bottle-feeding or both breast and bottle-feeding) on both generalised and behaviour-specific self-efficacy expectancies. Each of these analytic phases will now be dealt with in turn.

6.2.1 The effect of type of self-efficacy expectancy

On initial examination of the data, it became apparent that at each stage of the study (particularly the postnatal stages) there were differences between the number of participants who completed each scale, due both to their infant feeding practices, and to the unexplained omission of some items by participants. It was originally intended that a repeated measures Analysis of Variance (ANOVA) would be carried out to analyse the data. However, if this method were to be used, vital data would be lost as although the majority of participants had completed all three of the scales at each stage, some participants had only completed one or two of the scales.

In order to circumvent this problem a psychologist experienced in dealing with missing data was consulted. As a result, the data for each stage of the study was entered into SPSS in an arrangement that allowed analysis using an "analysis of variance using a general linear model approach to deal with missing variables" (Dennis, personal communication, March 13, 2002). The scores for each completed scale were entered as the dependent variable, the type of scale (GSES, breastfeeding and bottle-feeding) was entered as the fixed (or independent) variable, and participants (who were each assigned a number) were entered as the random variable.

Prior to interpretation of the results of the analyses, the assumptions of ANOVA (normal distribution of residuals, and homogeneity of variance) were tested by examination of a histogram of the residuals for each scale at each stage of the study, and the standard deviation for each scale respectively. Consideration of both the histograms and corresponding standard deviations (refer to appendix 23 for examples) confirmed that there had been no serious violation of these assumptions, and therefore interpretation of the analysis could proceed. Each stage of the study was analysed separately, and will be presented in sequence below. Table 7 (below) shows the number of participants who completed each scale, and the overall number of participants at each stage of the study.

Table 7: Number of participants to complete the GSES and the Breast and Bottle-feeding Self-Efficacy Scales at each stage of the longitudinal study.

Stage	N	GSES	Breastfeeding	Bottle-feeding
1	83	83	83	81
2	64	64	52	52
3	56	56	45	50

Analysis showed that there was a significant effect for type of self-efficacy scale ($F_{(2, 161)} = 98.130, p<0.001$) in the first stage of the study. Bonferroni Multiple Comparison tests were carried out in order to determine where this effect lay. The tests showed that, firstly, there was a significant difference between participants' scores on the GSES and their breastfeeding scores ($p<0.001$). Examination of total mean scores revealed that GSES scores are significantly greater (mean = 31.4578) than breastfeeding scores (mean = 24.12). Secondly, there was no significant difference reported between scores on the GSES and bottle-feeding scores ($p = .120$). Finally, there was a significant difference between participants' scores on the breastfeeding and the bottle-feeding sections of the behaviour-specific scale ($p<0.001$), with total means showing the bottle-feeding scores (mean = 30.28) to be significantly greater than the breastfeeding scores (mean = 24.12). Therefore,

at the antenatal stage of the study, participants have significantly lower self-efficacy expectancies for breastfeeding than for either bottle-feeding or general behaviour. Further, there is no significant difference between the level of participants' general self-efficacy expectancies and those for carrying out the behaviour of bottle-feeding

The analysis of the scores for the second stage of the study (the early postpartum period) also showed a significant effect for scale type ($F_{(2, 102)} = 21.042, p < 0.001$). The post hoc Bonferroni Multiple Comparison test showed three significant differences between the types of scale. Firstly, there was a significant difference between GSES and the breastfeeding section ($p < 0.001$) with GSES scores being significantly higher (mean = 32.58) than breastfeeding scores (mean = 28.5). Secondly, there was also a moderate significant difference between the GSES and the bottle-feeding section of the behaviour-specific scale ($p < 0.05$), which on further scrutiny showed bottle-feeding scores (mean = 34.65) to be significantly higher than those obtained from the GSES (mean = 32.58). Finally, there was a significant difference between the breastfeeding and the bottle-feeding sections of the Breast and Bottle-feeding Self-Efficacy Scale ($p < 0.001$). Examination of the total means revealed that bottle-feeding scores (mean = 34.65) were significantly greater than the breastfeeding scores (mean = 28.5). In terms of participants' self-efficacy at stage two of the study, strength and magnitude of breastfeeding self-efficacy was again significantly lower in comparison with bottle-feeding and general self-efficacy expectancies. However, contrary to the antenatal stage there was a significant difference between participants' levels of general and bottle-feeding self-efficacy with participants exhibiting higher levels of personal mastery over bottle-feeding than general behaviour at this stage.

The results of the analysis from the final stage of the study (the later postpartum period) are similar to those for the first stage. Analysis showed that there was a significant effect

for scale type ($F_{(2, 93)} = 24.963, p < 0.001$) in stage three. Post hoc tests again showed there to be a significant difference between GSES and the breastfeeding section of the behaviour-specific scale ($p < 0.001$). Examination of the total means showed the scores for the GSES to be significantly higher (mean = 33.21) than those for breastfeeding self-efficacy (mean = 28.16). No significant difference was found between bottle-feeding scores and those of the GSES ($p = 0.1$). A significant difference was also found between the breast and bottle-feeding self-efficacy sections ($p < 0.001$). The total means showed that the bottle-feeding scores were significantly higher (mean = 35.04) than the breastfeeding scores (mean = 28.16). The results for the third stage are similar to those of the antenatal stage presented above. Firstly, participants at the late postnatal stage exhibited significantly lower levels of personal mastery over breastfeeding than for bottle-feeding and general behaviour. Secondly, there is no significant difference between levels of general and bottle-feeding self-efficacy expectancies for participants at this stage.

In summary, consistently throughout the stages of the longitudinal study, the scores on the GSES are significantly higher than those on the breastfeeding section of the behaviour-specific scale. In addition, scores for bottle-feeding self-efficacy are significantly greater than those for breastfeeding self-efficacy across the three stages of the study. However, although in stage two there is a significant difference between bottle-feeding and GSES scores (with bottle-feeding being significantly higher than GSES), there was no such difference found between the scales in the first and third stages of the study.

6.2.2 The effect of stage of study

The same method of analysis as that performed to assess the effect of scale type was used to investigate the possible effect of the stage of the study on the scores of the self-efficacy scales. Score was again assigned as the dependent variable, participants as the random

variable, and study stage (one, two or three) was assigned as the fixed variable. The assumptions were again tested, and it was concluded that no serious violation had been made. Therefore, analysis and interpretation could proceed. The scores for the GSES, breastfeeding, and bottle-feeding were assessed separately. The results of the analyses will be presented in turn below.

There was a main effect of stage for the scores of the GSES ($F_{(2, 114)} = 5.697, p < 0.005$). The Bonferroni Multiple Comparisons test showed there to be a significant difference between GSES scores at stage one, and those at stage two ($p < 0.05$). Examination of the means showed that scores at stage two (mean = 32.33) were significantly higher than those at stage one (mean = 31.49). A significant difference was also found between GSES scores at stage one and those at stage three ($p < 0.001$), with those at stage three (mean = 33.58) being significantly greater than those at stage one (mean = 31.49). No significant difference was found between the scores for the GSES at stage two, and those at stage three ($p = .242$). Hence, participants at the antenatal stage of the study exhibited significantly lower levels of general self-efficacy than participants at the postnatal stages of the study. However, there was no significant difference in terms of participants' levels of general mastery between the early and later postnatal stages of the study.

In the case of the breastfeeding section of the behaviour-specific scale, there was also a significant main effect for stage of study ($F_{(2, 90)} = 10.733, p < 0.001$). Post hoc tests showed a significant difference between stages one and two ($p < 0.001$) with stage two scores (mean = 28.58) being significantly higher than those taken at stage one (mean = 24.01). Further, a significant difference was also shown between the breastfeeding scores for stages one and three ($p < 0.001$). Closer scrutiny revealed that scores at stage three (mean = 27.98) were significantly higher than those at stage one (mean = 24.01). Bonferroni Multiple Comparison tests showed that there was no significant difference between stages two and

three ($p = 1.0$). Therefore, analogous to the results obtained for the GSES, the strength and magnitude of participants' breastfeeding self-efficacy expectancies are significantly lower at the antenatal stage than at either of the postnatal stages of the study. Further, there is no significant difference in participants' feelings of breastfeeding mastery between the early and late postpartum stages of the study.

With regard to the bottle-feeding section of the Breast and Bottle-feeding Self-Efficacy Scale, there was again a significant main effect for stage ($F_{(2, 92)} = 23.299, p < 0.001$). Bonferroni post hoc tests showed there to be a significant difference between stages one and two ($p < 0.001$), and stages one and three ($p < 0.001$). Examination of the means showed that bottle-feeding scores at stages two (mean = 34.81) and three (mean = 35.29) were both significantly greater than those at stage one (mean = 30.2). Tests also revealed that there was no significant difference between the bottle-feeding scores recorded at stages two and three of the study. Comparable to the results of the GSES and the breastfeeding scores, participants' self-efficacy expectancies with regard to bottle-feeding are significantly higher at both postnatal stages of the study than the antenatal stage. However, there are no significant differences in levels of personal mastery for bottle-feeding between the early and late postnatal stages.

In summary, the results show consistently that across the three types of scale, there are significant differences in the scores between the antenatal stage (stage one), and both postnatal stages (stages two and three). Further, analysis also reveals that there is no significant difference in mean scores for the GSES, breastfeeding and bottle-feeding self-efficacy between the two postnatal stages of the study (stages two and three). Therefore, for both types of behaviour-specific self-efficacy and generalised self-efficacy, there are significantly higher levels of personal mastery among the participants who completed the scales postpartum than those who completed the scales antenatally.

6.2.3 The role of self efficacy expectancies and subsequent infant feeding behaviour

It was decided that the most useful way of analysing the results of the antenatal self-efficacy data with respect to infant feeding experience was to assess the differences in levels of each type of self-efficacy for participants who breastfed for at least 12 weeks, and those who ceased breastfeeding prior to 12 weeks. In this way, any antenatal differences in levels of both general and behaviour-specific personal mastery could be observed between those who stopped breastfeeding in the early antenatal period, and those who continued beyond this stage. Twenty-seven participants ceased breastfeeding and started sole bottle-feeding within 12 weeks of delivery, and 20 participants indicated that they breastfed their babies for at least 12 weeks. One-way analysis of variance was carried out for each type of self-efficacy, in order to assess whether there were significant differences in the mean scores of the two groups.

Analysis revealed that there was no significant difference between the antenatal mean scores for breastfeeding self-efficacy ($F_{(1,46)} = .748, p = .392$) for those who ceased breastfeeding (mean = 23.85) and those who continued (mean = 22.4). Similarly, there was no significant difference between the mean scores for bottle-feeding self-efficacy ($F_{(1,46)} = 1.902, p = .175$) for ceased breastfeeders (mean = 29.8) and continued breastfeeders (mean = 26.8). Additionally, results also showed that there was no significant difference between the means of the two groups (mean for ceased breastfeeders = 31.0, and mean for continued breastfeeders = 30.6), with respect to their level of generalised self-efficacy ($F_{(1,46)} = .133, p = .717$). Therefore, to conclude it was not possible to differentiate between those who continued to breastfeed and those who discontinued before 12 weeks in terms of their levels of antenatal self-efficacy expectancies.

6.2.4 The effect of infant feeding experience on postnatal self-efficacy expectancies

In order to adequately examine the effect of infant feeding experience on postnatal self-efficacy scores, it was necessary to assess the results of each scale independently. The scores of participants on each scale were assigned to one of three groups regarding experience. These were participants that had solely breastfed since delivery, participants that had solely bottle-fed since delivery, and those that had both breast and bottle-fed since delivery (mixed feeders). As there were very unequal numbers within these groups, which could violate the assumptions of ANOVA (mentioned above), it was decided to use the non-parametric equivalent of ANOVA, the Kruskal-Wallis test. For each separate scale, the score was entered into the analysis as the test variable, and the experience of the participant was entered as the grouping variable. The results of the analysis for the scales at each stage of the study are presented below.

In the case of the GSES at the second stage of the study, 28 sole breastfeeders, eight sole bottle-feeders, and 28 mixed feeders completed the scale. Analysis showed that there was no significant effect of experience on GSES scores at this stage of the study ($\chi^2 = 3.359$, $df = 2$, $p = .186$). At the third stage of the study six sole breastfeeders, nine sole bottle-feeders, and 41 mixed feeders completed the GSES. Again, analysis showed that there was no significant effect of infant feeding experience on GSES scores at stage three ($\chi^2 = 4.287$, $df = 2$, $p = .117$). Thus, there was no significant difference between breastfeeders', bottle-feeders' and mixed feeders' levels of general mastery at either stage two or stage three of the study.

At both postnatal stages of the study, only those mothers who had breastfed at some time since the birth of their infants were instructed to complete the breastfeeding section of the behaviour-specific scale. Therefore, no sole bottle-feeders completed this scale. At stage

two of the study, 28 sole breastfeeders and 24 mixed feeders completed the breastfeeding scale. The Kruskal-Wallis test showed there to be a significant effect for experience ($\chi^2 = 9.458$, $df = 1$, $p < 0.005$). Examination of the means showed the direction of the effect, with sole breastfeeders providing significantly higher scores (mean = 30.89) than mixed feeders (mean = 25.70). At the third stage of the study, six sole breastfeeders and 39 mixed feeders completed the breastfeeding scale. Analysis showed there to be no effect of infant feeding experience on the breastfeeding scores at this stage ($\chi^2 = 2.701$, $df = 1$, $p = 1.0$). The results therefore reveal that at the early postnatal stage, participants who have solely breastfed their babies since delivery have significantly higher levels of personal mastery with regard to breastfeeding than those who are currently mixed feeders, or who have previously breastfed, but now bottle-feed their babies.

All participants, regardless of infant feeding experience were requested to complete the bottle-feeding section of the Breast and Bottle-feeding Self-Efficacy Scale. Seventeen sole breastfeeders, eight sole bottle-feeders, and 27 mixed feeders completed the bottle-feeding scale at stage two of the study. The Kruskal-Wallis test showed there to be a significant effect of experience ($\chi^2 = 16.377$, $df = 2$, $p < 0.001$) on bottle-feeding scores. As there were three levels of experience, it was necessary to perform a post Kruskal-Wallis test in order to pinpoint the exact nature of this effect (akin to the use of the Bonferroni Multiple Comparison Test used in the previous analysis, above). The post hoc test used (Siegel & Castellan, 1988) revealed a significant difference between the mean ranks of the bottle-feeding self-efficacy scores for breastfeeders and bottle-feeders at stage two ($p < 0.05$). Examination of the means showed that bottle-feeders (mean = 39.81) have significantly higher levels of self-efficacy for bottle-feeding at stage two than breastfeeders (mean = 15.47). A further post hoc test revealed there to be a significant difference between the mean ranks for the bottle-feeding self-efficacy scores for breastfeeders and mixed feeders at stage two. Closer examination revealed that mixed feeders (mean = 29.5) held

significantly higher levels of personal mastery for bottle-feeding than breastfeeders (mean = 15.47). A third multiple comparison for the means showed there to be no significant difference between bottle-feeders and mixed feeders. Therefore, there are no significant difference in bottle-feeding self-efficacy between bottle-feeders and mixed feeders at stage two.

At the third stage of the study, one sole breastfeeder, nine sole bottle-feeders, and forty mixed feeders completed the bottle-feeding scale. Due to there only being one breastfeeder, it was decided to only run the analysis between the bottle-feeders and the mixed feeders in order not to confound the results. Analysis revealed a significant effect of infant feeding experience on the bottle-feeding scores ($\chi^2 = 5.514$, $df = 1$, $p < 0.05$). As there were only two groups (bottle-feeders and mixed feeders) in the analysis, it was not necessary to perform a post hoc test. Examination of the means revealed that unlike at stage two, bottle-feeders (mean = 35.06) held significantly stronger bottle-feeding self-efficacy expectancies than mixed feeders (mean = 22.74) at stage three.

Overall, analysis showed that there was no significant effect of infant feeding experience on participants' scores on the GSES at either of the postnatal stages of the study.

Concerning the breastfeeding section of the behaviour-specific scale, the significant difference between the scores of sole breastfeeders and mixed feeders witnessed at stage two, was not in evidence at stage three of the study. Finally, there was a significant effect of infant feeding experience on bottle-feeding scores at both postnatal stages of the study. These results raise issues concerning the salience of self-efficacy expectancies across stages. For both breastfeeding and bottle-feeding self-efficacy, although the differences are not always statistically significant, generally, participants who have solely performed a single behaviour (i.e. breastfeeding or bottle-feeding) have higher levels of personal mastery than those who have performed both behaviours (or who have had to replace one

behaviour with another). The following analysis concerns the sources and perceived need for social support, both at the antenatal stage, and for breastfeeders, bottle-feeders and mixed feeders at both postnatal stages of the longitudinal study.

6.3 Social Support Analysis

The Breast and Bottle-feeding Social Support Questionnaire was designed to measure perceived need for emotional, tangible, informational and appraisal support, and the main sources of these types of support with regard to breastfeeding and bottle-feeding in first time mothers. At stage one of the study, all participants were requested to complete both the breastfeeding and bottle-feeding sections of the questionnaire regardless of their intended method of infant feeding. At both postnatal stages, however (stages two and three), participants who had solely breastfed their babies were instructed to complete only the breastfeeding section of the questionnaire whereas those who had solely bottle-fed since birth were requested to complete only the bottle-feeding section. Those mothers who had both breastfed and bottle-fed their babies at some time since the birth were instructed to complete both the breastfeeding and the bottle-feeding sections of the questionnaire. Despite the instructions displayed on the front of the questionnaire concerning the section that should be completed, some participants did not complete all of the sections that were appropriate to their infant feeding experience. Therefore, prior to each presentation of results, the number and infant feeding experience (if applicable) of participants who have completed each section will be reported. Descriptive analysis of the types, sources and amount of social support required by participants for breastfeeding and bottle-feeding at each stage of the study are presented below.

6.3.1 Antenatal social support

The analysis of the social support data consists of the frequency with which participants reported that they would require each type of support, and the main source that would provide each type. Unlike the postnatal stages of the study, instructions at the antenatal stage requested participants to complete both sections of the questionnaire regardless of infant feeding intention. Therefore, this enables direct comparison of the sample's perceived need for and sources of social support for both breastfeeding and bottle-feeding. Seventy-five participants completed the bottle-feeding section, and 81 participants completed the breastfeeding section of the social support questionnaire. Each type of support is presented in turn with regard to the perceived amount and source of social support for both breastfeeding and bottle-feeding.

6.3.1.1 Antenatal stage: emotional support

Emotional support was represented by two items on the social support questionnaire as follows. The first item was concerned with having someone to call on when alone with the baby whilst breastfeeding or bottle-feeding, and the second item was related to having a shoulder to cry on when having problems with breastfeeding or bottle-feeding.

Regarding having someone to call on when lonely, the participant's mother was the most frequently reported source of this type of support for both breastfeeding (42%) and bottle-feeding (52%). The participant's partner was the second most frequently reported source of this type of emotional support, and was reported relatively equally for both feeding methods at 21% for breastfeeding and 21.3% for bottle-feeding. Partners' family and breastfeeding counsellor were each reported by one participant as being the main sources of support when feeling lonely whilst both breastfeeding and bottle-feeding. The

individuals who would provide a shoulder to cry on when having problems with feeding are reversed compared to those who would provide support when feeling lonely when feeding. In the case of both breastfeeding and bottle-feeding 60.5% and 61% of participants respectively reported their partners to be the main support source for having a shoulder to cry on. Other main sources of emotional support included friends, midwives, sisters and health visitor for both emotional items and feeding methods.

Table 8.1: Antenatal social support. Perceived need of emotional support for breastfeeding and bottle-feeding

Frequency	Someone to call on when feeling alone whilst <u>breastfeeding</u>	Someone to call on when feeling alone whilst <u>bottle-feeding</u>	A shoulder to cry on when having problems with <u>breastfeeding</u>	A shoulder to cry on when having problems with <u>bottle-feeding</u>
Never	2.5% (n=2)	8% (n=6)	2.5% (n=2)	8% (n=6)
Sometimes	71.6% (n=58)	74.7% (n=56)	81.5% (n=66)	76% (n=57)
Frequently	25.9% (n=21)	17.3% (n=13)	16% (n=13)	16% (n=12)

Table 8.1 (above) shows the frequency of perceived need for emotional support for both breastfeeding and bottle-feeding at the antenatal stage. It can be seen that the proportion of participants who perceive that they would never require emotional support is the same for feeling lonely when feeding, and for having a shoulder to cry on when facing problems with breastfeeding (2.5%) and bottle-feeding (8%), although there is a noticeable difference between the feeding methods. A greater proportion of participants reported that they would sometimes need to have a shoulder to cry on when having problems with breastfeeding and bottle-feeding than reported that they would sometimes require someone to call on when feeling lonely whilst breastfeeding and bottle-feeding. Sixteen percent of participants reported that they would require a shoulder to cry on when having problems with both breastfeeding and bottle-feeding. However, a larger proportion of participants stated that they would require someone to call on when feeling lonely with breastfeeding (25.9%) than when bottle-feeding (17.3%).

Overall, the sources of emotional support are consistent between breastfeeding and bottle-feeding, although different sources are most often required when feeling lonely whilst feeding, and providing a shoulder to cry on when having problems with feeding. Conversely, the number of participants indicating that they would never require emotional support differs between infant feeding methods with more participants indicating that they would never require emotional support for bottle-feeding than for breastfeeding. Additionally, a higher proportion of participants stated that they would frequently need someone to call on when lonely whilst breastfeeding than whilst bottle-feeding, and further, a greater proportion of participants indicated that they would sometimes need a shoulder to cry on when having problems with breastfeeding than with bottle-feeding. Generally, therefore, antenatal participants indicate that they believe that they would require more emotional support for breastfeeding than for bottle-feeding. The second type of social support to be examined here, tangible support is presented below.

6.3.1.2 Antenatal stage: tangible support

Tangible support represents practical support provided by a person or group in order to help an individual. In this study, tangible support was represented on the Breast and Bottle-feeding Social Support Questionnaire by two items. Firstly, support involving small practical jobs (for example, doing the shopping or making a cup of tea) were assessed and secondly, support concerning practical help to keep things in order around the home (for example, doing the laundry, keeping a general routine) was considered.

The two most commonly cited sources for help with practical jobs whilst both breastfeeding and bottle-feeding are partner (76.5% and 80% respectively for breastfeeding and bottle-feeding) and participants' mother (16% and 14.7 % for breastfeeding and bottle-

feeding respectively). Friends are also noted as being a source of help regarding practical jobs for both feeding methods. However midwife and sister are cited as sources of support for practical jobs for breastfeeding whereas partners' family provide such help for bottle-feeding. Interestingly, whilst all participants stated a source of support who could help with practical jobs for breastfeeding, 2.5% of participants stated that no one would provide this form of tangible support for bottle-feeding.

Partner (76.5% and 74.7% respectively for breastfeeding and bottle-feeding) and participants' mother (17.3% and 20% respectively for breastfeeding and bottle-feeding) were also the most frequently reported sources of support concerning practical help to maintain a routine. As was the case for help with practical jobs, midwife and sister were cited as sources of support who would help participants to maintain a routine in the home. However, unlike support with practical jobs when breastfeeding, 2.5% of participants did not indicate a source for help with a routine when breastfeeding.

Table 8.2: Antenatal social support. Perceived need of tangible support for breastfeeding and bottle-feeding.

Frequency	Help with practical jobs whilst <u>breastfeeding</u>	Help with practical jobs whilst <u>bottle-feeding</u>	Help with maintaining a routine whilst <u>breastfeeding</u>	Help with maintaining a routine whilst <u>bottle-feeding</u>
Never	1.2% (n=1)	8% (n=6)	4.9% (n=4)	8% (n=6)
Sometimes	43.2% (n=35)	54.7% (n=41)	49.4% (n=40)	60% (n=45)
Frequently	55.6% (n=45)	37.3% (n=28)	45.7% (n=37)	32% (n=24)

The frequency with which participants expressed that they would need tangible support for breastfeeding and bottle-feeding is presented in table 8.2 above. For both infant feeding methods a higher proportion of participants indicated that they would “sometimes” require help with maintaining a routine than would require help with practical jobs (49.4% vs

43.2% for breastfeeding, and 60% vs 54% for bottle-feeding). In contrast, a higher proportion of participants reported that they would require help with practical jobs frequently (55.6% and 37% for breastfeeding and bottle-feeding respectively) than help with the day to day routine (45.7% and 32% for breastfeeding and bottle-feeding respectively). Examining the differences between the infant feeding methods, however, it is clear that the majority of participants believe that tangible support overall is required more frequently for breastfeeding than for bottle-feeding.

In summary, there is little difference between the most commonly cited sources of social support for practical jobs and help with the routine for both infant feeding methods.

Although both examples of tangible support are more likely to be reported as required frequently for breastfeeding than for bottle-feeding, help with practical jobs is reported as being frequently needed by participants more often than assistance with the routine.

Sources and frequency of need for informational support are presented below.

6.3.1.3 Antenatal stage: informational support

Informational support is the provision of information required by individuals. The items representing informational support on the Breast and Bottle-feeding Social Support Questionnaire concerned firstly, advice when having problems with breastfeeding or bottle-feeding and secondly, advice concerning feeding methods and techniques.

The most commonly reported source of informational support is quite different to those indicated by participants for emotional and tangible support. Both for advice concerning problems, and advice related to feeding methods, the midwife was the most commonly reported source of informational support. In the case of breastfeeding, 67.9% and 75.3% (for form one and form two) of participants indicated that the midwife was the main source

informational support, and for bottle-feeding, 48% and 52% cited the midwife as the major source of this type of support for form one and form two respectively. These results further show that proportionately fewer participants indicated the midwife as a source of informational support for bottle-feeding than for breastfeeding. Participants' mother was the second most commonly reported source of informational support for both methods of feeding. Interestingly, the effect of infant feeding method is reversed for this source, with more participants indicating that their mother was the major source of informational support for bottle-feeding (26.7% and 16% for forms one and two respectively) than for breastfeeding (13.6% for form one, and 8.6% for form two). Less frequently reported sources of informational support for both breastfeeding and bottle-feeding included health visitor and friends. Only one participant indicated that her partner would be a main source of advice concerning problems with bottle-feeding.

Table 8.3: Antenatal social support. Perceived need of informational support for breastfeeding and bottle-feeding.

Frequency	Advice when experiencing problems with <u>breastfeeding</u>	Advice when experiencing problems with <u>bottle-feeding</u>	Advice concerning methods and techniques for <u>breastfeeding</u>	Advice concerning methods and techniques for <u>bottle-feeding</u>
Never	1.2% (n=1)	8% (n=6)	1.2% (n=1)	10.7% (n=8)
Sometimes	84% (n=68)	85.3%(n=64)	86.4% (n=70)	84% (n=63)
Frequently	14.8% (n=12)	6.7% (n=5)	12.3% (n=10)	5.3% (n=4)

It can be seen in table 8.3 (above) that a relatively equal proportion of participants who completed the breastfeeding and the bottle-feeding section of the questionnaire believe that they would require informational support for breastfeeding and bottle-feeding “sometimes”. However, for both advice concerning problems, and advice concerning feeding methods approximately double the percentage of participants responded that they would require informational support frequently for breastfeeding than for bottle-feeding.

Additionally, a higher proportion of participants indicated that they would never require informational support for bottle-feeding than for breastfeeding.

In brief, there is less comparison to be made between the two forms of informational support than has been possible between the forms of emotional and tangible support discussed previously. Although the most commonly cited sources and the proportion of participants “sometimes” requiring this type of support is comparable between breastfeeding and bottle-feeding there are differences between the infant feeding methods both in terms of the relative proportion of sources and extreme (“never” and “sometimes”) levels of perceived need of informational support. Similar comparisons can also be made in the case of appraisal support, presented below.

6.3.1.4 Antenatal stage: appraisal support

Appraisal support concerns encouragement and the instilling of the capacity for self-evaluation. Appraisal support was measured using two different forms related to reassurance when worrying about breast or bottle-feeding, and reassurance that breast or bottle-feeding is being done correctly

Midwife was the most commonly cited source of reassurance when both worrying about breastfeeding or bottle-feeding, and that breast or bottle-feeding are being carried out correctly. However, unlike informational support, a higher proportion of participants suggested midwife as the main source of support when worrying about bottle-feeding (40%) than when worrying about breastfeeding (35.8%). Yet, a much greater proportion of participants indicated the midwife as the main source of reassurance that breastfeeding is being carried out correctly (75.3%) than bottle-feeding (52%). Partner was the second most frequently and relatively equally reported source of support when worrying about

breastfeeding (25.9%) and bottle-feeding (24%). However, the second most commonly cited support source of reassurance that infant feeding is being carried out correctly differed between the feeding methods with health visitor being the second most cited source for breastfeeding, and participants’ mother being the second most commonly cited source for bottle-feeding. Despite this difference in the order of sources, a comparable proportion of participants indicated health visitor as a source of reassurance of feeding technique for both breastfeeding (8.6%) and bottle-feeding (8%).

Table 8.4: Antenatal social support. Perceived need of appraisal support for breastfeeding and bottle-feeding.

Frequency	Reassurance when worrying about <u>breastfeeding</u>	Reassurance when worrying about <u>bottle-feeding</u>	Reassurance that feeding methods being carried out correctly for <u>breastfeeding</u>	Reassurance that feeding methods being carried out correctly for <u>bottle-feeding</u>
Never	1.2% (n=1)	12% (n=9)	2.5% (n=2)	12% (n=9)
Sometimes	82.7% (n=67)	80% (n=60)	87.7% (n=71)	81.3% (n=61)
Frequently	16% (n=13)	8% (n=6)	9.9% (n=8)	6.7% (n=5)

The frequency of need for appraisal support presented in table 8.4 (above) is comparable to that of informational support, with the majority of participants indicating that they would require reassurance regarding both problems and technique breastfeeding and bottle-feeding “sometimes”. Again, similar to the previous section of results, a larger proportion of participants report that they would require appraisal support frequently for breastfeeding than for bottle-feeding, while additionally, a far greater proportion of participants indicate that they would never require appraisal support for bottle-feeding than for breastfeeding.

Sources of appraisal support are, therefore, affected by both infant feeding method, and the form of appraisal support. Perceived need for appraisal support is effected by infant feeding method at the extremes of the “need” scale (i.e. “never” and “frequently”),

although approximately equal proportions of participants who completed the scale believed that they would require both forms of appraisal support “sometimes” for both breastfeeding and bottle-feeding.

6.3.1.5 Summary of antenatal stage social support

The first finding to be addressed here is the differences between the sources reported for emotional and tangible support, and those reported for informational and appraisal support. As has been discussed, either partners or mothers of participants are reported most frequently as being the main source of emotional and tangible support, whereas midwives are the most frequently reported sources for both informational and appraisal support.

The second finding to be addressed concerns the frequency of need for support types. A greater proportion of participants indicated that they would require tangible support frequently compared to other types of support for breastfeeding and bottle-feeding. Further, overall, most participants believe that they would require emotional, informational and appraisal support “sometimes” rather than “never” or “frequently”.

Thirdly, with regard to infant feeding method, in general, participants perceive breastfeeding as a method that requires a higher degree of social support than bottle-feeding. It is the “never” and “frequently” ends of the scale where this difference is most noticeable, with more participants stating that they would never need support for bottle-feeding than breastfeeding, and also more participants indicating that they would frequently require social support for breastfeeding rather than bottle-feeding. Therefore, when asked to consider social support required for breastfeeding and bottle-feeding, it would appear that pregnant women in this study believe that they would require more social support for breastfeeding than for bottle-feeding.

To sum up, for antenatal social support, there are marked differences in the types of social support in terms of the sources from which these types would originate. Additionally, the perceived need for social support is dominated by the method of infant feeding to which the social support is aimed. Hitherto, the sources, types and amount of social support that participants perceive they would require after the birth of their baby have been examined for the antenatal stage. The analysis of social support will now turn to the source, type and amount of social support in the light of participants' infant feeding experiences at the postnatal stages of the study, with the aim of discovering whether infant feeding experience effects social support for breastfeeding and bottle-feeding. The facets of breastfeeding social support will be examined between sole breastfeeders and mixed feeders (those who have had experience of breastfeeding and bottle-feeding), and additionally the facets of bottle-feeding social support will be investigated between sole bottle-feeders and mixed feeders.

6.3.2 The effect of infant feeding experience on breast and bottle-feeding social support.

In order to examine the effect of infant feeding experience on social support, the results from stages two and three of the study were analysed in the light of the breast and bottle-feeding experience of the participants at each stage. To recap, at the postnatal stages, participants who had solely breastfed their babies since delivery were requested only to complete the breastfeeding section of the Breast and Bottle-feeding Social support Questionnaire. Likewise, participants who had only bottle-fed their babies since delivery were instructed to complete only the bottle-feeding section of the questionnaire. Those participants who had at some point or who were currently breastfeeding and bottle-feeding were asked to complete both sections of the questionnaire.

As was the case with the analysis of the antenatal social support data, the results of the postnatal study will be presented as frequencies of sources and level of perceived need of social support for both breastfeeding and bottle-feeding. To allow the effect of infant feeding experience to be taken into account in the light of the “types” of participants who completed the breast and bottle-feeding sections of the questionnaires, the following two comparisons will be made:

- i. Breastfeeding social support: comparison between sole breastfeeders and mixed feeders.
- ii. Bottle-feeding social support: comparison between sole bottle-feeders and mixed feeders.

For the purposes of this study, sole breastfeeders are defined as those participants who have only breastfed or given their babies expressed breast milk since birth. Sole bottle-feeders are those who have only bottle-fed their babies formula since birth, and mixed feeders are those participants who have had experience of both infant feeding methods since delivery. Comparisons between infant feeding methods will be presented in turn with reference to the source, type and perceived need of social support.

6.3.2.1 Breastfeeding Social Support: Comparison between breastfeeders and mixed feeders

Twenty-five sole breastfeeders and 26 mixed feeders completed the breastfeeding section of the Breast and Bottle-feeding Social Support Scale at stage two. The number of participants and the number of women exclusively breastfeeding their baby declined by the third stage of the study, leaving six breastfeeders and 38 mixed feeders at stage three. The

first facet of social support to be addressed in the light of infant feeding experience here is the main source of social support.

Regarding emotional support, mother was the most frequently reported source of someone to call on when alone for breastfeeders and mixed feeders at both postnatal stages. Partner was the second most frequently reported source that would be called upon when mixed feeders were feeling lonely, whereas the second most frequently reported source for breastfeeders was their sister, with partner as the third most commonly reported.

Conversely, breast and mixed feeders, in descending order, would call on partner and mother most frequently in order to have a shoulder to cry on when experiencing problems with breastfeeding. Partner and mother were also the first and second most frequently reported sources of tangible support at both stages apart from breastfeeders at stage three who equally assigned their partners, mothers and “no one” as the main source of tangible support regarding maintaining the routine.

In the case of informational support, midwife was cited most often by breast and mixed feeders at stage two as a main support source, with health visitor being the second most commonly cited source. However, at stage three, health visitor was the most commonly cited source of informational support for breastfeeders and mixed feeders, apart from for informational support regarding breastfeeding method and technique, for which mixed feeders jointly assigned health visitor and midwife as the most often cited source of this support.

Midwife was the most commonly reported source of appraisal support when worrying about breastfeeding by both feeding groups at stage two. Regarding appraisal support concerning reassurance that breastfeeding is being carried out correctly, midwife and partner were the first and second most frequently reported source for mixed feeders.

Midwife was also the most commonly cited source of this type of reassurance for breastfeeders, but partner and health visitor were equally reported as the second source of this type of support. At stage three, midwife and health visitor were jointly the most popular sources of reassurance that breastfeeding is being carried out correctly for breastfeeders, whereas mixed feeders reported midwife as a more popular choice of appraisal support than health visitor. By contrast, health visitor was the most commonly cited form of reassurance regarding worries over breastfeeding problems at stage three for mixed feeders whereas for breastfeeders, partner was the most frequently reported source.

In brief, the sources of social support are relatively similar between feeding experience groups within each stage. Perhaps the most obvious difference is that between the postnatal stages concerning the main source of appraisal support, as the majority of participants at stage two indicate that their midwife would be the main source of this support, whereas at stage three, the most frequently reported main source was health visitor and partner. The sources of social support cited by participants raises the issue of availability; if for example, midwives offer more appraisal support than health visitors at stage two, but this is reversed at stage three, this change could be due to the availability of these sources at the time of assessment, rather than their capability of providing such support. The next section of this comparison between breastfeeders and mixed feeders concerns the frequency of perceived need of emotional, tangible, informational and appraisal support at stages two and three according to infant feeding experience.

The perceived need for support by breastfeeders and mixed feeders at the postnatal stages of the study are reported separately for each type of support. In order to aid the discussion, tables of the frequency of perceived need are provided for each type of support below.

Table 9.1: Frequency of perceived need for breastfeeding emotional support for breastfeeders and mixed feeders at stage 2

Frequency	<u>Breastfeeders:</u> Someone to call on when feeling alone whilst breastfeeding	<u>Mixed feeders:</u> Someone to call on when feeling alone whilst breastfeeding	<u>Breastfeeders:</u> A shoulder to cry on when having problems with breastfeeding	<u>Mixed feeders:</u> A shoulder to cry on when having problems with breastfeeding
Never	8% (n=2)	19.2% (n=5)	32% (n=8)	26.9% (n=7)
Sometimes	76% (n=19)	57.7% (n=15)	60% (n=15)	34.6% (n=9)
Frequently	16% (n=4)	23.1% (n=6)	8% (n=2)	38.5% (n=10)

Table 9.2: Frequency of perceived need for breastfeeding emotional support for breastfeeders and mixed feeders at stage 3

Frequency	<u>Breastfeeders:</u> Someone to call on when feeling alone whilst breastfeeding	<u>Mixed feeders:</u> Someone to call on when feeling alone whilst breastfeeding	<u>Breastfeeders:</u> A shoulder to cry on when having problems with breastfeeding	<u>Mixed feeders:</u> A shoulder to cry on when having problems with breastfeeding
Never	16.7% (n=1)	5.3% (n=2)	50% (n=3)	21.1% (n=8)
Sometimes	66.7% (n=4)	73.7% (n=28)	50% (n=3)	63.2% (n=24)
Frequently	16.7% (n=1)	21.1% (n=8)	0% (n=0)	15.8% (n=6)

Tables 9.1 and 9.2 show the perceived need for emotional support for breastfeeding across both infant feeding groups at stages two and three of the study. Perhaps the most striking difference between breastfeeders and mixed feeders at stage two is the difference between the proportion of participants who reported that they would require emotional support frequently, particularly needing a shoulder to cry on when experiencing problems (8% and 38.5% for breast and mixed feeders respectively). Interestingly, more mixed feeders than breastfeeders believed that they would never need to call on someone when alone whilst feeding at stage two, whereas conversely, more breastfeeders than mixed feeders indicated that they would never require a shoulder to cry on when experiencing problems with breastfeeding. The greater proportion of mixed feeders requiring emotional support frequently compared with breastfeeders is perpetuated at stage three. However, contrary to

stage two, more breastfeeders at stage three reported that they would never need emotional support compared with mixed feeders.

Table 10.1: Frequency of perceived need for breastfeeding tangible support for breastfeeders and mixed feeders at stage two

Frequency	<u>Breastfeeders:</u> Help with practical jobs whilst breastfeeding	<u>Mixed feeders:</u> Help with practical jobs whilst breastfeeding	<u>Breastfeeders:</u> Help with maintaining a routine whilst breastfeeding	<u>Mixed feeders:</u> Help with maintaining a routine whilst breastfeeding
Never	0% (n=0)	7.7% (n=2)	0% (n=0)	11.5% (n=3)
Sometimes	44% (n=11)	38.5% (n=10)	68% (n=17)	42.3% (n=11)
Frequently	56% (n=14)	61.5% (n=14)	32% (n=8)	46.2% (n=12)

Table 10.2: Frequency of perceived need for breastfeeding tangible support for breastfeeders and mixed feeders at stage three

Frequency	<u>Breastfeeders:</u> Help with practical jobs whilst breastfeeding	<u>Mixed feeders:</u> Help with practical jobs whilst breastfeeding	<u>Breastfeeders:</u> Help with maintaining a routine whilst breastfeeding	<u>Mixed feeders:</u> Help with maintaining a routine whilst breastfeeding
Never	0% (n=0)	0% (n=0)	33.3% (n=2)	7.9% (n=2)
Sometimes	66.7% (n=4)	55.3% (n=21)	50% (n=3)	55.3% (n=20)
Frequently	33.3% (n=2)	44.7% (n=17)	16.7% (n=1)	44.7% (n=16)

Referring to table 10.1 (above) the most noticeable difference between the infant feeding groups at stage two for tangible support, is that a small proportion of mixed feeders indicated that they would never need this support while no sole breastfeeders asserted this. On the other hand at stage three (refer to table 10.2), both more breastfeeders and mixed feeders stated that they would never require help with maintaining a routine compared to no breast or mixed feeders asserting that they would never need help with practical jobs. Further, although the difference is not as great as that for emotional support, more mixed feeders report that they would require tangible support frequently than breastfeeders at both stages of the study. However, more breastfeeders and mixed feeders reported that they would frequently need help with practical jobs more than help with maintaining a routine,

apart from mixed feeders at stage three, for whom the need of frequent tangible support was equal for both forms. Tables 11.1 and 11.2 show the perceived need for informational support by breastfeeders and mixed feeders at the postnatal stages of the study.

Table 11.1: Frequency of perceived need for breastfeeding informational support for breastfeeders and mixed feeders at stage two

Frequency	<u>Breastfeeders:</u> Advice when experiencing problems with breastfeeding	<u>Mixed feeders:</u> Advice when experiencing problems with breastfeeding	<u>Breastfeeders:</u> Advice concerning methods and techniques for breastfeeding	<u>Mixed feeders:</u> Advice concerning methods and techniques for breastfeeding
Never	8% (n=2)	15.4% (n=4)	8% (n=2)	11.5% (n=3)
Sometimes	88% (n=22)	50% (n=13)	80% (n=21)	61.5% (n=16)
Frequently	4% (n=1)	34.6.1% (n=9)	8% (n=3)	26.9% (n=7)

Table 11.2: Frequency of perceived need for breastfeeding informational support for breastfeeders and mixed feeders at stage three

Frequency	<u>Breastfeeders:</u> Advice when experiencing problems with breastfeeding	<u>Mixed feeders:</u> Advice when experiencing problems with breastfeeding	<u>Breastfeeders:</u> Advice concerning methods and techniques for breastfeeding	<u>Mixed feeders:</u> Advice concerning methods and techniques for breastfeeding
Never	16.7% (n=1)	7.9% (n=3)	16.7% (n=1)	18.4% (n=7)
Sometimes	83.3% (n=5)	84.2% (n=32)	83.3% (n=5)	76.3% (n=29)
Frequently	0% (n=0)	7.9% (n=3)	0% (n=0)	5.3% (n=2)

At stage two (refer to table 11.1), the major differences between mixed feeders and breastfeeders in the case of informational support again lies in the reporting of either never or frequently requiring this type of support. More mixed feeders than breastfeeders at this stage stated that they would never require informational support, and similarly, more mixed feeders than breast feeders stated that they would frequently require this type of support. The most common response by breastfeeders was that they would require

informational support sometimes. The difference between breastfeeders and mixed feeders with regard to “never” and “sometimes” responses is less pronounced in stage three (refer to table 11.2), with the majority of participants indicating that they would require informational support sometimes regardless of infant feeding experience.

Table 12.1: Frequency of perceived need for breastfeeding appraisal support for breastfeeders and mixed feeders at stage two

Frequency	<u>Breastfeeders:</u> Reassurance when worrying about breastfeeding	<u>Mixed feeders:</u> Reassurance when worrying about breastfeeding	<u>Breastfeeders:</u> Reassurance that feeding methods being carried out correctly for breastfeeding	<u>Mixed feeders:</u> Reassurance that feeding methods being carried out correctly for breastfeeding
Never	8% (n=2)	19.2% (n=5)	16% (n=4)	15.4% (n=4)
Sometimes	88% (n=22)	46.2% (n=12)	80% (n=20)	53.8% (n=14)
Frequently	4% (n=1)	34.6% (n=9)	4% (n=1)	30.8% (n=8)

Table 12.2: Frequency of perceived need for breastfeeding appraisal support for breastfeeders and mixed feeders at stage three

Frequency	<u>Breastfeeders:</u> Reassurance when worrying about breastfeeding	<u>Mixed feeders:</u> Reassurance when worrying about breastfeeding	<u>Breastfeeders:</u> Reassurance that feeding methods being carried out correctly for breastfeeding	<u>Mixed feeders:</u> Reassurance that feeding methods being carried out correctly for breastfeeding
Never	50% (n=3)	18.4% (n=7)	33.3% (n=2)	18.4% (n=7)
Sometimes	50% (n=3)	71.1% (n=27)	66.7% (n=4)	73.7% (n=28)
Frequently	0% (n=0)	10.5% (n=4)	0% (n=0)	7.9% (n=3)

In comparison to informational support, similar results were found for appraisal support at stage two (refer to table 12.1, above) as more mixed feeders stated that they would never require appraisal support than breastfeeders, and conversely that more mixed feeders would frequently require appraisal support than breastfeeders. Again, comparable to informational support, the most frequent response by breastfeeders at stage two was that they would sometimes require appraisal support. Apart from reassurance regarding

breastfeeding problems, this distribution is repeated at stage three for both breastfeeders and mixed feeders. However at stage three (refer to table 12.2) a far greater proportion of breastfeeders responded that they would never need appraisal support than mixed feeders than at stage two. Although, again, more mixed feeders than breastfeeders indicated that they would frequently require appraisal support, this difference is less pronounced than at stage two despite no breastfeeders stating that they would frequently require appraisal support at stage three.

Regarding frequency of need for each type of support, the main difference between breastfeeders and mixed feeders at stage two occurred due to the majority of breastfeeders stating that they would only require social support sometimes, compared to the majority of mixed feeders stating that they would require each type of support either never or frequently. The only exception to this was in the case of the first form of tangible support, when the majority of participants in both infant feeding groups indicated that they would frequently require this support. It is possible that in the case of the mixed feeders, as a proportion of these participants had changed to bottle-feeding due to problems that they encountered with breastfeeding, that they perceive carrying out the behaviour of breastfeeding as requiring a higher level of social support than those participants who have not experienced such difficulties. Although in most cases this difference was perpetuated between breastfeeders and mixed feeders at stage three, overall this difference was not as obvious as at stage two, with most responses of mixed feeders moving to "sometimes", particularly for informational and appraisal support.

In summary, there is little difference between sole breastfeeders and mixed feeders with regard to the most frequently reported sources of each type of social support. Additionally, the change in the main sources cited between emotional and tangible support and informational and appraisal support, is similar to that reported at the antenatal stage.

Therefore, significant others appear to play a major role in emotional and tangible support, whereas health professionals take the lead with regard to providing participants with informational and appraisal support. However, there is a difference between the stages with regard to the type of health professional most often cited. Whereas at stage two the midwife was most the most frequently cited health professional concerning informational and appraisal support, health visitor is the most commonly reported health professional suggested as a source of these types of support at stage three. In the following section, a similar analysis is carried out for the sources and frequency for need for bottle-feeding social support.

6.3.2.2 Bottle-feeding Social Support: Comparison between bottle-feeders and mixed feeders

Eight sole bottle-feeders and 27 mixed feeders completed the bottle-feeding section of the Breast and Bottle-feeding Social Support Questionnaire at stage two of the study. At the third stage of the study, nine sole bottle-feeders⁵ and 40 mixed feeders completed the bottle-feeding section. The sources of each type of support for bottle-feeding will be discussed below, followed by an evaluation of the perceived need of each support type by bottle-feeders and mixed feeders.

Regarding emotional support at stage two, mixed feeders cited firstly mother and secondly their partner as the most common source of someone to call on when alone whilst bottle-feeding. However, more bottle-feeders regarded partner as the main source of emotional support, and the remaining participants each stated mother, sister, family and no one as the main source of this support. Partner and mother were again the most frequently cited sources of a shoulder to cry on when experiencing problems with bottle-feeding at stage

⁵ One participant completed only stages 1 and 3 of the longitudinal study.

two by mixed feeders, whereas although partner was the most common source reported by bottle-feeders, the remaining participants indicated that friends or no one would be the main sources of this form of emotional support. At stage three partner and mother were equally and most frequently reported as the main source of emotional support when participants were alone whilst bottle-feeding by both bottle-feeders and mixed feeders. On the other hand at stage three, “no one” was most frequently cited as the main source of a shoulder to cry on when having problems with bottle-feeding by bottle-feeders, and was jointly most frequently cited by mixed feeders with partner.

In the case of tangible support, for help with practical jobs, both bottle-feeders and mixed feeders indicated that firstly partner and secondly mother would be the main sources of support at both postnatal stages, although mixed feeders at stage three indicated “no one” as often as mother as a source of this type of support. This pattern was repeated for help with maintaining a routine for mixed feeders across both stages, and bottle-feeders at stage three. However, bottle-feeders at stage two reversed this order of frequency, placing mother as the most frequently cited source, and partner second.

Mother was reported as the most frequent source of informational support concerning advice about bottle-feeding problems by mixed feeders, and friends and health visitor were both most frequently cited by bottle-feeders at stage two. At stage three, mother was the most frequent source of support related to advice concerning bottle-feeding problems cited by bottle-feeders. Health visitor was consistently most commonly cited as the main source of advice related to bottle-feeding techniques at all stages by participants from both infant feeding groups (although bottle-feeders at stage two cited mother as jointly the most common source).

Regarding appraisal support, mother was most commonly cited as a main source of reassurance when worrying about bottle-feeding by bottle-feeders at both postnatal stages (jointly with “no one” and partner at stage two, and again jointly with “no one” and health visitor at stage three), and by mixed feeders at stage two. Friends are the most frequently cited sources of this support by mixed feeders at the third stage of the study. Concerning reassurance that bottle-feeding is being carried out correctly, Health visitor was the most commonly cited source of support by both feeding groups at stages two and three (although jointly with “no one” by bottle-feeders at stage two).

In brief, there is less consistency between the stages and the feeding experience groups regarding sources of tangible and emotional support compared to reported sources of informational and appraisal support. Further, both bottle-feeders and mixed feeders at stage three are more likely to report “no one” as the main source of bottle-feeding support than all participants completing this section at stage two. The remainder of the discussion continues the comparison of bottle-feeders and mixed feeders at stages two and three with regard to their level of perceived need for emotional, tangible, informational and appraisal support.

As was the case with the breastfeeding section, in order to aid the discussion, the frequencies of perceived need for each type of support for stages two and three will be presented in table form below. Each type of support will be dealt with in turn in the light of the infant feeding experience of the participants.

Table 13.1: Frequency of perceived need for bottle-feeding emotional support for bottle-feeders and mixed feeders at stage 2

Frequency	<u>Bottle-feeders:</u> Someone to call on when feeling alone whilst bottle- feeding	<u>Mixed feeders:</u> Someone to call on when feeling alone whilst bottle- feeding	<u>Bottle-feeders:</u> A shoulder to cry on when having problems with bottle-feeding	<u>Mixed feeders:</u> A shoulder to cry on when having problems with bottle-feeding
Never	25% (n=2)	22.2% (n=6)	37.5% (n=3)	37% (n=10)
Sometimes	50% (n=4)	55.6% (n=15)	62% (n=5)	55.6% (n=15)
Frequently	25% (n=2)	22.2% (n=6)	0% (n=0)	7.4% (n=2)

Table 13.2: Frequency of perceived need for bottle-feeders emotional support for bottle-feeders and mixed feeders at stage 3

Frequency	<u>Bottle-feeders:</u> Someone to call on when feeling alone whilst bottle- feeding	<u>Mixed feeders:</u> Someone to call on when feeling alone whilst bottle- feeding	<u>Bottle-feeders:</u> A shoulder to cry on when having problems with bottle-feeding	<u>Mixed feeders:</u> A shoulder to cry on when having problems with bottle-feeding
Never	11.1% (n=1)	25% (n=10)	55.6% (n=5)	57.5% (n=23)
Sometimes	55.6% (n=5)	65% (n=26)	44.4% (n=4)	35% (n=14)
Frequently	33.3% (n=3)	10% (n=4)	0% (n=0)	7.5% (n=3)

With reference to table 13.1 representing bottle-feeding emotional support for stage two, apart from mixed feeders stating that they would frequently require a shoulder to cry on when experiencing problems with bottle-feeding in comparison to no bottle-feeders stating this, bottle-feeders and mixed feeders generally follow approximately the same levels of perceived need for emotional support at this stage. At stage three (refer to table 13.2) it is apparent that more bottle-feeders than mixed feeders report that they would frequently require someone to call on when alone whilst bottle-feeding. Conversely, and similar to the findings at stage two, no bottle-feeders reported that they would frequently need a shoulder to cry on compared to 7.5% of mixed feeders.

Table 14.1: Frequency of perceived need for bottle-feeding tangible support for bottle-feeders and mixed feeders at stage 2

Frequency	<u>Bottle-feeders:</u> Help with practical jobs whilst bottle-feeding	<u>Mixed feeders:</u> Help with practical jobs whilst bottle-feeding	<u>Bottle-feeders:</u> Help with maintaining a routine whilst bottle-feeding	<u>Mixed feeders:</u> Help with maintaining a routine whilst bottle-feeding
Never	0% (n=0)	7.4% (n=2)	12.5% (n=1)	11.1% (n=3)
Sometimes	37.5% (n=3)	55.6% (n=15)	75% (n=6)	59.3% (n=16)
Frequently	62.5% (n=5)	37% (n=10)	12.5% (n=1)	29.6% (n=8)

Table 14.2: Frequency of perceived need for bottle-feeders tangible support for bottle-feeders and mixed feeders at stage 3

Frequency	<u>Bottle-feeders:</u> Help with practical jobs whilst bottle-feeding	<u>Mixed feeders:</u> Help with practical jobs whilst bottle-feeding	<u>Bottle-feeders:</u> Help with maintaining a routine whilst bottle-feeding	<u>Mixed feeders:</u> Help with maintaining a routine whilst bottle-feeding
Never	11.1% (n=1)	17.5% (n=7)	33.3% (n=3)	17.5% (n=7)
Sometimes	44.4% (n=4)	45% (n=18)	55.6% (n=5)	57.5% (n=23)
Frequently	44.4% (n=4)	37.5% (n=15)	11.1% (n=1)	25% (n=10)

Concerning tangible support, at both postnatal stages (refer to tables 14.1 and 14.2 above), more bottle-feeders than mixed feeders indicated that they would require help with practical jobs whilst bottle-feeding, whereas the reverse is true for help with maintaining a routine. For both feeding groups, more participants stated that they would never need tangible support at stage three than at stage two.

Table 15.1: Frequency of perceived need for bottle-feeding informational support for bottle-feeders and mixed feeders at stage 2

Frequency	<u>Bottle-feeders:</u> Advice when experiencing problems with bottle-feeding	<u>Mixed feeders:</u> Advice when experiencing problems with bottle-feeding	<u>Bottle-feeders:</u> Advice concerning methods and techniques for bottle-feeding	<u>Mixed feeders:</u> Advice concerning methods and techniques for bottle-feeding
Never	12.5% (n=1)	14.8% (n=4)	12.5% (n=1)	18.5% (n=5)
Sometimes	87.5% (n=7)	81.5% (n=22)	87.5% (n=7)	77.8% (n=21)
Frequently	0% (n=0)	3.7% (n=1)	0% (n=0)	3.7% (n=1)

Table 15.2: Frequency of perceived need of bottle-feeders informational support for bottle-feeders and mixed feeders at stage 3

Frequency	<u>Bottle-feeders:</u> Advice when experiencing problems with bottle-feeding	<u>Mixed feeders:</u> Advice when experiencing problems with bottle-feeding	<u>Bottle-feeders:</u> Advice concerning methods and techniques for bottle-feeding	<u>Mixed feeders:</u> Advice concerning methods and techniques for bottle-feeding
Never	22.2% (n=2)	30% (n=12)	33.3% (n=3)	35% (n=14)
Sometimes	77.8% (n=7)	65% (n=26)	66.7% (n=6)	60% (n=24)
Frequently	0% (n=0)	5% (n=2)	0% (n=0)	5% (n=2)

The reporting of the need for frequent informational support changes very little between the two postnatal stages of the study for these groups (refer to tables 15.1 and 15.2, above). However, as was the case with tangible support, more participants from both feeding groups indicated that they would never require informational support at stage three than at stage two. Examining each stage separately, there is little difference between bottle-feeders and mixed feeders with the majority of both groups reporting that they would need advice concerning problems with bottle-feeding or advice about bottle-feeding techniques sometimes.

Table 16.1: Frequency of perceived need for bottle-feeding appraisal support for bottle-feeders and mixed feeders at stage 2

Frequency	<u>Bottle-feeders:</u> Reassurance when worrying about bottle-feeding	<u>Mixed feeders:</u> Reassurance when worrying about bottle-feeding	<u>Bottle-feeders:</u> Reassurance that feeding methods being carried out correctly for bottle-feeding	<u>Mixed feeders:</u> Reassurance that feeding methods being carried out correctly for bottle-feeding
Never	37.5% (n=3)	29.6% (n=8)	50% (n=4)	29.6% (n=6)
Sometimes	62.5% (n=5)	63% (n=17)	50% (n=4)	70.4% (n=20)
Frequently	0% (n=0)	7.4% (n=2)	0% (n=0)	3.7% (n=1)

Table 16.2: Frequency of perceived need for bottle-feeders appraisal support for bottle-feeders and mixed feeders at stage 3

Frequency	<u>Bottle-feeders:</u> Reassurance when worrying about bottle-feeding	<u>Mixed feeders:</u> Reassurance when worrying about bottle-feeding	<u>Bottle-feeders:</u> Reassurance that feeding methods being carried out correctly for bottle- feeding	<u>Mixed feeders:</u> Reassurance that feeding methods being carried out correctly for bottle- feeding
Never	33.3% (n=3)	42.5% (n=17)	33.3% (n=3)	50% (n=20)
Sometimes	66.7% (n=6)	52.5% (n=21)	66.7% (n=6)	45% (n=18)
Frequently	0% (n=0)	5% (n=2)	0% (n=0)	5% (n=2)

Comparable to informational support there is little change between the stages regarding the need for frequent appraisal support by bottle-feeders and mixed feeders (refer to tables 16.1 and 16.2, above) with the majority of both groups indicating that they would need appraisal support sometimes. More bottle-feeders stated that they would never require appraisal support at stage two than at stage three, whereas a higher proportion of mixed feeders indicated that they would never need appraisal support at stage two than at stage three.

Overall, there is a greater difference in bottle-feeding social support between the stages of the study than between the infant feeding groups. It can be seen that between the stages, more participants cite “no one” and state that they would never need support at stage three than at stage two. Therefore more participants at stage three perceive that they do not require social support for bottle-feeding during the late postnatal period than the early postnatal stage.

In summary, concerning sources of social support, the greatest difference is between breast and bottle-feeding social support itself, with more bottle-feeders and mixed feeders relying on their health visitor for bottle-feeding social support, contrasted with a switch from midwife at stage two to health visitor at stage three for breastfeeding social support. These

results again brings into question the availability of sources, but in this case rather than this being different simply across time, these results also imply that infant feeding method might also have an effect on the sources of support available. Therefore, breastfeeders might have more access to midwives in the early postnatal stage than bottle-feeders, or those who have changed from breastfeeding to bottle-feeding. In comparison with breastfeeding social support, there is less stability of sources of bottle-feeding emotional and tangible support reported by bottle-feeders and mixed feeders, than between breastfeeders and mixed feeders within each stage.

The greatest effect of infant feeding experience on both breastfeeding and bottle-feeding social support is the frequency of perceived need for support. Regarding frequency of need for support, for both informational and appraisal support, a higher proportion of breastfeeders and mixed feeders stated that they would frequently require this support for breastfeeding than bottle-feeders and mixed feeders did for bottle-feeding informational and appraisal support.

6.3.2.3 Summary of Social Support

Overall, the results show that social support, both in terms of sources and perceived need, are vital to the infant feeding experience both in terms of stage of the experience (i.e. antenatal, early postnatal and late postnatal) and infant feeding behaviour performed. For all stages and experience groups there is a split between the types of sources of emotional and tangible support (predominantly family and friends), and the types of sources of informational and appraisal support (predominantly health professionals). Further, with few exceptions (i.e. tangible support) most participants believe that they would need more support for breastfeeding than for bottle-feeding.

The following section discusses the findings of the self-efficacy and social support analyses in the light of the theoretical concepts presented in chapter 3. The results pertaining to both theoretical perspectives will be addressed in turn, followed by an argument for the simultaneous investigation of both positions in the study of infant feeding.

6.4 Discussion

This chapter set out to report the results of the analyses concerning the investigation of self-efficacy and social support to infant feeding. The following pages will discuss the implications of the results of the self-efficacy and social support analyses for SET and the conceptualisation of social support presented in chapter 3 (refer to chapter 3, section 3.2.1). Firstly, the theoretical relevance of the results concerning self-efficacy will be considered, and secondly, the effect of the social support results on the conceptualisation of this theoretical construct in this thesis will be examined. Finally, the complementary nature of both self-efficacy and social support in developing an understanding of the maintenance of infant feeding will be appraised.

As stated in chapter 3 (refer to chapter 3, section 3.1.1), researchers (e.g. Bandura, 1977; Maddux, 1995) state that in order to fully understand the effect of self-efficacy expectancies regarding performing a behaviour it is necessary to measure the strength, magnitude and generality of these experiences. Further, it was contended that in order for self-efficacy to be comprehensively measured, both behaviour-specific and generalised measures of self-efficacy expectancies should be taken. Strength and magnitude of expectancies were measured by the scale scores, and in order to measure generality, the standardised scale of the GSES (Schwarzer & Jerusalem, 1995) was administered alongside the behaviour-specific scales. The results show that across both postnatal stages

of the study the participants' levels of general self-efficacy were consistent (i.e. there were no significant differences between them). However, levels of general self-efficacy were significantly higher at both postnatal stages than at the antenatal stage (stage one). As levels of generalised self-efficacy were not effected directly by infant feeding experience, it is possible therefore, that the experience of becoming a mother, which would of course include the experience of infant feeding, might positively effect levels of general personal mastery.

These results were mirrored by the results of the behaviour-specific breastfeeding and bottle-feeding self-efficacy measurements, as for both types of expectancy, there were no significant differences between the strength and magnitude of self-efficacy expectancies at stages two and three, but these postnatal scores were found to be significantly higher than the antenatal scores. From these results, as the levels of both generalised and behaviour-specific self-efficacy are analogous across the stages of the study, it could be argued that there are insufficient grounds for measuring both generalised and behaviour-specific expectancies (see, for example, Ford-Gilboe, 1997; Gillespie et al., 2000; Maciejewski et al., 2000, who only measured generalised self-efficacy expectancies). However, as shown by the analyses examining the effect of infant feeding experience on breastfeeding and bottle-feeding self-efficacy, there was an effect of experience on both behaviour-specific measures. This raises the question as to the explanation of the rise in behaviour-specific self-efficacy from the antenatal to the postnatal stages. As mentioned above, the change in the GSES scores between the stages could be regarded as being a result of the effect of becoming a mother, with a possible indirect effect of infant feeding as this is part of the experience. The explanation of the change in levels of personal mastery for breastfeeding and bottle-feeding between the stages cannot be so simply explained. It could be that behaviour-specific expectancies are raised by the transfer to motherhood, but equally they could be raised directly by infant feeding experiences, or by the heightened feelings of

general self-efficacy themselves. Either way, this provides weight to the contention made earlier in this thesis that both general and behaviour-specific measures should be made. Additionally, although the levels of all of the types of expectancies increase and remain the same at the same stages of the study, the actual degree of these expectancies are markedly different.

The most noticeable difference between the levels of self-efficacy expectancy is that between the breastfeeding scores, and those concerning bottle-feeding self-efficacy and the GSES. Across all stages of the study, levels of breastfeeding self-efficacy expectancies are significantly lower than those of bottle-feeding and general self-efficacy. Interestingly, at both the first and third stages of the study, there was no significant difference in the levels of personal mastery for bottle-feeding or general behaviour. By observing the scores throughout the stages of the study, it can be seen that breastfeeding is set apart from both bottle-feeding and generalised self-efficacy in terms of the comparably low levels of personal mastery of breastfeeding that participants display. These results clearly show that it is vital that both behaviour-specific and generalised measures of self-efficacy are made when investigating infant feeding (as, for example, in Lowe's, 1993, study of maternal confidence for labour). In the case of infant feeding, examining both generalised and behaviour-specific self-efficacy expectancies, firstly allows accurate measurement of the dimensions of self-efficacy itself (i.e. magnitude, strength and generality), and secondly permits examination of the differences between separate behaviours in a choice situation such as infant feeding. By ignoring either the generality of self-efficacy expectancies, or expediently disregarding behaviour-specific measures, it would not be possible either to fully understand the differences in the operationalisation of the internal processes for these behaviours, or the effect that general levels of personal mastery can have on specific behaviours. The following discussion moves on from understanding the internal processes

involved in the maintenance of infant feeding, to the perceptions of external influences through the medium of social support.

It was proposed in the conceptualisation of social support in this thesis (refer to chapter 3, section 3.2.1) that in order to fully apply social support to infant feeding, sources, types (emotional, tangible, informational and appraisal, House, 1981) and level of perceived need of social support should be investigated. The results have shown that the components of source and type are particularly intertwined. In general, throughout the stages, and across the infant feeding experience groups, it is health professionals who according to participants would provide informational and appraisal support, and significant others (most commonly partner and mother) who provide emotional and tangible support. Further, in terms of need, tangible and emotional support are generally perceived as being required more often than informational and appraisal support. It would therefore appear that more, and very particular support, is required from significant others than health professionals. Without measuring the three facets of social support mentioned above (source, type and perceived need, also measured by Matich & Sims, 1992), this profile of the types of supporter, and their role in providing support could not be achieved. The differences between the level of support required for breastfeeding and bottle-feeding also provide weight to the conceptualisation of social support as provided in this thesis, and further the simultaneous analysis of self-efficacy and social support with regard to infant feeding.

As discussed above, the measurements of self-efficacy made in longitudinal study were designed to increase understanding of the internal processes involved in the performance of the behaviours of breastfeeding and bottle-feeding through the examination of levels of personal mastery. The measurement of social support, on the other hand, was designed to understand the subjective account of external processes effecting infant feeding through

the concept and underlying facets of social support. As noted, the results of the self-efficacy analysis showed participants to hold significantly lower levels of personal mastery for breastfeeding than for either bottle-feeding or general behaviour. The results of the social support analyses showed that in general (with the exception of tangible support), most participants felt that they needed social support more often for breastfeeding than for bottle-feeding. This could be interpreted, therefore, that as mothers' internal resources for dealing with breastfeeding are low, it is necessary for them to look for external resources to fill this void. These results lend weight to the proposal that measurement of social cognitive processes such as self-efficacy should be examined alongside external processes such as social support due to the complementary understanding, and enlightenment that such simultaneous measurement and analysis affords. In order to fully understand the nature of the relationship between internal and external processes and pressures, it is necessary to look to both social characteristics and experiences in order to clarify the relationship between these contrary and yet complementary processes.

The following chapter continues the investigation of the maintenance of infant feeding through the examination of sociodemographic variables, birth circumstances and infant feeding behaviours. Additionally, qualitative analysis will be presented to supplement the understanding of the entire infant feeding experience of the first time mothers in this sample.

External Variables and the Infant Feeding Experience

This chapter will use a combination of qualitative and quantitative methodologies to explore and understand the infant feeding experience of participants taking part in the study. The quantitative and qualitative instruments upon which the results in this chapter are based were first tested in the antenatal and postnatal pilot studies, which can be observed in the appendix (refer to appendix 17). In relation to this chapter, firstly, sociodemographic variables will be examined with regard to infant feeding behaviour and breastfeeding duration. Secondly, both questionnaire data, and data collected from the qualitative study will be presented in order to identify issues relating to the birth and infant feeding experience that are pertinent to the maintenance of infant feeding behaviour.

7.1 The effect of sociodemographic variables on infant feeding behaviour and maintenance

The three sociodemographic variables of age, education and marital status were examined in relation to infant feeding behaviour and breastfeeding duration. Age and education were identified in the literature as being associated with breastfeeding duration (refer to chapter 3, section 3.3.3). Specifically, researchers have found that older mothers are more likely to breastfeed for longer than younger mothers (Cooper et al., 1993; Feinstein et al., 1986; Scott et al., 1990). Additionally, increased levels of educational attainment have been found to be positively associated with breastfeeding duration (Cooper et al., 1993; Feinstein et al., 1986; Ryan et al., 1990; Scott et al., 1999). In order to investigate the effect of these variables on the overall infant feeding experience of first time mothers, age and education were examined in relation to infant feeding intention and initial behaviour, as

well as the duration of breastfeeding. Marital status was also investigated as to its effect on intention, initiation and duration. Each of these three sociodemographic variables are examined in turn below.

7.1.1 The effect of age

The mean age of participants at stage one was 27.4 years (further descriptive statistics are available in appendix 24). Intention to breastfeed or bottle-feed was assessed by a question on the Antenatal Sociodemographic Variables Questionnaire. Seventy-two participants stated that they intended to breastfeed, 11 stated that they intended to bottle-feed and one indicated that she was undecided as to which infant feeding method to choose. One participant did not state an intended feeding method. The mean age of intended breastfeeders was 28 (standard deviation = 4.47). The mean age of intended bottle-feeders was 22.73 (standard deviation = 6.47). Spearman's rho correlation coefficient showed there to be a significant negative correlation between age of participant and intended method of feeding ($r = -.267, p < 0.05$). In other words, participants who intend to bottle-feed tend to have a lower age than those who intend to breastfeed.

The ages of participants who initially breastfed or bottle-feed were also examined. In order to assess participants' initial method of feeding, 71 participants at stage two of the study indicated an initial infant feeding method. Sixty-two participants breastfed following delivery (mean age = 28.1 years, standard deviation = 5.45). Nine participants solely bottle-fed after delivery (mean age = 24.78, standard deviation = 5.89), although one of these participants stated that she tried breastfeeding once, thirty days after delivery. There was no significant correlation between age and infant feeding behaviour following delivery ($r = -.192, p = .109$), despite the apparent trend in that direction.

Age was also investigated with regard to its relationship to the duration of breastfeeding. Twenty-six participants reported that they ceased breastfeeding before the time that was regarded as the early antenatal period in this study (12 weeks). Of these, ten participants stopped breastfeeding within seven days of delivery (mean age = 24 years). Five participants stated that they breastfed for two weeks (mean age = 25.8 years), and seven reported that they stopped breastfeeding between three and six weeks after delivery (mean age = 29.4). Finally, four participants breastfed their babies for between seven and ten weeks (mean age = 31 years). Spearman's rho correlation showed there to be a significant positive correlation between age and duration of breastfeeding ($r = .519, p < 0.01$). Therefore, this analysis shows that age of participants increases with increased duration of breastfeeding.

In summary, it can be seen from the above analysis that age has an effect both on intended method of feeding, and duration of breastfeeding within the early antenatal period.

Although there was a trend in the direction of older mothers being initial breastfeeders and younger mothers being initial bottle-feeders, there was no significant correlation between age and method in this case. Intention, initial method and duration of breastfeeding are examined in terms of marital status below.

7.1.2 The effect of marital status

Of the antenatal sample, 57.6% of participants were married, 27.1% were cohabiting, 4.7% were engaged, and 10.6% were single. Due to the low numbers of participants in the single and engaged groups it was decided to analyse the data in terms of frequencies rather than perform a statistical test such as Chi-square. As mentioned with regard to the analysis of age above, 72 participants stated an intention to breastfeed at stage one of the study. Of these intended breastfeeders, 63.9% were married, 26.4% were cohabiting, 5.6% were

single, and 4.2% were engaged. In contrast, of the 11 bottle-feeders, 45.5% were single, 27.3 were cohabiting, 18.2% were married, and 9.1% were engaged. There appears, therefore, to be a definite contrast between the largest groups within each feeding method, with married couples being the largest group for breastfeeding, and single participants being the largest group for bottle-feeding. However, interestingly, the proportion of cohabiting participants was comparable within both feeding methods.

The marital status of participants was also examined in terms of initial infant feeding behaviour. Of the 62 participants who initially breastfed, 64.5% were married, 25.8% were cohabiting, 8.1% were single, and 1.6% were engaged. Of the nine initial bottle-feeders, 33.3% were married or cohabiting respectively, 22.2% were engaged, and 11.1% were single.

With regard to duration of breastfeeding, the marital status of the participants in each of the five groups who ceased breastfeeding prior to twelve weeks was examined. Table 17 below shows the frequency of type of marital status for each duration group.

Table 17: Frequency of marital status with regard to duration of breastfeeding.

Marital status	0-7 days	2 weeks	3-6 weeks	7-10 weeks
N	10	5	7	4
Single	20%	20%	14.3%	0%
Cohabiting	30%	20%	42.9%	50%
Married	40%	60%	42.9%	50%
Engaged	10%	0%	0%	0%

It is difficult to make comparisons between the marital status of participants due to their unequal distribution across the duration groups. However, more married participants than single participants ceased to breastfeed in the early antenatal period.

To sum up, the most noticeable difference in the effect of marital status on infant feeding is that between intention and initial behaviour. Although the largest group within the intended breastfeeders comprised married participants, and the largest group within the intended bottle-feeders was single participants, on examination of participants whose initial infant feeding behaviour was bottle-feeding, married participants were the largest group and single participants were the smallest group. This change in proportions of groups regarding marital status might suggest a shift between intention and initial behaviour. However, it must also be remembered that there was a certain degree of attrition between stages one and two of the study, and so this shift might be due to the characteristics of the participants who did not complete the study rather than a change governed by marital status. The following section examines intention, initial behaviour and duration of breastfeeding with regard to the final sociodemographic characteristic to be examined here, that of educational attainment.

7.1.3 The effect of education

Education of participants was divided into two groups: those who had stopped education prior to the A level stage, and those who had continued their education to A level stage or beyond (Cooper et al., 1993). Again, similar to the analysis of the effect of age on infant feeding, due to the disproportionate numbers of participants in the educational groups who wanted to breast or bottle-feed, frequencies rather than statistical tests were used to examine the results. Of the 72 intended breastfeeders at the antenatal stage, 62.5% had an education of at least A level standard, compared to 31.8% who ceased education prior to this stage. Of the 11 participants who intended to bottle-feed, 72.7% did not attain A level standard education, and 27.3% received this level of education or beyond. Therefore, although there are differences in the size of the intention groups, proportionately more intended breastfeeders than bottle-feeders achieved at least an A level standard education.

Concerning initial infant feeding behaviour, of the 62 participants who initiated breastfeeding, 66.1% had received a minimum of A level standard education, whereas in the case of the nine bottle-feeders 44.4% had received this standard of education. The differences between participants who ceased breastfeeding prior to twelve weeks were also investigated from the perspective of education. Table 18 below presents the proportion of participants in the various duration groups.

Table 18: Frequency of education achieved with regard to duration of breastfeeding

Education	0-7 days	2 weeks	3-6 weeks	7-10 weeks
N	10	5	7	4
Minimum A level standard	60%	80%	57%	25%
Less than A level standard	40%	20%	43%	75%

Results show that a greater proportion of participants of A level standard or more ceased breastfeeding at 0-7 days, two weeks and three to six weeks postpartum. However, a greater proportion of pre A level standard participants stopped breastfeeding their babies when they were seven to ten weeks of age. Therefore, although more A level standard participants intended and initiated breastfeeding compared with those who did not reach at least A level standard education, a larger proportion of A level standard participants stopped breastfeeding earlier than those who did not attain this educational standard.

7.1.4 Summary

The above results suggest that age has a major role both in the formation of infant feeding intentions, and the duration of breastfeeding in the early postpartum period. It appears that there are effects of both marital status and education at the intention formation stage, but that these effects become less pronounced with regard to initial behaviour and duration of

breastfeeding. Therefore, older, married women who have been educated to at least A level standard are more likely to form an intention to breastfeed than younger, single or cohabiting women who have ceased education prior to A level stage. However, it is older women who are more likely to successfully maintain breastfeeding for longer.

7.2 Infant feeding practices

Participants at both postnatal stages of the longitudinal study were asked to respond to several questions regarding how they were feeding their babies in the Infant Feeding Details Questionnaires. The responses of participants will be detailed below for both stages two and three of the study.

Participants were initially asked as to how they were currently feeding their babies at each stage of the study. Table 19 below shows the infant feeding methods used by participants at each postnatal stage of the study. It can be seen that at stage two, over 50% of participants were giving their babies some breastmilk, whereas at stage three 75.4% were exclusively bottle-feeding their babies formula milk. Although due to the level of attrition between the postnatal stages the results cannot be directly compared, they do suggest a general trend toward sole formula feeding over time.

Of the 72 participants who completed stage two (mean age of infants = 9 weeks), 37 were currently feeding their babies at least some breastmilk, 26 had previously breastfed and were now exclusively bottle-feeding, and nine participants had only bottle-fed formula since delivery. Of the 57 participants who completed stage three, 14 were currently feeding their babies some breastmilk, 33 had previously breastfed and were now exclusively bottle-feeding, and ten participants had solely bottle-fed since delivery (one participant at stage three had not completed stage two).

Table 19: Current infant feeding methods being used by participants at the postnatal stages of the longitudinal study

Feeding method	Proportion of participants at stage 2 (N = 72)	Proportion of participants at stage 3 (N = 57)
Breastfeeding	26% (19)	8.8% (5)
Bottle-feeding	49% (35)	75.4% (43)
Breastfeeding & expressing	12.5% (9)	1.75(1)
Breastfeeding and supplementing with formula	9.7% (7)	12.3% (7)
Bottle-feeding & expressing	1.4% (1)	0
Breastfeeding & bottle-feeding & expressing	1.4% (1)	1.75(1)

Overall, 63 participants who responded to stage two of the study actually breastfed their babies at some time after delivery (although one of these participants only tried to breastfeed once, thirty days after delivery, and so will not be entered into the discussion below). The majority (45) indicated that they breastfed immediately after the birth. Three participants breastfed within an hour, two within three hours, and one within four hours, six hours and seven hours respectively. One participant responded that she was unable to breastfeed until ten hours after delivery as her baby was in an incubator. The remaining participants commenced breastfeeding at 12 hours (one participants), 24 hours (two participants), two days (one participants), three days (one participant) and four days (one participant) after delivery.

Of the 62 participants who initiated breastfeeding, 37 were still breastfeeding at least partially at stage two. Of the remaining 26 participants who stopped breastfeeding within the early antenatal period (0-3 months), 18 (69%) had breastfed immediately following delivery. The remaining eight participants had commenced breastfeeding between 4 hours to 2 days after the birth. The duration of breastfeeding varied considerably from only once

to ten weeks. However, the majority of participants who ceased breastfeeding by stage two of the study (16) actually stopped breastfeeding by two weeks postpartum.

The infant feeding behaviour of those 37 participants who were (at least partially) breastfeeding at stage two was further examined at stage three to determine the proportion of these participants who had breastfed their babies for at least four months. Unfortunately, nine of these participants did not complete stage three of the study. However, due to the ages of the infants when participants completed stage two, it was determined that two of these participants who had not completed stage three, had breastfed their babies for at least four months. Fifteen participants who had been breastfeeding at stage two, had ceased by stage three. However, of these participants, seven had breastfed for at least four months. Thirteen participants were still breastfeeding at stage three of the study, and were assessed between four and a half and seven and a half months postpartum. Therefore, discounting those participants who were breastfeeding and completed stage two at less than four months postpartum, 73% (22) of mothers who were breastfeeding at least partially at stage two of the study, breastfed for at least four months. Further, of these 22 mothers who breastfed for at least four months, 18 (82%) initiated breastfeeding immediately following delivery, whilst the remaining four participants commenced breastfeeding between 3 hours and four days following delivery.

All participants who completed stage three indicated that they had started to give their babies solid food. Thirty-seven participants provided the age at which they commenced giving solids in weeks. The mean age in weeks was 14.94 weeks, with the lowest age being eight weeks, and the highest being 28 weeks. Seventeen participants stated the age that their infants started having solids in months, with the mean age being 3.52 months, the youngest age being three months, and the oldest being four months. Three participants did not state the age at which weaning commenced. Unfortunately, despite this point about

disparity in units used to measure age being highlighted in the pilot studies, it was not sufficiently remedied in the case of weaning age in the longitudinal study. Although this was rectified part of the way through data collection for the third stage of the study, as weaning was not covered in the postnatal pilot study, the specification of units was initially overlooked.

At both postnatal stages, participants were asked to rate the care that they received regarding breastfeeding and bottle-feeding, and at stage three, the care that they had received regarding weaning. Care was rated on a 7-point scale with 1 representing 'not at all satisfied' and 7 representing 'extremely satisfied'. Participants' ratings of care concerning breastfeeding were similar for both stages two and three, with mean ratings of 5.8 and 5.73 respectively. Slightly lower ratings were provided for bottle-feeding care, with participants at stage two recording a mean rating of 5.0, and participants at stage three recording a mean rating of 5.2. Ratings of care regarding weaning at stage three were similar to bottle-feeding at this stage, with a mean rating of 5.25. Overall, therefore, it would appear that on average, participants were satisfied with the care that they received regarding all three forms of infant feeding.

Finally, participants were asked open ended questions regarding their infant feeding decisions at both postnatal stages. At stages two and three, participants were asked to respond to questions (where applicable) about why they had decided not to initiate breastfeeding, and why they had changed from breastfeeding to bottle-feeding. At stage three, participants were also asked as to why they had decided to start giving their babies solid food. On completion of data collection, the responses were typed up and analysed using TCA (Thematic Content Analysis).

Concerning the reasons provided by participants who had not initiated breastfeeding following delivery, the majority of participants stated personal reasons for the decision to solely bottle-feed their babies. For example participants stated that they, "Just preferred to bottle-feed" or that breastfeeding, "didn't appeal to me." Other participants also provided social reasons such as, "I would find it too embarrassing in public" or felt bottle-feeding was easier as "other people could feed him."

The largest number of responses concerned the change from breastfeeding to bottle-feeding, and included responses not only from those women who had changed from exclusive breastfeeding to sole bottle-feeding, but also from those who had changed from exclusive breastfeeding to mixed feeding (i.e. supplementing with formula). The reasons given for changing infant feeding methods generally fell into three categories at both stages of the study. These categories are baby's needs, physical problems and personal reasons. Each category will be dealt with in turn below.

At stage two of the study, 32 participants provided details as to why they had changed from breastfeeding to bottle-feeding. Of these participants, 27 had changed from exclusive breastfeeding to sole bottle-feeding, and five had changed from exclusive breastfeeding to supplementing breastfeeding with formula (mixed feeding). Four of the five participants who had changed to mixed feeding at stage two, cited the demands of the baby as their reason for introducing the bottle. Participants wrote of their babies not being satisfied, or needing to, "top him up" in the evening or during fussy periods. The remaining participant indicated that circumstances surrounding the birth had caused problems in breastfeeding maintenance as, "complicated birth caused baby not to respond to breastfeeding." Meeting the demands and needs of the baby was reported by 11 of the participants who changed from breastfeeding to sole bottle-feeding. Satisfaction was again important, although falling asleep at the breast, and problems with latching on were also noted. Generally,

however, participants who referred to their baby's needs as their reason for ceasing to breastfeed described the difficulties of keeping up with the demand of having a hungry baby. For example, one participant indicated that she, "did not have any breast milk after 2 weeks. Baby was very hungry," and another stated that, "I was not producing enough milk for my baby as she is a hungry baby."

Fourteen participants who switched to sole bottle-feeding at stage two cited physical problems as being influential in their decision to change infant feeding methods. The most common of these problems was soreness, for example, "extremely sore cracked nipples – tried expressing to see if they would heal but no success", and similarly, "extremely sore breasts, very uncomfortable, not enjoyable because of pain." Also included in this category is the physical pain of stitches following delivery which make it uncomfortable to find a comfortable position to breastfeed. Further, exhaustion was reported by three participants as being the strongest factor in their decision to stop breastfeeding.

The final category that was reported as significant in the decisions of three participants were personal reasons for changing feeding methods. One participant stated that she felt that it would be more "convenient" for her to cease breastfeeding. Further, the second participant reported that she would like to know the quantity of milk that the baby was receiving, and that would be possible with the change to bottle-feeding. Finally, the third participant whose reasons fall into this category simply stated that she did not feel comfortable with breastfeeding.

Two participants stated reasons for changing to bottle-feeding at stage two that did not fall into either of the three categories discussed above. The first of these participants stated social reasons for changing from breastfeeding to bottle-feeding as she, "did not feel happy feeding in public." However, the second participant indicated her imminent return to work

as her reason for changing feeding methods. Although at stage two, only one participant cited the return to work as influential in this infant feeding decision, this becomes more widespread at stage three, which will be discussed below.

Ten of the 41 participants who responded to the open ended question regarding changing from breastfeeding to bottle-feeding cited their return to work as a main cause for changing feeding methods. As participants were assessed at four to seven months postpartum at stage three, it would be expected that more participants would be returning to work following maternity leave than at stage two, and might therefore feel it necessary to change to bottle-feeding.

Of the participants who responded to the question at stage three, 22 had previously stated their reasons for changing to bottle-feeding or to mixed feeding at stage two. Of the remaining 19 participants, only one stated a physical cause of feeding method change, which was, "thrush/bleeding nipples", compared to the fourteen participants who indicated physical problems as a cause of their change to bottle-feeding at the second stage of the study. Similarly, only four participants who changed feeding method at stage three indicated that it was their baby's behaviour or demands that was the motive for this change in comparison to 11 participants at stage two.

Five participants referred to personal reasons for ceasing breastfeeding such as, "Did not like leaky boobs, 100% tied to baby," or, "...for ease of feeding as I am a single parent" and, "...wanting to return to 'normal'." Although the specific reasons are very different, they all express a personal underlying motivation for wishing to change to bottle-feeding. Two participants at stage three indicated that their partner's wish to become more involved with feeding determined their change in feeding method; a cause that was not suggested by

participants at stage two. Further, two participants suggested that they stopped breastfeeding due to the introduction of solid foods.

In summary, at stage two, the majority of participants who were changing from breastfeeding to bottle-feeding did so due to physical problems and/or the demands or behaviour of the baby. This is quite different from the reasons given by participants who stopped breastfeeding by stage three, as the basis for this change was most commonly the return to work and/or personal reasons. Further, two new categories were added by the responses gathered at stage three, these being consideration of partner, and the introduction of solid food. The motivations behind participants' decision to start weaning are discussed below.

Fifty-five of the 57 participants who completed stage three responded to the question regarding the decision to introduce solid food. The majority (44) of participants indicated that the main reason behind their decision to start weaning was a change in their infants' behaviour. Three differences in behaviour were noted by participants. Firstly, some participants noticed that their babies were waking more frequently at night, for example, "started to wake up in the night again for a bottle," and "...she started waking again during the night for food." Secondly, participants also noticed that their babies were feeling hungry in general, rather than simply at night, for example, "she was still hungry after her bottle." Thirdly, participants also noticed that their babies were watching them when they were eating, and this caused them to introduce their babies to different foods, for example, "he was showing an interest when we ate," and "...she was interested in our food." Therefore, the majority of participant started to give their infants solid food due to a change or changes in their behaviour, which was noticed by the participants themselves.

The second largest category that emerged from the data is the advice from the participants health visitor, either in conjunction with observations of baby's behaviour, or as a singular motivation for the introduction of solids. Three participants stated that they held baby's behaviour and health visitors' advice as the reason behind their decision to introduce solids. Four participants, on the other hand stated that the advice of their health visitor was their sole motivation for starting to wean their babies, for example, "I was advised to from my health visitor" or the "Health visitor advised me to start when I attended a mother and baby group."

Although, from their responses, it can be assumed that most participants were happy with the advice that they received, one participant stated that the, "health visitor said I had to even though I explained that my baby was not ready." It is possible, therefore that this mother was waiting for a behavioural sign from her baby before introducing solids rather than simply relying on the advice of her health professional. Two participants combined the advice given to them by their health visitors with recommendations read in the lay literature, for example participant gave her reason for starting to wean as "advice from health visitor to begin at 18 weeks as weight slowing down. Also information in book advise to begin around 4 months." The remaining participants cited either practical or health benefits, for example nutrition, or stated personal reasons for the introduction of solid food to their baby's diet, such as, "I couldn't wait to get onto the next stage of feeding – therefore started trying as soon as allowed (reason – I found it exciting!)."

To summarise, the majority of participants at stage three used their own observations of their baby's behaviour to judge the correct time to introduce solid food. Although some participants also took their health visitor's advice into account, very few acted on this advice alone. The following section examines the infant feeding experience of the women with regard to their experiences, and the circumstances surrounding the birth of their baby.

7.3 Birth Experience

Seventy-two participants completed the Details of Birth Questionnaire at stage two of the study. All participants gave birth in hospital. Of these 72 deliveries, 61 (84.7%) were vaginal, eight (11.1%) were emergency caesareans, and three (4.2%) were elective caesareans. Of the participants who delivered their babies vaginally, 19 required extra assistance with the delivery. Of these assisted deliveries, five involved forceps, seven involved ventouse, six required both forceps and ventouse, and one involved ventouse and stomach manipulation. Two of the three deliveries that culminated with emergency caesareans underwent assisted deliveries prior to the decision to perform the caesarean, and involved ventouse, and both forceps and ventouse respectively. Of the four reported breech births, three were delivered by elective caesarean, and one was delivered by emergency caesarean.

Twenty participants indicated that there had been further problems with the birth that were not assessed on the questionnaire. Table 20 below presents both the problem (in the participants' own words) and the type of delivery in which each labour concluded. The duration of breastfeeding for each participant who reported a problem is also presented.

Although it is not within the remit of this study to investigate the causation of breastfeeding duration, it is interesting to note the duration of breastfeeding of the participants who reported problems in table 20 above. Unfortunately, it is not possible to assess whether four of the participants breastfed their babies for at least four months, as they did not complete stage three of the study (although they were still breastfeeding at stage two). However, it can be seen that of the three participants who had emergency caesareans, and for whom infant feeding behaviour is recorded up to four months

postpartum, only one participant who reported a problem managed to breastfeed for at least four months.

Table 20: Type of delivery and breastfeeding duration experienced by participants who had experienced problems with the birth

Participant	Problem	Type of delivery	Duration of Breastfeeding
1	Had to be induced and did not dilate properly – very nearly had to have caesarean section	Normal vaginal delivery	2 weeks
2	I had high blood pressure	Assisted vaginal delivery (ventouse)	7 weeks
3	Baby was distressed so I had an episiotomy to get baby out	Normal vaginal delivery	At least 4 months
4	Shoulder dystocia	Assisted vaginal delivery (ventouse and manipulation)	15 weeks
5	When she was coming out I had to give birth on my side otherwise my cervix would have come out with her	Normal vaginal delivery	Bottle-fed
6	Face presentation, pre eclampsia	Normal vaginal delivery	13 weeks
7	Umbilical cord around his neck and body causing his heart beat to slow every time I had a contraction	Emergency caesarean	At least 6.5 weeks (did not complete stage 3)
8	Distress/heart rate slow etc.	Normal vaginal delivery	Bottle-fed
9	Face to pubes but turned in birth canal prior to being born	Normal vaginal delivery	15 weeks
10	Footling breech	Emergency caesarean	6 weeks
11	He almost died	Assisted vaginal delivery (forceps)	Once
12	Cord around neck. Epidural to strengthen contractions, head of baby not positioned correctly	Normal vaginal delivery	At least 8 weeks (did not complete stage 3)
13	Baby very distressed, cord around neck, heart beat dropped and he was stuck in birth canal hence emergency caesarean	Emergency caesarean	2 days
14	Lost about 1 litre of blood immediately after the birth	Normal vaginal delivery	At least 4 months
15	Retained after birth. Required surgery	Normal vaginal delivery	5 weeks
16	Induced by breaking waters – baby delivered one week early due to low liquor levels	Normal vaginal delivery	At least 10 weeks (did not complete stage 3)
17	I had a hemorrhage, had to have blood transfusion	Normal vaginal delivery	9 weeks
18	Labour took a long time to progress (3 days!) but once we got to 3 cm all was fine.	Normal vaginal delivery	At least 14 weeks (did not complete stage 3)
19	Needed drug to bring on more regular contractions in second stage	Normal vaginal delivery	At least 4 months
20	Pelvis too narrow	Emergency caesarean	At least 4 months

The remaining two participants breastfed their babies for two days and six weeks respectively. Further, three of the four participants who reported problems, but who continued to breastfeed for at least four months experienced 'normal' vaginal deliveries. Nevertheless five participants who experienced 'normal' vaginal deliveries and who remained in the study after they had ceased breastfeeding, breastfed for less than four months. Cross tabs were calculated to examine the possible effect of birth type on breastfeeding duration of the whole sample. However, a conclusion based on this effect could not be reached due to the disparity of numbers of participants in each 'birth type' group. From the results shown in table 20 above, it appears that it is not the problems surrounding the birth per se that are a problem for women and, so affect the duration of breastfeeding, but rather, the way in which women deal with these problems that can positively or negatively affect duration.

Of the 72 participants who completed the Details of Birth Questionnaire, 66 provided a duration of labour in hours. The mean length of labour was 15.4 hours, with the shortest being 1.5 hours, and the longest labour being 49 hours. Of the six participants who did not provide a duration, three had had caesarean deliveries (two planned and one emergency) and it was unclear as to why the remaining participants had not stated a time.

Fifty-four of the 61 vaginal deliveries required stitching, and of these 24 required stitching as the result of an episiotomy. All deliveries involving episiotomies, however, resulted in vaginal deliveries. All participants used at least one form of (natural or medical) pain relief during labour. Table 21 (below) shows the number of participants that used each method of pain relief, the mean and the range of the scores for effectiveness. Again, cross tabs were calculated for pain relief used and infant feeding behaviour, but due to the small

numbers of participants initially bottle-feeding, no conclusions could be drawn from this analysis.

Table 21: Pain relief used by participants during labour and delivery (N=70)

Pain relief	Number of participants	Mean effectiveness score	Range of effectiveness scores
Entonox	56	4.71	1-7
Pethidine	27	4.59	1-7
Epidural	47	6.55	2-7
Mobile epidural	2	5.5	5-6
TENS	20	2.95	1-5
Breathing and relaxation	37	4.1	2-7
Water	14	3	1-5
Massage	9	4.2	1-5

Table 21 shows that on average participants rated epidural as the most effective form of pain relief. Although entonox (gas and air) was the most commonly adopted method of pain control, it was rated only marginally higher than the natural methods of pain relief of breathing and relaxation and massage that were adopted by a smaller proportion of the sample.

Seventy participants stated the identities of the individuals who were present at the time of the birth. The majority of participants (70%) indicated that their partner was present at delivery. Nine stated that their partner and mother were both present, and two participants specified that their partner and a friend were present at the birth. Three participants indicated that only their mother was present at the birth (as well as medical staff), two stated that their fathers were present at delivery, and one participant noted that both of her parents were present for the birth. One participant had three individuals present aside from health care professionals, these being her mother, her mother-in-law and her partner. Two participants, who were both single, indicated that the “baby’s father” was present at the birth.

Finally, participants were asked to rate their satisfaction with the care that they received from health professionals both during and immediately following labour. Each rating was on a scale of 1-7 with 1 representing 'not at all satisfied' and 7 representing 'extremely satisfied'. The mean score for care whilst in labour was 6.4 with a range of 2-7, and the mean score for satisfaction with care immediately after delivery was 6.1, with a range of 1-7. These results show that the mean scores were high with regard to the rating scale, indicating that most participants were satisfied with the standard of care that they had received both during and immediately following delivery.

Overall, the majority of participants who completed stage two of the study delivered their babies vaginally, and without the need for extra assistance. However, simply using the type of birth as an indicator of the impact of the birth experience can be misleading. As can be observed in table 20 above, many participants who experienced 'normal' vaginal deliveries, did experience other problems that might impact on their perception of the birth experience. This again highlights the importance of listening to women, and allowing some freedom of expression even within the confines of a quantitative instrument such as a questionnaire.

The following section presents the infant feeding experiences of participants at stages two and three of the study, from the results gathered from the Infant Feeding Details Questionnaires. Similar to the Details of Birth Questionnaire, the Infant Feeding Details Questionnaire asks direct questions with regard to infant feeding practices, but also allows open-ended responses for questions regarding infant feeding decisions.

7.4 Problems with infant feeding

In order to gauge the incidence of the infant feeding problems assessed in the Breast and Bottle-feeding Self-Efficacy Scale, participants were asked which of these problem they had encountered whilst feeding their babies, and how well they felt that they had coped with these problems. Figures 15 and 16 below present the number of participants who encountered the problems with breastfeeding specified in the Breast and Bottle-feeding Self-Efficacy Scale (abscess, refusing the breast, mastitis, positioning and nipple pain) at stages two and three of the longitudinal studies respectively.

Figure 15: Graph to show the types of breastfeeding problems experienced by participants at stage 2

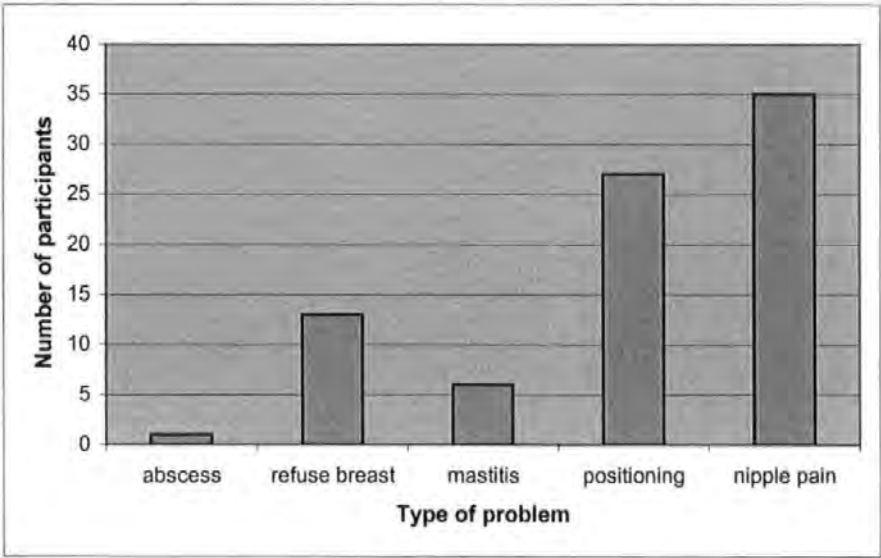
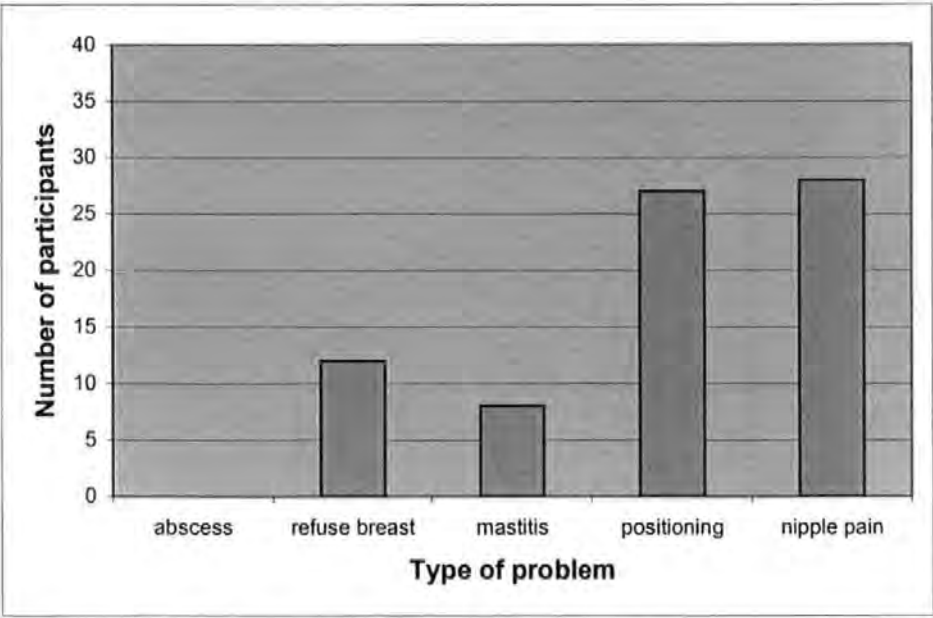


Figure 16: Graph to show the types of breastfeeding problems experienced by participants at stage 3



As can be seen, the two most common problems reported by participants are positioning and nipple pain. At both postnatal stages of the study, participants were asked whether they had encountered any problems with breastfeeding and bottle-feeding at any time since delivery. Therefore, participants who were completing the scale at stage three would not simply be responding to their experience specifically at that stage, but for their entire infant feeding experience. As there are no more problems reported at stage two than at stage three, it would appear that these types of breastfeeding problems mainly arise at the early postnatal stage. Other breastfeeding problems reported by participants at stage two included tiredness, engorged and leaking breasts, and the baby falling asleep at the breast. At stage three, breastfeeding problems that were not covered by the items on the scale included knowing the number of breastfeeds required, the baby falling asleep at the breast, “living the rest of your life” and leaking breasts. Table 22 below displays the mean coping scores of participants who encountered the breastfeeding problems discussed above. As the scale ranged from 1-4, it can be seen that participants were generally moderately satisfied

with the way in which they coped with each problem (no participants stated that they had suffered from breast abscess at stage three).

Table 22: Coping scores of participants who have experienced breastfeeding problems

Breastfeeding problem	Stage 2: mean coping score	Stage 3: mean coping score
abscess	3	0
Refusing breast	2.8	3.25
Mastitis	3.3	3.25
Positioning	2.9	3.07
Nipple pain	2.97	2.86

Figures 17 and 18 below show the number of participants who suffered from the bottle-feeding problems included on the Breast and Bottle-feeding Self-Efficacy Scale (overfeeding, heating milk to the correct temperature, mixing formula, refusing the bottle and planning ahead) at stages two and three of the longitudinal study. At least five participants encountered each of the problems at both stages of the study. Further, the number of participants who reported problems with the baby refusing the bottle, and planning ahead rose between stages two and three, possibly due to the number of participants changing from breastfeeding to bottle-feeding between these stages. Other problems that participants indicated that they encountered at stage two included finding a suitable formula, the baby getting colic from the bottle and having a hungry baby. At stage three, participants did not indicate that they came across any bottle-feeding problems other than those included on the scale.

Figure 17: Graph to show the types of bottle-feeding problems experienced by participants at stage 2

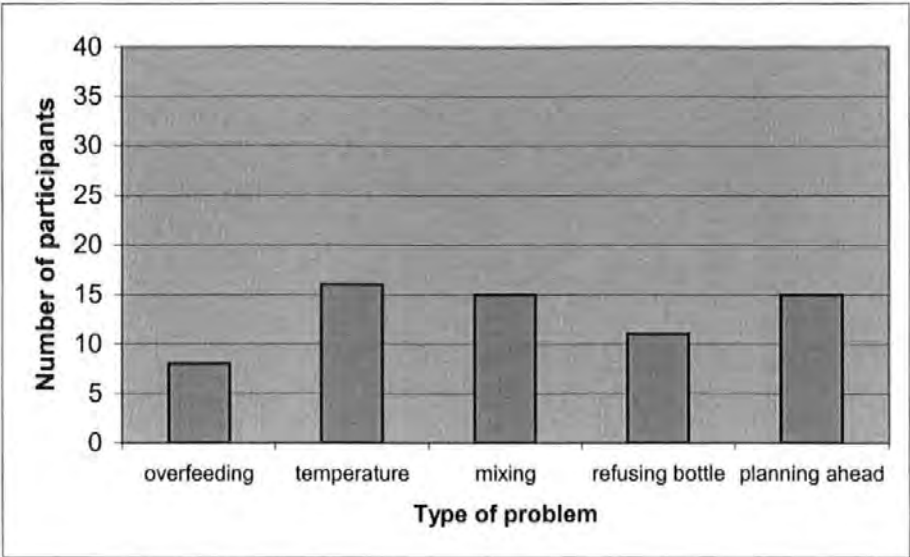


Figure 18: Graph to show the types of bottle-feeding problems experienced by participants at stage 3

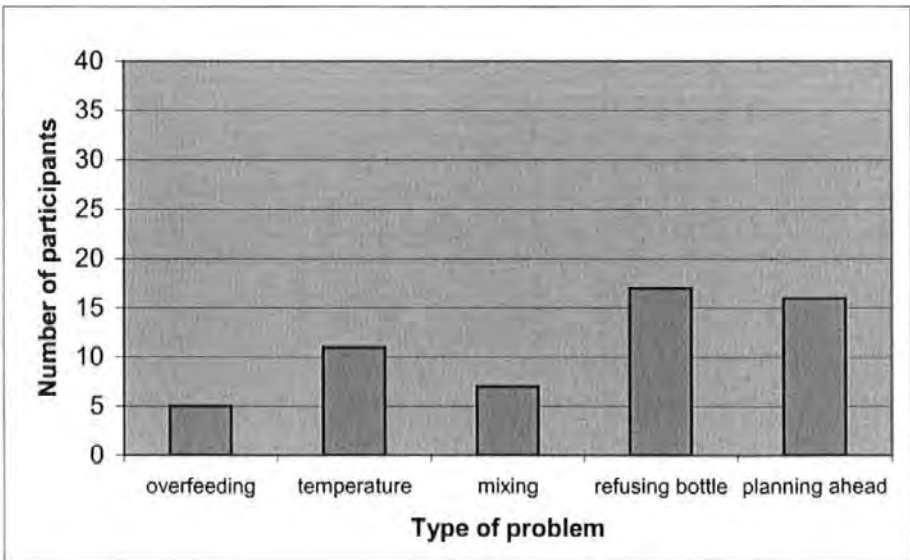


Table 23 below shows the mean coping scores for participants who experienced problems with breastfeeding at stages two and three of the longitudinal study. It can be seen that apart from refusing the bottle at stage two, participants generally feel that they cope with bottle-feeding problems either moderately or very well. Further, apart from mixing formula, the mean scores are higher at stage three than at stage two. Although the

participants completing the bottle-feeding section of the scale are likely to be different at stage three from those at stage two (as many breastfeeders will have changed to bottle-feeding), this change between the stages might indicate that participants feel that they cope marginally better with bottle-feeding related problems at the later postnatal stage than at the early postnatal stage.

Table 23: Coping scores of participants who have experienced bottle-feeding problems

Bottle-feeding problem	Stage 2: mean coping score	Stage 3: mean coping score
Overfeeding	3.1	3.4
Temperature	3.4	3.8
Mixing formula	3.4	3.4
Refusing bottle	2.8	3.2
Planning ahead	3.6	3.75

In summary, the most distinctive issue to arise from the analysis of the infant feeding problems of participants is that of the number of participants who suffer from breastfeeding difficulties compared to those who encounter bottle-feeding problems. Although at least five participants reported each of the bottle-feeding problems, in general, more participants indicated a problem with breastfeeding than with bottle-feeding. Additionally, most participants who reported bottle-feeding difficulties, indicated that they coped with these difficulties better than participants who reported breastfeeding problems. Breast and bottle-feeding problems as well as other aspects such as the birth and circumstances surrounding breast and bottle-feeding will now be examined qualitatively below with a view to gaining a comprehensive understanding of the infant feeding experience of first time mothers.

7.5 Women's experiences of infant feeding

The development, recruitment and pilot of the qualitative study are presented in chapters four and five (refer to chapter 4, section 4.9; refer to pilot study, appendix 17). To reiterate, the overall aim of the qualitative study was to gain further understanding of the infant feeding experience of first time mothers through semi structured interviews designed to enhance the information gained by the scales and questionnaires used in the longitudinal study. Interviews were transcribed verbatim and analysed using TCA. In meeting this aim, the analysis revealed issues related to three phases of the infant feeding experience, that is, the decision-making period, initiation of feeding, and maintenance of feeding. Although the original conceptualisation of infant feeding recognises these three phases, the way in which the phases emerged from the data show that they are constructed in quite a different manner to the original understanding of the experience. Each of the phases will be discussed in turn below with regard to the qualitative analysis. However, prior to the analysis, each of the eight mothers who took part in the qualitative study will be introduced by means of a short profile detailing their personal circumstances and feeding methods.

7.5.1 Profiles of Qualitative Study Participants

The profiles of the qualitative study participants below are designed to illuminate the analysis to be presented in the next section. All of the participants, and their babies names have been changed in order to preserve their anonymity.

Sarah

Sarah was introduced in the pilot study (appendix 17) as the pilot interview, and the first participant to be interviewed for the qualitative study. At twenty-five, Sarah is married with a three month old baby boy called Richard, and the youngest mother to take part in

this study. Sarah had breastfed Richard since he was born, although she is starting to introduce some formula feeding so that she can leave the baby with someone else for the occasional evening out.

Linda

Linda is 29 years old and mother to David, four months. Although Linda is a first time mother, she is also a full time step mother to her two step daughters, who are her husband's children from his first marriage. Linda has been breastfeeding David since birth, and introduced a bottle of formula for his evening feed from eight weeks.

Rebecca

Rebecca is 27 years of age, and mother to Maisy, seven months. Similar to Linda, Rebecca is also a step mother to her partner's daughter from a previous relationship, although she only lives with them intermittently during the school holidays. Rebecca has breastfed Maisy since delivery, and started to introduce a bottle three weeks prior to interview.

Lisa

Lisa is married, and mother to Suzy, three months. At 34 years of age, Lisa is one of the older participants in this study. As Lisa's husband is a fisherman, she spends a great deal of time alone with the baby. Lisa has been exclusively breastfeeding and feeding expressed breastmilk since Suzy was born, and has only tried formula feeding once.

Jackie

Jackie is 29 years of age and mother to Adam who was three months at the time of interview. Although a single parent, Jackie is in contact with her boyfriend, who works abroad, and was with her at the time of the birth of their son. Jackie exclusively breastfed

for the first eight weeks, and gradually introduced formula until she stopped breastfeeding completely at ten weeks.

Leanne

Leanne is a 31 year old first time mother to Anna, three months. Although Leanne is also a step mother to her husband's three children, they are all in their twenties and do not live with her. Leanne exclusively breastfed Anna for six weeks and had been introducing formula for a further six weeks prior to taking part in the qualitative study.

Claire

Claire, 29, is married and mother to Katy, four months. As Claire's husband is in the Royal Navy, like Lisa she spends a great deal of time on her own with the baby. Claire breastfed Katy for six weeks, and gradually fed formula milk from four weeks.

Sam

Sam, a veterinary nurse, is married and 33 years of age. As a first time mother to Jake, four months, Sam decided to bottle-feed during pregnancy, and has bottle-fed Jake since delivery.

7.5.2 Infant feeding decisions

All of the mothers who took part in the qualitative study, decided which infant feeding method they were going to use during pregnancy. All of the participants but Sam decided to breastfeed their babies. Several of the breastfeeding mothers gave specific reasons for wanting to breastfeed. Both Linda and Leanne felt that it would bring them closer to their babies, whereas Sarah and Jackie said that they believed that breastfeeding was a natural thing for them to do. Lisa, Leanne and Rebecca cited the baby's health as a main

motivation for their wanting to breastfeed, with Rebecca stating that one of the main reasons for her wanting to breastfeed was due to a family history of skin rashes, which she hoped that she could eliminate in her baby if she breastfed. Sam stated two clear reasons for wanting to bottle-feed rather than breastfeed. Firstly, it was important to her to know exactly how much milk her baby was taking, which she considered would not be possible with breastfeeding. Secondly, it was important both to Sam and her husband that he was equally involved with feeding, which could be achieved through bottle-feeding.

Participants who intended to breastfeed, varied in the conviction with which they had made their decision. For example, although Claire wanted to breastfeed, she stated that, “when I was pregnant, I told myself I didn’t mind either way, I wasn’t going to put pressure on myself.” At the other extreme, however, Rebecca and Sarah were so adamant that they wanted to breastfeed that they were worried during pregnancy that they wouldn’t be able to fulfil this wish. This questioning of their capabilities had consequences for their feelings about breastfeeding during their pregnancy, to the extent, for example that Sarah, “was in tears to the midwife worrying that I wouldn’t be able to do it [breastfeed].” Rebecca had gone to the extent of buying bottles prior to the birth of her baby as, “all I’d heard was um oh it’s very difficult to breastfeed it’s painful and I thought I wouldn’t be able to do it.”

A further theme that emerged when analysing participants’ infant feeding decisions was their prior experience (or lack thereof) of breastfeeding. Four of the qualitative study participants who were intending to breastfeed had no relatives who had breastfed. Most of these participants mothers had not breastfed, and two participants (Linda and Sarah) were actively discouraged from breastfeeding by members of their family (although not by their partners). Interestingly, however, both Linda and Sarah said that these family members were beginning to change their minds about breastfeeding, even to the extent that Sarah’s sister, who had previously bottle-fed her current children, was considering breastfeeding

her next baby. In Rebecca's case pressure was exerted on her decision to breastfeed by her sister who had successfully breastfed her children, and Lisa's sisters' breastfeeding appeared to have some influence on her decision to breastfeed her baby. Although no one in Sam's family had breastfed, two work colleagues had found breastfeeding difficult. However, it is not possible to judge the degree to which this influenced her decision to bottle-feed.

In summary, it appears that there are three major themes surrounding the decision to breastfeed. Firstly, the particular benefits of the infant feeding method to be chosen (or conversely, the disadvantages of the method that is rejected) appear to be readily available to mothers, and substantially influence the decision as information is gathered during pregnancy. Secondly, the degree to which women want to breastfeed varies. Although it is not clear as to the effect that this has on breastfeeding success, it appears that concern regarding the accomplishment of breastfeeding can be heightened during pregnancy when mothers have a strong, overwhelming desire to breastfeed. Finally, when asked about their decision to breast or bottle-feed, participants invariably indicated the level of experience that they had previously had with breastfeeding. Although the adverse vicarious experience with breastfeeding that Sam had encountered may or may not have contributed to her decision, it appears that for those participants who wanted to breastfeed, lack of experience did not effect their decision, despite their reporting of this deficiency of experience. Further, concerning those who had been met with opposition from their families regarding breastfeeding, this opposition appears to have simply strengthened their resolve to follow through their decision.

The following section continues the progression of the infant feeding experience by exploring the issues raised by participants concerning the initiation of their chosen infant feeding method.

7.5.2 Initiation of the chosen method of infant feeding

Three main themes emerged from the data regarding the initiation of infant feeding, these being, the birth experience, help and support with feeding, and initial problems encountered by breastfeeding participants. Each of these themes will now be discussed in turn below in relation to the effect that each theme had on the initiation of breastfeeding and bottle-feeding.

All participants talked at length, and in great detail, about the birth of their babies during interview. Four of the eight participants had had their babies delivered by caesarean section, with three of these participants initiating breastfeeding after delivery (Lisa, Claire and Leanne). Although all three of these caesareans were classed as emergencies, the only analgesia required was administered by epidural, which meant that participants were conscious throughout the procedure. As a result, the three breastfeeding participants who underwent caesarean deliveries were able to breastfeed their babies soon after delivery took place, and appeared satisfied with this first feed. For example, Claire said of her first breastfeeding experience, "yes not long after she was born and there was no problem with that at all and they brought her in and she just had a quick feed...yeah that was good I was pleased about that". Similarly, as soon as Sam was brought up to the ward after her caesarean section, she was simply asked the brand of formula that she had chosen, and was able to bottle-feed her baby as she had wished, with no pressure to breastfeed.

Although Rebecca and Linda had vaginal deliveries, they both had problems with their babies as a result of the birth (for example, cord tied around the neck of the baby, and foetal distress), which meant that they had to wait for their babies to be examined before they could give the initial feed. Despite these preliminary problems, both Rebecca and

Linda appeared satisfied with their first breastfeed, as Rebecca recalled, “it wasn’t long at all ‘cause she was fine and uh then she went straight to the breast and fed a little bit and that was it.” Unfortunately, the remaining two participants were not as satisfied as those discussed above with their first experience of breastfeeding their babies. Despite there being just 45 minutes between delivery and Sarah’s first attempt at breastfeeding, it appears that she was worried by this as she said, “it actually seemed to take too long ‘cause I heard that you should put them to the breast straight away and it just wasn’t happening...and it was only when I was asking when can I try to breastfeed that they actually put him there and then he wouldn’t take it, and I had to wait until I was up on the ward for someone else to help.” Jackie too had to wait until she was on the postnatal ward until she could give her baby his first feed. As she recalls, “yeah, he didn’t feed, they didn’t even offer him, as soon as he was born he wasn’t sort of put on the breast at all...”. As a consequence, Jackie was not able to initiate breastfeeding for two hours, that is, until her transfer from the labour ward to the postnatal ward.

In summary, it might be expected that those participants who had undergone caesarean sections would have felt frustrated by the amount of time that they had to wait between the delivery of their babies and their first breastfeed. A similar response might also have been expected from those mothers whose babies had experienced difficulties during delivery. However (although Sarah did have an assisted delivery), it appears that it was those mothers who had relatively straightforward deliveries who were frustrated and disappointed with having to wait for their initial breastfeed with their babies. It is possible that due to the difficulties that the majority of the participants had in delivering their babies, that they did not have such high expectations as Sarah and Jackie regarding when they would have their first feed. However, as the first feed is when mothers start their infant feeding experience, it is vital that all mothers are provided with the opportunity and help to enable the initiation of breastfeeding to be satisfying and successful. The discussion

below broadens the understanding of the initiation of infant feeding through the theme of help and support afforded to mothers when in hospital.

The help given to participants in this study varied in terms of the type of support offered, the amount of support offered, and the individuals who provided the support. Two participants expressed resentment at the low level of support and help that they received from midwives whilst in hospital. Jackie indicated several times that she felt “ignored” by hospital staff, and was left out of activities such as learning how to bath her baby, whilst the other women staying in her room were included. Similarly, Rebecca felt that although she didn’t have any particular problems with breastfeeding, she would have appreciated some support, as she said, “it would have been nice for somebody to sit on the end of the bed and have a coffee with me and say you know how are you coping.” Ultimately the lack of support received by Rebecca caused further distress as she could not be discharged on time because a member of staff had not yet witnessed Rebecca feeding her baby.

Participants talked in detail about the type of help that they received, which came as a surprise to some, as Lisa said, “it’s quite strange really ‘cause like you never think so many people are gonna touch your boobs.” Sarah also talked of receiving what could be described as ‘hands on help’ which involved having a member of staff physically latching her baby on for her. However, when it became necessary to attach her baby herself when the staff member had gone, she was not able to do it. It was only when another member of staff explained everything to Sarah as she physically showed her how to latch her baby onto the breast that she understood what she needed to do. Lisa also found that the most useful piece of advice given to her in hospital was to ensure that her babies jaw and ear were moving. It can be deduced from these two examples that the most useful support that was provided to these participants was that which allowed them to be independent and cope when support was not available.

Unlike the breastfeeding participants, it was not how support was delivered that effected Sam as she initiated bottle-feeding, but the type of support itself. When Sam started bottle-feeding her son, he was often sick after he had been fed. Understandably this made Sam upset, and even caused her to question the infant feeding method that she had chosen. However, she was not told that this was a common occurrence for babies that have been born by caesarean section, and that he was being sick due to the mucus that had not been expelled by the action of a vaginal delivery. Therefore, Sam needed, but did not receive both information and reassurance to prevent her from being unduly concerned with the difficulties that she was experiencing when bottle-feeding her baby.

In terms of sources of support, three participants made distinctions between trained midwives and auxiliaries who offered support in hospital. Jackie spoke of the auxiliary nurses in a positive light as they looked after the babies so that the mothers could get some rest. However both Sarah and Linda found that the 'hands on' approach employed by the auxiliaries neglected the information required to allow them to learn how to breastfeed. In order to rectify this problem, Sarah was satisfactorily helped by the ward sister, and Linda employed trial and error to solve her problem of positioning on her own.

Therefore, in terms of support, type, amount and source appear to be important to mothers during the initial stages of breastfeeding. The way in which support is delivered appears to have had a major impact on at least two of the participants' abilities to cope with breastfeeding, and to be able to feel confident in feeding independently of health professionals' help. The next stage of this discussion of the issues surrounding the initiation of infant feeding concerns the problems experienced by breastfeeding participants in the first weeks of breastfeeding.

Two main problems hindered participants initiation of breastfeeding. These problems were positioning and latching on, which will now be dealt with in turn. Positioning was particularly problematic for patients who had undergone caesarean deliveries or who had delivered their babies vaginally, but required an episiotomy. Although books often show women who have had caesarean sections lying down to breastfeed, this was not always the best position for participants in this study. For example, Lisa found that, “when I lay down it really hurt um but when I was on my side it was even worse I found”. On the other hand, Linda, who had also undergone a caesarean, found that she was comfortable feeding lying down in hospital, but that the bed at home was too soft in order for this to be achieved comfortably which meant that a new position had to be adopted. Jackie, who had required an episiotomy, also found finding a satisfactory position difficult initially as the stitches made it uncomfortable to sit up.

Correctly latching the baby onto the nipple also caused problems for some of the participants, with the main concern being the mother herself knowing when the baby was correctly attached. As mentioned in the previous section of this discussion of initiation concerning support, Lisa was given some valuable advice, which enabled her to know when her baby was properly latched onto her breast. However, for other participants such as Sarah, learning how to latch her baby onto the breast was more complicated, as she explained, “the midwife, she kept saying, oh you’re doing wrong or he’s too high, he’s too low, but ...I didn’t know you know how to put it into his mouth.”

In conclusion, the initiation of infant feeding involves a number of issues. Firstly, the circumstances in which the women were able to give their babies their first feed appears to have an impact on their feelings and memories of this first experience. Secondly, the amount, type, and source of support, and the manner in which the support is imparted can impact not only on the way in which women cope with feeding problems, but additionally,

their overall feeding experience. The following section continues the exploration of the issues important to the infant feeding experience by examining the concerns of participants in maintaining their chosen method of feeding.

7.5.3 Maintenance of the chosen method of infant feeding

There are two major issues raised by participants that concern the maintenance of breastfeeding in particular, which are feeding in public, and the introduction of formula. Although it appears that the latter issue can effect the duration of breastfeeding, the former can equally impact on the satisfaction of the infant feeding experience of the mother. Each of these issues will be discussed below.

All of the participants who breastfed their babies spoke of the difficulties in breastfeeding their babies in public. Some participants such as Lisa and Jackie went to great lengths to time how long they were out in order that they were either home before their babies would require feeding, or so that they could feed in the car. For example Lisa said that, "the majority of the time it's been we've worked it so that at least I'm back at the car or whatever." Satisfactory places to breastfeed whilst shopping or out having lunch was a major topic in relation to breastfeeding in public. Most participants preferred to use facilities in shops or restaurants so that they could breastfeed in relative privacy, but these were often found to be inadequate. For example, Sarah recounted a situation that had recently happened to her when she had to sit on the floor of a disabled toilet which was being used as a mother and baby room in a restaurant, because there was no chair or cover on the toilet upon which she could sit to feed her baby.

Only one participant, Rebecca, appeared confident in openly breastfeeding in public, although she admitted that the reactions of others were sometimes difficult to cope with,

such as “um you know you get old men looking and I just say you know I’ll put a tassel on the other one in a minute, it doesn’t bother me but people can be quite funny.” Almost all of the participants mentioned the need to be discreet when breastfeeding in public.

However, Linda pointed out not only the difficulties of breastfeeding discreetly, but that mothers do not tend to be taught how to do this. Fortunately, in Linda’s case, she met another mother who was able to help her, “and her baby is like seven weeks older than David and she said all you’ve gotta do is like lift your top and then put the top back over their face which is, nobody tells you these things.”

Not only was breastfeeding when out in public an issue for participants, but likewise, breastfeeding in front of visitors when at home was also a concern for some. Often, this depended on who the visitors were. For example, Leanne didn’t feel comfortable breastfeeding in front of her husband’s adult children, but felt fine feeding her daughter in front of other members of the family. On the other hand, Linda and Sarah found that other peoples’ feelings of discomfort at seeing them breastfeed forced them to move to another room to feed.

Therefore, issues related to breastfeeding in public tend to focus on the availability of facilities, the reactions and feelings of others, and the ability and necessity to breastfeed discreetly. None of these issues effected Sam’s experience of bottle-feeding her baby, and in fact due to the difficulties that she had faced in finding a suitable place to breastfeed when she was out, Sarah admitted that, “that’s when bottle-feeding looks good.”

Conversely, when Jackie tried to get around the problem of breastfeeding in public by taking a bottle of expressed breastmilk, she became concerned that other people might think that she was bottle-feeding formula and not doing the best for her baby.

At the time of interview, two of the seven participants who had breastfed their babies were solely bottle-feeding. Of the remaining five participants, all had tried to introduce some formula feeds, and three were regularly mixed feeding in varying proportions of breast and formula milk. Jackie and Claire, who were solely bottle-feeding when participating in the qualitative study, both expressed guilt over their decisions to cease breastfeeding completely. For example, despite wanting to change from breastfeeding to bottle-feeding due to exhaustion, Claire found it a difficult decision to make, but was happy with the decision once it was made, as she says, “before I stopped I got I got a bit tearful I thought oh, you know this might be the last breastfeed and I was going on another day and another day and um but actually when I did stop I didn’t miss it that much.”

Unlike Claire, who had no problems with the actual practice of breastfeeding, Jackie contended that she never, “felt 100 per cent comfortable breastfeeding the whole ten weeks”, and eventually stopped breastfeeding in the hope that a routine might be established as she was on her own with the baby. Both of these mothers introduced bottles at night, and gradually, the number of bottle-feeds overtook the number of breastfeeds until finally bottle-feeding became the sole feeding method. At the time of the study, Linda, Rebecca and Leanne were regularly giving their babies formula milk in place of some breastfeeds. Leanne only breastfed her baby in the morning, and both Rebecca and Linda had introduced bottles at night. Apart from solid foods, Rebecca had exclusively breastfed for over six months, and decided to introduce a bottle as she was finding expressing a bottle of milk each day tiring, and it would give her some freedom. None of the participants who had either changed from breastfeeding to bottle-feeding or who were currently mixed feeding had experienced problems with changing to the bottle, and with swapping between the breast and bottle, although Linda found that even when being bottle-fed, she was the only person who could settle her baby after a feed. Participants spoke in detail about the type of teats that they used and how they were sterilised which conveyed

that a good degree of thought had been used by participants in preparing to introduce formula feeding.

The remaining breastfeeding participants had only tried a small amount of formula in case they ever needed to leave their babies with someone else. Sarah particularly felt it to be important that her partner gave their baby one feed a day, and so had initially tried expressing milk for him to give to the baby. Unfortunately, her baby had refused the bottle, which caused her to be concerned that she might never be able to transfer from breastfeeding to bottle-feeding. Lisa, on the other hand had been expressing a bottle of milk each day for some time in order that her partner could feed their baby, and so when she tried her baby with formula the week before the interview, she did not encounter any problems.

7.5.4 Summary

By listening to women's experiences of infant feeding, three distinct phases of the experience emerged. Firstly, the decision phase during pregnancy was a time when participants weighed up the pros and cons of breastfeeding and bottle-feeding before coming to a final decision. Secondly, the initiation phase included both the initial feed using the chosen method, and further a time when initial problems were encountered and attempts were made to deal with them. Thirdly, the maintenance phase was a time when routines were developed, and social problems concerning particularly breastfeeding were met and managed. These phases, and particularly the postnatal initiation and maintenance phases will be discussed below in the light of both the qualitative analysis reported above, and the quantitative analysis of the longitudinal study presented at the start of this chapter.

7.6 Discussion

The main issue to be raised by the results of the qualitative study of women's experiences of infant feeding is that of the three phases that have emerged from the data. The decision phase was investigated quantitatively by the TRA analysis in chapter five. The qualitative study strengthens the choice of the application of the TRA to investigate this phase of the infant feeding experience as it shows that pregnant women do indeed weigh up the pros and cons of both infant feeding methods before making their decision (Ajzen & Fishbein, 1980), even if they believed it to be the most natural method for them. However, although in general initiation is considered to consist of the initial feed using the chosen method following delivery (as analysed by the TRA) (Righard & Alade, 1990), the qualitative study calls this description into question.

As has been shown by the analysis of the qualitative data, although mothers are generally pleased with the initial feed that they give to their babies, actually instituting a feeding method with which they feel comfortable is more complex (Byam-Cook, 2001), and takes longer than simply giving the initial feed. Further, there is a clear difference between the issues and problems encountered during the early stages of particularly breastfeeding (e.g. positioning, pain) and those experienced at a later stage (e.g. social difficulties). Therefore, it appears that the initiation phase constitutes more than simply the initial feed, but involves a more complex progression from the initial feed to maintenance of the chosen method.

The longitudinal study provides further evidence that the initiation phase is both more than simply the initial feed, and also distinct from the maintenance phase. Firstly, the quantitative analysis of external variables at the beginning of this chapter (refer to section

7.1) showed that of the 62 participants who commenced breastfeeding following delivery, 26 ceased breastfeeding within 10 weeks (similar to the results of Scott et al., 1999). Further, 15 of these participants stopped breastfeeding within two weeks of the birth of their baby (analogous to the findings of Foster et al., 1995). The results also showed that participants who ceased breastfeeding at this stage were more likely to be younger than those who breastfed for longer (as found in studies by Cooper et al., 1993; Feinstein et al., 1986; Scott et al., 1990). As this would not have given sufficient time for establishment of breastfeeding, these results indicate that a large proportion of participants ceased breastfeeding before establishment could commence. Coupled with the reasons given by longitudinal study participants for changing from breastfeeding to bottle-feeding at the second stage of the study, this provides weight for the argument that the initiation of feeding consists of more than simply the initial feed.

Further, the marked differences between the reasons given for changing from breastfeeding to bottle-feeding by participants who ceased at the early postnatal stage to those who ceased at the later postnatal stage provide evidence for the distinction between initiation and breastfeeding. Those who stopped breastfeeding at the second stage of the longitudinal study were more likely to cite physical difficulties as reasons for changing to bottle-feeding, than those who stopped at stage three, who were more likely to indicate social or work commitments as the motivation for changing feeding methods (Feinstein et al., 1986). The tendency for physical problems for breastfeeding to arise at the early postnatal stage is further evident in the results relating to problems with infant feeding, as no more cases of physical problems are reported at stage three than at stage two of the longitudinal study. It can therefore be assumed that if physical problems are going to occur, it they are liable to present during the early postnatal period (it is proposed during the initiation period) than the later postnatal period.

In summary, the investigation of the external and experiential aspects of the infant feeding experience have given rise to three issues. Firstly, initiation is a phase that is not simply defined by the initial behaviour. Secondly, there are distinct differences in the experience of initiation and maintenance that make the distinction between these phases possible. Finally, thirdly the progression from the initiation to the maintenance phases is delineated by individual experiences. The emergence of these three phases from the qualitative data, are substantiated by the results of the quantitative longitudinal study and call for a women-centred reconceptualisation of the infant feeding experience, and further provide support for the combination of qualitative and quantitative methodologies in this thesis (Tashakkori & Teddlie, 1998). The following chapter is centred on the debate surrounding the definition of the decision, initiation and maintenance phases based on the principle findings of the longitudinal and qualitative studies and focuses on a central, theoretically based integrated model of the infant feeding experience of first time mothers from which practical and theoretical recommendations can be made.

Discussion: Toward an integrated approach to women-centred infant feeding research

The thesis thus far has presented the conceptual and theoretical issues pertinent to the understanding and explanation of the infant feeding experience of first time mothers, and has developed and presented analysis of results of both a quantitative and qualitative study designed to address these issues. The overall aim of this chapter is to present the principle findings of the thesis, and to develop a holistic, and women-centred explanation of the processes involved in the experience of infant feeding in this sample. The first section of the discussion will present the principle findings of the thesis, guided by the research questions presented in chapter three (refer to chapter 3, section 3.4). The second section of the discussion presents the conceptualisation of infant feeding in three phases: the decision phase, the initiation phase, and the maintenance phase, and argue for the necessity for a women-centred approach within these phases. The third section of this chapter will focus on the results of the longitudinal and qualitative studies in relation to the three aforementioned phases. The fourth section of the discussion will combine the conceptual and theoretical debates and results raised by this thesis in order to develop an integrated model of the infant feeding experience of first time mothers. Finally, the fifth section of this chapter will expose the limitations of the longitudinal and qualitative studies, and present the theoretical and practical implications of these studies with a view to the development of future research.

8.1 Statement of findings

The following section provides a statement of findings of the study with reference to the research questions provided in chapter three (refer to chapter 3, section 3.4).

Findings related to each set of research questions will be presented below; that is, those related to the Theory of Reasoned Action, the application of Self-Efficacy Theory, aspects of social support, and those related to external variables.

8.1.1 Principle findings of the application of the Theory of Reasoned Action to infant feeding.

The research questions concerning the application of the TRA concerned both how first-time mothers form the intention to breastfeed and bottle-feed separately, how they make the decision between these behaviours, and the immediate determinants of both intention and behaviour. The results showed that participants' attitude was significantly predictive of intention to breastfeed (and therefore determined this intention), whereas their perceptions of the views of significant others was not. However, in the case of bottle-feeding intention, both of these variables were significantly predictive of, and consequently determined, intention to bottle-feed (although subjective norm was only moderately significant). Moreover, although both the breastfeeding and bottle-feeding models were highly significant in terms of predicting behavioural intention, a far larger proportion of the variance attributable to breastfeeding intention was predicted by breastfeeding attitude and subjective norm than in the bottle-feeding model. Therefore, it appears that first time mothers rely

more strongly upon attitude in forming their intention to breastfeed, than to bottle-feed.

In terms of the decision between breastfeeding and bottle-feeding in this sample, it was found that first time mothers appear to weigh up the advantages of both infant feeding methods when forming their behavioural intentions to breastfeed and bottle-feed. Further, it is ultimately choice intention that predicts choice of infant feeding behaviour, and so is its major determinant, due to its superiority over both behavioural and differential intention in predicting behaviour. Nevertheless, differential intention mediates between differential attitude and choice intention, and so can be viewed as the major determinant of choice intention.

8.1.2 Principle findings of the application of Self-Efficacy Theory to infant feeding

The research questions guiding the study of the application of SET to infant feeding regarded the investigation, firstly of the effect of type of self-efficacy expectancy on participants' levels of self-efficacy, secondly, the effect of time or stage of study on all types of self-efficacy expectancy, and thirdly, the effect of infant feeding experience on these expectancies. Firstly, with regard to type of self-efficacy expectancy, measurements were made of two behaviour-specific self-efficacy expectancies (breastfeeding and bottle-feeding), and of generalised self-efficacy. At all stages of the study, participants held significantly lower self-efficacy expectancies for breastfeeding than for either bottle-feeding or general self-efficacy. However, only at stage two (the early postnatal stage), was there any significant difference between participants' bottle-feeding and generalised self-efficacy scores, with bottle-feeding self-efficacy

expectancies at this stage being significantly higher than general expectancies.

Therefore, there were differences found both between behaviour specific and generalised self-efficacy expectancies, and within the types of behaviour specific expectancy for the first time mothers in this sample.

Secondly, concerning the effect of time, or the stage of the study, there were significant differences in participants' generalised and behaviour-specific self-efficacy expectancies between stages one and two, and between stages one and three.

Therefore, there was no significant difference in participants' generalised or behaviour-specific self-efficacy expectancies between the postnatal stages of the study (stages two and three). In terms of generalised self-efficacy, participants displayed higher levels of general personal mastery antenatally (stage one) than in the early postnatal stage (stage two), whereas participants showed higher levels of general personal mastery at the late postnatal stage (stage three) than at the antenatal stage. Patterns of behaviour-specific self-efficacy were analogous across the stages, with participants' levels of personal mastery for both breastfeeding and bottle-feeding being significantly higher at both postnatal stages than at the antenatal stage. Whilst it must be remembered that participants completed the behaviour-specific scales according to the infant feeding behaviour performed, it appears that in general the first time mothers in this sample strengthened their personal mastery for both breastfeeding and bottle-feeding by entering the postnatal stages, and the experiences this provided.

Thirdly, in terms of infant feeding experience, participants who ceased breastfeeding before 12 weeks postpartum could not be differentiated from those who continued beyond 12 weeks from their antenatal generalised or behaviour-specific self-efficacy

scores. Additionally, there was no significant effect of infant feeding experience in terms of levels of general self-efficacy expectancies at either postnatal stage of the study. With regard to breastfeeding self-efficacy at the early postnatal stage, mothers who had solely breastfed their babies from birth had significantly greater levels of personal mastery for breastfeeding than women who had either stopped breastfeeding and who were now bottle-feeding, or who were currently both breast and bottle-feeding. Mothers did not display such disparity in breastfeeding self-efficacy levels at the final stage of the study. Participants' levels of bottle-feeding self-efficacy significantly differed according to infant feeding experience at both postnatal stages of the study. Bottle-feeders and those who had or were currently both breast and bottle-feeding held significantly higher levels of personal mastery for bottle-feeding than those mothers who had solely breastfed. Although there was no significant effect of infant feeding experience on bottle-feeding self-efficacy between bottle-feeders and mixed feeders at the early postnatal stage, this effect was significant at stage three with sole bottle-feeders holding higher levels of personal mastery for bottle-feeding than mixed feeders. However, differences between participants of differing infant feeding experience were not in evidence with respect to the self-efficacy data antenatally.

8.1.3 Principle findings of the application of Social Support to infant feeding

The research questions based on aspects of social support concerned the three facets of social support that were highlighted in the literature review as important for investigation, these being type of social support (emotional, tangible, informational and appraisal), sources of social support, and frequency of perceived need of social support (or level of social support). Therefore, the research was aimed at

understanding the importance of these three facets and the interactions between them in first time mother's infant feeding experiences.

Unfortunately, due to disparity in the number of participants who completed all sections of the Social Support Questionnaire, it was not possible to perform the anticipated statistical analysis on the results (i.e. Chi-Square). Consequently, analysis of the social support data relied on the comparison of frequencies, and as such, all inferences based on this analysis should be treated with caution.

Firstly, concerning both type of support, and sources, there was a general distinction between the sources of support perceived as required by participants for both emotional and tangible support (partners and mothers), and informational and appraisal support (midwives and health visitors). Secondly, in relation to infant feeding experience, bottle-feeders and mixed feeders relied on their health visitor for bottle-feeding social support, whereas breastfeeders and mixed feeders relied, firstly on their midwife in the early postnatal stage, and then their health visitor in the later postnatal stage for breastfeeding social support. This may suggest that mothers' perceptions of the optimum source of support might change according to timing and infant feeding behaviour, but also might indicate the availability of health visitors and midwives to breast and bottle-feeding mothers at certain stages in their experience.

Thirdly, in relation to the relationship between infant feeding experience and perceived need of different types of support, a greater proportion of breastfeeders and mixed feeders stated that they would require informational and appraisal support for breastfeeding than bottle-feeders and mixed feeders stated that they would require for

bottle-feeding. However, this perceived need of informational and appraisal support by breastfeeders and mixed feeders for breastfeeding decreased between the early postnatal and the late postnatal stages. These results therefore indicate that experience of using certain methods of infant feeding changes the perception of the type of support required by mothers (as illustrated by the responses of the mixed feeders) for each method, and also time and possibly length of infant feeding experience is related to this perceived need. Finally, the most noticeable trend suggested by the analysis is that, in general, participants perceive that they would require a greater level of social support for breastfeeding than for bottle-feeding. As this trend also exists at the antenatal stage of the study prior to infant feeding experience, this would suggest that first-time mothers might hold preconceived ideas regarding the level of support required for both infant feeding methods prior to delivering their babies.

8.1.3 Principle findings of the understanding of external variables in relation to infant feeding.

The research questions based on the external variables of interest to the study concerned the relationship between the variables of age, education, marital status and birth experience and infant feeding behaviour and duration. Firstly, concerning age, there was a relationship in the sample between age and intended feeding method, with younger mothers tending to intend to bottle-feed and older mothers tending to intend to breastfeed. Although this trend also appears evident for initiation of behaviour, the correlational analysis was not significant. Additionally, older first-time mothers who breastfed in the sample, tended to breastfeed for longer than younger mothers.

Secondly, marital status was analysed using frequencies rather than the planned analysis of chi-square due to the low numbers of participants in some of the marital status groups (e.g. single). Therefore, as with the social support findings discussed above, care must be taken when making inferences from results based upon the comparison of frequencies. Examination of the frequencies suggests a shift in proposed infant feeding method by participants between intention and initiation, as single participants comprised the largest group of intended bottle-feeders, whereas married participants comprised the largest group of initiated bottle-feeders. However, attrition between the antenatal and early postnatal stages of the study may account for this shift in part. It is difficult to assess the relationship between marital status and duration of breastfeeding due to the unequal distribution of marital status groups to initiate breastfeeding. However, of those participants who ceased breastfeeding in the early antenatal period, more married and cohabiting participants than single participants breastfed for longer in this period.

Thirdly, similar to marital status, the relationship between education and infant feeding initiation and duration was examined using frequencies, and so caution should be taken when interpreting the results, as discussed above. Education was categorised as those participants who had ceased formal education prior to A level stage, and those who had attained A level stage education or beyond. Frequencies showed that, in general, more women who intended to breastfeed had achieved A level standard education than intended bottle-feeders. A similar pattern was shown in the examination of the initiation of infant feeding behaviour, with over half of the participants who initiated breastfeeding attaining an A level standard of education or

higher, and less than half of the participants who initiated bottle-feeding attaining this standard of education.

Fourthly, concerning the relationship between the birth experience and infant feeding, by far the largest proportion of participants had 'normal' vaginal deliveries. It was therefore not possible to conclude whether aspects of the birth experience affected initiation or duration of infant feeding. However, examination of breastfeeding duration of participants who stated that they experienced problems with the birth (which include participants who experienced 'normal' vaginal deliveries) suggests that it might not be the type of birth per se that affects infant feeding experience, but rather, the way in which these problems are dealt with by participants.

The final research question detailed in chapter three concerns the results of the qualitative study, that was designed in order to focus on women's experiences of infant feeding, and to provide further understanding of the quantitative results. The following sections detail the way in which the qualitative component of the thesis informs the principle findings of the quantitative analysis discussed above.

8.2 The three phases of the infant feeding experience

The results of both the longitudinal and the qualitative studies show there to be three phases that are integral to the understanding of the infant feeding experience of first time mothers: the decision phase, the initiation phase, and the maintenance phase.

Each of these phases will be discussed below with a view to building a women-centred conceptualisation of the infant feeding experience.

It was contended in chapter one that most mothers make their infant feeding decisions during pregnancy (Sheridan, 1997), which has been upheld by the results of the longitudinal study (refer to appendix 17, pilot study and chapter 6, section 6.4.1). Although the degree to which a minority of participants held this intention varied, the majority of participants in the longitudinal study had made the decision and formed an intention to either breastfeed or bottle-feed during pregnancy. The timing of the decision making phase (that is, during pregnancy) was also evident in the qualitative study, although again the strength of the eventual intention varied. Therefore, the decision phase is determined both by the process involved, that is the formulation of an intention to either breastfeed or bottle-feed, and the timing of the decision, that is during pregnancy. The definite parameters of the decision phase allow the conceptualisation of this phase to be straightforwardly applied. However, it is the ambiguity and indistinctness of the boundaries of the initiation phase that is central both to the debate of the overall conceptualisation of infant feeding, and the importance of a women-centred approach to this process.

The decision phase is a rational process of weighing up the pros and cons of each method (i.e. breastfeeding and bottle-feeding) and deciding which method to adopt. However, in experiencing the decision phase most women follow a similar route, that is, they form an intention to either breastfeed or bottle-feed during pregnancy, or at least before any behaviour is carried out. The initiation phase, although seemingly simply a continuance of the intention formed during the decision phase, is more complex both in terms of the behaviour that it encapsulates, and the timing and duration of the phase.

The major debate here is the definition of initiation, either as a behaviour or as a process. As a behaviour, initiation would simply comprise the initial feed following delivery. By defining initiation in this way, both the timing and the behaviour involved would allow straightforward classification. As shown by the results of the TRA analysis, intention is a significant predictor of initial behaviour. Therefore, if a participant has formed an intention to breastfeed, it is likely that the initial feed given by the participant to her new baby following delivery would be a breastfeed. However, as the analysis of the duration of breastfeeding has shown, simply because a woman initially breastfeeds her baby, this does not mean that breastfeeding will continue and become a routine or maintained behaviour.

Both breastfeeding and bottle-feeding are behaviours that often require learning (Byam-Cook, 2001). Neither is wholly instinctive, and both have their own unique difficulties that need to be overcome (to varying degrees) in order to be successfully carried out. By viewing the initiation phase as a process rather than a behaviour it is possible to understand this learning process as a time for establishing the chosen feeding method rather than as either a routine behaviour following the decision phase, or as part of the maintenance phase. It is argued here that it is not until breastfeeding or bottle-feeding has become established, that is until it becomes a regular, routine behaviour that progression to the maintenance phase has been achieved. Therefore, the initiation phase does have boundaries as it starts with the initial infant feeding behaviour, and ends on establishment of the chosen method. However, rather than being defined by time (as in the case of the decision phase), the duration of the initiation phase is totally dependent on the individual experience of the woman.

Consequently, due to the impact that the differing infant feeding experiences of women can have on the initiation phase, and the subsequent maintenance phase, it is vital that a women-centred approach is taken in order to achieve a full investigation and thorough understanding of the first time mothers' infant feeding experiences.

The maintenance phase, therefore, commences on establishment of the chosen infant feeding method which itself signals the completion of the initiation phase. Some mothers might progress to the maintenance phase after a number of days. Once their milk has come in, such mothers might not experience any of the common initial problems with breastfeeding such as soreness or difficulty positioning the infant, and feel comfortable with the behaviour after a relatively short period of time. Other mothers, however, might experience difficulties with latching on and/or positioning, and may even incur breast disorders such as mastitis (Department of Child and Adolescent Development, 2000). Such problems could prevent establishment of breastfeeding, and therefore, it might take weeks or even months before they become accustomed to this behaviour and progress to the maintenance phase. Furthermore, some mothers might never reach the maintenance phase. As has been shown in both the longitudinal and the qualitative studies, some mothers stop breastfeeding after a number of days or weeks without ever having fully established or felt comfortable with the behaviour. If this occurs, it is therefore necessary to initiate bottle-feeding and commence the initiation phase again with this new method.

Although, as has been shown by the analysis of both the qualitative and quantitative results, the maintenance phase might not be without its problems, these are often quite different (i.e. social rather than physical problems) from those encountered during the

initiation phase. Maintenance can be even less defined by time than the initiation phase. Whereas the start of the initiation phase could be determined as being the initial behaviour using the chosen method, the beginning of the maintenance phase is wholly reliant on successful completion of the initiation phase. Accordingly, the end of the maintenance phase is whenever the mother stops breastfeeding or bottle-feeding. Although as shown by the longitudinal study, in the case of breastfeeding, this might be determined by the return to work, as covered in the qualitative study, it is usually determined by how long the mother wishes to breastfeed for. Similarly, the duration of the maintenance period in the case of bottle-feeding is determined by when the mother chooses to stop feeding her baby with a bottle, and instead give a cup. The individuality of the commencement, process and duration of the maintenance phase gives further weight to the above mentioned recommendation that the processes involved in the experience of infant feeding should be investigated and viewed from a women-centred perspective.

In summary, it is argued that the three phases discussed above provide a framework within which the infant feeding experiences of first-time mothers can be understood. However, although this framework enables the internal and external process to be examined and observed, this does not mean that the phases form an overall process whereby one can inevitably progress from one phase to another. Rather, the three phase framework proposed allows for sensitivity to individual experiences, permitting women-centred examination of the processes involved in each of the phases. This is further indicated in the following section, which examines the evidence for the decision, initiation and maintenance phases from the results of the quantitative and qualitative analyses, and the theoretical and practical issues that they raise.

8.3 Examining the evidence

8.3.1 *The decision phase*

Within the decision phase, both the quantitative and qualitative analyses uncover two processes by which the phase can be understood. These are, firstly, the timing and strength of the intention formulated with respect to making the decision to breastfeed or bottle-feed, and secondly, the course of a choice decision, and its determinants. Each of these processes will be dealt with below.

Ninety-six percent of participants at stage one (during pregnancy) had formed an intention to either breast or bottle-feed. This was supported by the results of the qualitative study, as the participants reported having made their decision as to whether to breast or bottle-feed prior to the delivery of their babies. Therefore, it appears that the majority of mothers make the decision to breast or bottle-feed during pregnancy, supporting the literature that concentrates on women's infant feeding choices discussed in chapter one (refer to chapter 1, section 1.3) (for example, Baranowski, Bee, Rassin, Richardson, Brown, Guenther & Nader, 1983; Brown, Lieberman, Winston & Pleshette, 1960; Earle, 2000; Guttman & Zimmerman, 2000; Hoddinott & Pill, 1999; Hughes & Rees, 1997; McIntosh, 1985; Murphy, 1999; Scott, Binns & Aroni, 1997).

All participants in both studies who expressed an intention to bottle-feed indicated that their intention was strong. However, although a large proportion of participants who stated an intention to breastfeed indicated that the strength of their intention was

strong, a minority of both longitudinal, and qualitative study participants did not express strong intentions to breastfeed their babies. The TRA analysis showed a strong relationship, between attitude and intention, when assessing breast and bottle-feeding both separately and differentially. Further, multivariate analysis showed that attitude was more predictive of intention than subjective norm (Ajzen, 1988). Therefore, as it is clear that intention to breastfeed or (to a lesser extent) bottle-feed is determined more by attitude than by normative considerations, the varying strength of intentions can be understood in terms of the strength of attitude toward breastfeeding or bottle-feeding.

Similarly, it was reported in the qualitative study that participants were determined to breastfeed despite the negative attitudes, and in some cases, open discouragement and distaste concerning breastfeeding of people who were important to them. This suggests that the major process underpinning the decision phase is based upon the personally held attitudes and beliefs of individuals regarding breastfeeding and bottle-feeding to a greater extent than their perceptions of the beliefs of significant others. The strength of the relationships found between both the behavioural and differential components of the TRA regarding breastfeeding and bottle-feeding, and the data acquired through the qualitative study, lend confidence to the structure and interrelationships of the components of the TRA model (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Additionally, the results also lend weight to the methodological argument for the combination of quantitative and qualitative techniques (Tashakkori & Teddlie, 1998). This also highlights the importance of assessing women's subjective perceptions, and of the dangers of generalization in such studies, as in the case of, for example, Hoddinott and Pill's (1999) study and Guttman

and Zimmerman's (2000) research their participants reported that their infant feeding choice was affected by other's reactions to the observation of breastfeeding.

The second process underlying the decision phase is the understanding that, ultimately, infant feeding decisions are based on choice intentions. As well as being assessed as separate behaviours, breastfeeding and bottle-feeding were assessed differentially to discover whether the formulation of intentions, and subsequently performed behaviours could be understood in terms of a choice process or decision. The results of both the TRA analysis and the qualitative study gave a convincing account of the decision phase as constituting a choice decision. This again draws attention to an important gap in the TRA and TPB literature discussed in chapter two (refer to chapter 2, section 2.4), as only Manstead (1983) assesses infant feeding behaviour differentially.

The results of the quantitative analysis based on the TRA showed that differential attitude was highly predictive of differential intention, which was itself highly predictive of choice intention. Subsequently, choice intention was highly predictive of initial infant feeding behaviour. Further, participants, when discussing their decision to breastfeed or bottle-feed in the qualitative study, often talked of evaluating both breastfeeding and bottle-feeding when formulating their intentions. Moreover, the quantitative TRA analysis showed that simple choice intention contributed significantly to behaviour, whereas the combination of the two separate behavioural intentions (differential intention) did not. This simultaneous evaluation of breastfeeding and bottle-feeding adds further weight to Ajzen and Fishbein's (1980) theory which states that in a choice situation, individuals tend to evaluate the pros and

cons of each possible behaviour before forming a choice intention, which is more predictive of behaviour than separate behavioural intentions. Specifically in relation to infant feeding research based on the TRA, it is vital that both breastfeeding and bottle-feeding are investigated, rather than simply concentrating on the theoretical components as related to breastfeeding (for example, Duckett et al., 1998; Humphries et al., 1998; Janke, 1994; Kloeblen et al., 1999; Stockdale, 2001; Wambach, 1997). Further, as noted above, although Manstead et al. (1983; 1984) did assess breastfeeding and bottle-feeding differentially, it was unclear as to whether the behavioural or differential measures were more predictive of intention and behaviour.

Although the choice component of the decision phase, informed by the TRA, is important with regard to the formation of choice intentions, and the subsequent performance of behaviour, it is equally important to understand the beliefs that inform the attitudes upon which these intentions are based. As choice intentions are based on positive and negative evaluation of both behaviours of breastfeeding and bottle-feeding, so attitudes toward these behaviours are constituted of both positive and negative beliefs (Ajzen & Fishbein, 1980). Therefore, the determinants of a positive attitude about breastfeeding, for example, would consist of both positive and negative beliefs about breastfeeding. Thus there appear to be two (possibly simultaneous) processes of evaluation that lead to the formation of intentions. Firstly, women identify the positive and negative aspects of both breastfeeding and bottle-feeding that are important to their performance of the behaviour, and secondly these positive and negative beliefs are evaluated in order to decide on a personally acceptable method of infant feeding. Due to the problems with generalising between populations mentioned above, it is essential that Ajzen and Fishbein's (1980) recommendation of consultation

with a sample of the population of interest when constructing an instrument to measure the components of the TRA (and TRA related theories). It is proposed that it is essential to ensure that the issues of relevance to the population are examined in the construction of any instrument to be used in quantitative research that professes to be women-centred.

Once the decision has been made, and an intention is formed as to which infant feeding behaviour to carry out, women must wait until after delivery until the initiation phase can begin. The following section continues the examination of the results related to the initiation of infant feeding behaviour. The discussion below will incorporate both quantitative and qualitative analysis in order to develop a broader understanding of the nature and processes underlying the initiation phase.

8.3.2 The initiation phase

Previously, initiation of breast or bottle-feeding has been defined as the initial feed, that is, the first infant feeding behaviour to take place, or the first attempt at a particular infant feeding behaviour (e.g. Clemens, Roa, Savarino, Morsy, Kim, Wierzba, Naficy & Lee, 1999; Dusdieker, Booth, Seals & Ekwo, 1985). Although much of the research that focuses on women's experiences reviewed in chapter one (refer to chapter 1, section 1.3) investigates the duration of breastfeeding, it is often prenatal factors (e.g. O'Campo et al., 1992) or specific interventions (e.g. Chen, 1993; Jenner, 1988; Pugh, Milligan, Frick, Spatz & Bronner, 2002; Susin, Giugliani, Kummer, Maciel, Simon and da Silveira, 1999), that are examined rather than women's experiences of and reasons for their duration of breastfeeding. However, the

reconceptualisation of infant feeding discussed above, and which has emerged particularly from the qualitative analysis, has moved the understanding of the initiation phase from a behaviour, simply to be understood in terms of duration or success, to a process. As discussed earlier in this chapter (refer to section 8.1), the initiation phase commences with the initial behaviour of the chosen infant feeding method, and ends upon establishment of that chosen method. However, due to the way in which infant feeding was previously conceptualised (e.g. Dusdieker et al., 1985; Righard & Alade, 1990), and therefore the way in which this thesis was set up, the results of the initiation phase are focused on the commencement of the phase (i.e. the initial feed). Future quantitative research concerning the initiation phase would therefore require analysis of the processes and behaviours contained in this phase as well as that of the initial feed. However, in order to maintain clarity in the discussion of the results concerning the initiation phase, they will be discussed in terms of the way in which the thesis was set up, that is, in terms of the TRA analysis as signaling the start of the initiation phase, and qualitative analysis that encompasses both the commencement and cessation of the phase. The results will be discussed below firstly, with regard to the initial behaviour that indicates the start of the initiation phase, and secondly, the circumstances that effect the duration and completion of the phase.

Although this study was not designed to examine the effects of the first feed per se, much of the infant feeding literature has placed great store on the importance of the first breastfeed to the continuance of breastfeeding (e.g. Righard & Alade, 1990). However, despite the majority of participants who intended to breastfeed actually initiating breastfeeding (and in many cases after undergoing traumatic deliveries), many ceased breastfeeding soon after delivery (Foster et al., 1995). However, as the

above discussion posited that initiation is not inevitable when progressing from the decision to the initiation phase, neither is the successful completion of the initiation phase inevitable once the first feed has been successfully achieved.

The length of the initiation phase, or whether it is in fact completed, varies from woman to woman. Both breastfeeding and bottle-feeding can take time to establish and become routine behaviours (Byam-Cook, 2001). As detailed from the qualitative analysis in both the longitudinal and the qualitative studies, many participants encountered physical problems such as pain, and difficulties with positioning and latching on in the early stages of breastfeeding. As mentioned above, many women who underwent traumatic deliveries nevertheless managed to start the initiation phase of breastfeeding by carrying out a first breastfeed. Although an initial breastfeed took place, however, establishment of breastfeeding itself was not without (possibly ongoing) difficulty (Ellis & Hewat, 1984). It was not until these problems were resolved, either through the support of health professionals or through trial and error, that participants felt comfortable with breastfeeding, if this resolution occurred at all.

Although the quantitative analysis shows that the timing of the initial feed after delivery varies between participants, the qualitative study showed that it was not necessarily the time that it took between delivery and initial feed per se that proved a problem for participants, but rather their own personal concerns. Mothers in the qualitative study who had undergone caesarean sections and had to wait to be stitched did not appear to be effected by this necessary delay in the same way as those participants who had delivered their babies vaginally and found that they needed to ask before they could put their babies to the breast. Additionally, mothers in the

second stage of the longitudinal study who reported that they experienced difficult problems with regard to pain, positioning and latching on introduced above nevertheless went on to complete the initiation phase and establish breastfeeding. However, one participant who experienced similar problems stated that she had never felt comfortable with breastfeeding and therefore never properly established this behaviour. Focusing on women's subjective views, therefore, is essential to a women-centred understanding of infant feeding, as discussed in chapter one (refer to chapter 1, section 1.3) with reference to Hoddinott & Pill's (1999) participants' reflections on observing breastfeeding, and the effect that these observations had on their infant feeding choices.

Thus it appears that among the participants of this study there are issues of understanding and control involved in the differing perceptions and experiences of particularly breastfeeding that influence and effect the duration of the initiation phase. Whilst a proportion of participants are equipped with sufficient support to understand and gain some control over what is happening to them, to allow them to move from initiation to maintenance, others might not be furnished with the appropriate degree of support to enable this transfer to occur. This provides tentative support to the Buffering Hypothesis in the social support literature (Cohen & Wills, 1985), which proposes that the effects of support are through a barrier that protects the individual from stressful events. In this case, it could be seen that support protects women from the effects of difficulties by providing a sense of control. The results of the qualitative study, coupled with the reasons given for ceasing breastfeeding by the stage two participants in the longitudinal study, suggest that control and independence regarding

overcoming problems concerning infant feeding is vital in allowing mothers to successfully negotiate the initiation phase.

The following section moves the discussion of the results to the final phase of the infant feeding experience, the maintenance phase. Although, as discussed above, according to their experiences, the maintenance phase will commence at different times for different women, the discussion of the results will focus on the results of the analysis of self-efficacy, social support, external variables and the qualitative study in line with the original arrangement of the thesis in order to elucidate the discussion.

8.3.3 The maintenance phase

The reconceptualisation of infant feeding that has taken place in this chapter has implications for the reporting of the results pertinent to the maintenance phase similar to those described at the beginning of the report of the initiation phase. Due to the way in which the longitudinal study was originally set up (with initiation meaning the first initial feeding behaviour), it is not possible to differentiate at which postnatal stage participants progressed from initiation to maintenance. Therefore, to sustain clarity, in line with both the structure of the thesis, and the organisation of this discussion, maintenance will cover the issues related to both postnatal stages with regard to self-efficacy, social support, external variables, and the maintenance section of the qualitative study.

It must first be noted that overall, participants appear to view bottle-feeding as an 'easier' behaviour to perform than breastfeeding. At all stages of the study,

participants exhibited lower levels of personal mastery over breastfeeding than either behaviour-specific bottle-feeding self-efficacy, or generalized self-efficacy. Additionally, apart from tangible support (Matich & Sims, 1992), participants generally reported that they would require more support for breastfeeding than for bottle-feeding. These results might well be affected by the proportion of breastfeeders and bottle-feeders completing the postnatal scales. However, as similar results were found at the antenatal stage when all participants were required to complete all of the items on the scale, this gives rise to a possible common perception of breastfeeding as being a behaviour that requires a greater level of both internal and external resources in order for it to be successfully tackled, rather than a 'natural' behaviour as proposed by much of the lay literature (e.g. National Dairy Council, 1995). Further, these results appear to provide confirmation for the integration of the internal social cognition of self-efficacy and the subjective external influence of social support for understanding the phases of the infant feeding experience.

By observing the general differences between the theoretically based results for breastfeeding and bottle-feeding it would, therefore, appear that there is a broad distinction between the way in which mothers view these methods. However, once account has been taken of the effect of infant feeding experience, this distinction becomes less apparent. This is particularly apparent in the case of the lack of distinction between ceased breastfeeders and continued breastfeeders at the antenatal stage of the study. Further, although at the first postnatal stage, most participants report weaker self-efficacy expectancies for breastfeeding than for bottle-feeding, it is the mixed feeders who display the lowest levels of personal mastery for breastfeeding. Therefore, it appears that those participants who have been unable to successfully

maintain breastfeeding, and have needed to change to bottle-feeding have lower levels of personal mastery over breastfeeding postnatally, than those who have successfully maintained breastfeeding until measurement at stage two. This is similar to the preliminary findings of Dennis and Faux (1999) who showed that those who had previously maintained breastfeeding had higher self-efficacy expectancies for this behaviour than first time mothers. Thus those who have had either no experience, or whose experience of breastfeeding has been adverse, have lower self-efficacy expectancies than those who have been able to successfully maintain this behaviour.

Although in the case of bottle-feeding self-efficacy at stage two, there was no difference between bottle-feeders and mixed feeders with regard to the strength of their self-efficacy expectancies for bottle-feeding, there were significant differences between the expectancies of those who had had experience of bottle-feeding and those who had not. Both bottle-feeders and mixed feeders held stronger self-efficacy expectancies over bottle-feeding than breastfeeders, who had had no experience of bottle-feeding. Further, at stage three, bottle-feeders showed significantly higher levels of personal mastery over bottle-feeding than mixed feeders.

The above synopsis of the self-efficacy results show that it is vital to take account of the infant feeding experience of women when understanding their feelings regarding their capabilities concerning both breastfeeding (Dennis & Faux, 1999), and bottle-feeding. Although generally, breastfeeding is seen as promoting lower levels of self-efficacy than bottle-feeding, it is not perhaps always helpful simply to look at differences between breastfeeding and bottle-feeding without taking experience into account. For example, if mothers change from breastfeeding to bottle-feeding at the

maintenance phase, it is essential that the low feelings of self-efficacy concerning bottle-feeding observed in these mothers are acknowledged, and the appropriate support given to counter the possible effects of such low self-efficacy. By simply assuming that all mothers have low self-efficacy for breastfeeding compared to bottle-feeding, and not examining the specific needs of infant feeding groups, individual mothers needs could be ignored.

Similar to the self-efficacy results, differences were found within the breastfeeding social support results between participants who had only experienced one form of infant feeding, and those who had experienced both. However, there was little difference between bottle-feeders and mixed feeders with regard to bottle-feeding social support. Although breastfeeding support *sources* changed little according to experience, the frequency of perceived need for support exhibited an effect regarding experience, with for example, mixed feeders stating that they required a higher level of support for breastfeeding than sole breastfeeders. As discussed in chapter seven (refer to chapter 7, section 7.1) external variables might effect the duration of breastfeeding, and therefore effect who becomes a mixed feeder rather than a sole breastfeeder. However, the reasons that are given by participants for their change in infant feeding method, and their experience of the circumstances of this change (that could in turn be effected by the level of self-efficacy expectancies), could effect the level of social support that they believe is required for breastfeeding. Therefore, although due to the method of analysis used to examine the social support data (frequencies), the results cannot be statistically verified, in general, the results suggested that participants who have needed to change from breastfeeding to bottle-feeding indicated that they need more social support than participants that have continued breastfeeding. .

To summarise the theoretical discussion of the maintenance phase, it seems that infant feeding experiences have a large part to play in the case of the internal processes at work in the process of maintaining infant feeding behaviours. Conversely, it might be the internal processes themselves that effect the infant feeding experience. Certainly there appears to be an effect whereby where there are low internal resources (i.e. low self-efficacy expectancies) participants appear to be aware that they require greater levels of external resources (i.e. higher levels of social support) and vice versa. Although the actual level of social support available to participants cannot be determined without direct observation, participants' awareness of levels of personal mastery could play a part in their subjective perception of their level of need for social support.

The following section proposes a model of infant feeding based on the three phases discussed above. Both internal processes and external influences will be explained in relation to the possible behavioural alternatives available to women, and the impact that changes in behaviour have on their progress in the overall infant feeding experience.

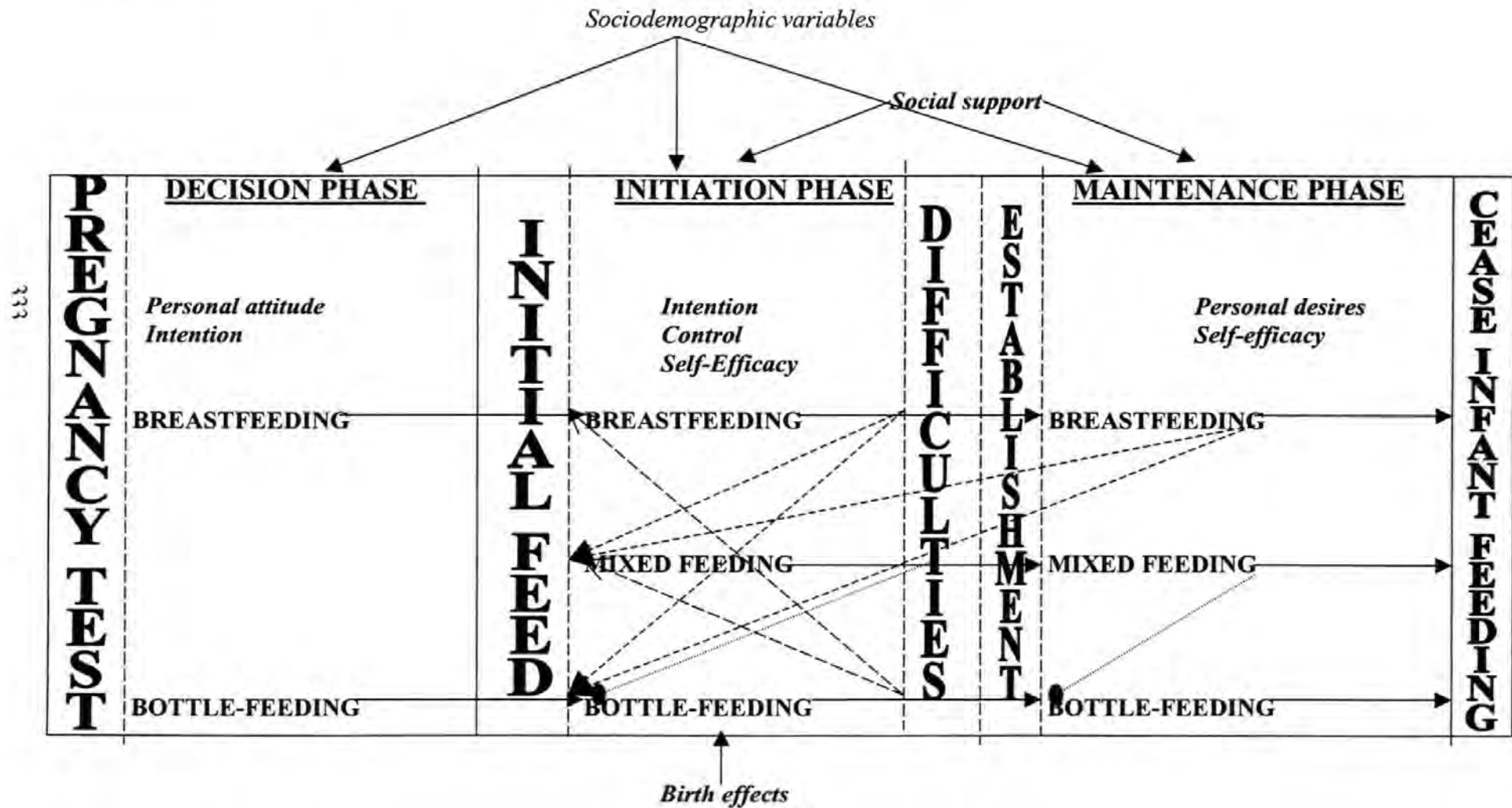
8.4 Toward an integrated model of the infant feeding experience of first time mothers

8.4.1. Synopsis

The chapter thus far has raised three important issues. Firstly, the analysis has shown there to be three phases by which the infant feeding experience can be understood; the decision phase, the initiation phase and the maintenance phase. Secondly, this research has shown that progression through these phases is not inevitable. Simply because a mother embarks on a course of behaviour does not mean that she will be able to continue this behaviour – progression is defined by a range of factors specific to the individual's experience, not time. Thirdly, the analysis has also provided evidence for the utility of combining theoretical frameworks and concepts, as well as methodological perspectives, to develop a holistic and women-centred understanding of infant feeding experience. This section presents a women-centred model that articulates the integration and operationalisation of the internal and external processes involved in the three phases of the infant feeding experience.

The model shown overleaf clearly shows the three phases of the infant feeding experience outlined in the previous sections. Within each phase the model presents the possible infant feeding behaviours and the internal processes that are at work at each phase. For example, it can be seen that during the decision phase the internal process at work is 'personal attitude'. The external influences on each phase are displayed outside the boundaries of each phase, with for example, birth effects providing an effect on the initiation phase. Further, the defining boundaries surrounding each phase

Figure 19: An integrated model of first time mothers' infant feeding experience



and through which women must pass in order to reach the next phase are clarified. Each of the phases, and the possible modes of advancement through them will be explained in detail below.

8.4.2 Formulation and explanation of the model

As discussed earlier in the chapter, the decision phase usually takes place during pregnancy. Therefore, once a woman has knowledge of her pregnancy, based on the TRA analysis she can then start to weigh up the pros and cons of breastfeeding and bottle-feeding in order to form an intention to perform one of these behaviours. Integral to her formulation of this intention is her personal attitude toward breastfeeding and bottle-feeding as the ongoing internal process, and externally, the influences on her choice are her sociodemographic characteristics (e.g. age, education and marital status).

The start of the initiation phase is marked by the initial feed performed by the mother following the birth of her baby. The internal processes at work in relation to the initial feed are intention (as shown by the TRA analysis) and control (indicated by participants in the qualitative study), whilst external influences include birth effects and sociodemographic variables as shown by the longitudinal study. As discussed earlier in the chapter, the initiation phase is a time for learning the chosen infant feeding behaviour, with the aim of developing it to become an established behaviour. Therefore, if the internal processes of control and self-efficacy are correctly integrated with the sufficient of social support (particularly appropriate informational support) the new mother will be able to overcome any difficulties, establish the behaviour

(either breastfeeding or bottle-feeding) and progress to the maintenance phase.

However, if difficulties cannot be successfully overcome or avoided, a change in behaviour might take place before establishment can be achieved.

If a breastfeeding woman comes across difficulties that she cannot surmount, both the qualitative and longitudinal studies have shown that two behaviours are open to her.

Firstly, she can either change the way in which she feeds her baby from sole breastfeeding to sole bottle-feeding. This will involve returning to the beginning of the initiation phase for bottle-feeding (the initial feed) and starting this phase of the process again. Secondly, the woman could start mixed feeding; supplementing her baby's diet with formula whilst still giving the baby some breastfeeds. Although the latter behaviour involves the continuation of breastfeeding, the mother must return to the beginning of the initiation phase due to her introducing the new behaviour of bottle-feeding. Further, mixed feeding has been classified as a separate behaviour in the model due to the new complexities that the combination of the two methods brings. Whether mixed feeding or sole bottle-feeding are chosen, the behaviour at some point becomes established and the maintenance phase is reached.

A similar pattern of possible behaviour is available to the mother who has initiated bottle-feeding but is having difficulties. Although none of the participants in this study initiated bottle-feeding and changed to breastfeeding⁶, this is a course of action available to bottle-feeding mothers in the early postnatal period before their milk has dried up. Similarly, mixed feeding is also an option open to bottle-feeding mothers at this early stage. To perform both of these behaviours, it would be necessary to return

⁶ One participant who bottle-fed from delivery did breastfeed her baby once at 30 days postpartum, but this was not classified as a behaviour in the analysis.

to the start of the initiation phase to carry out the first breastfeed. Additionally, it could be possible for difficulties to present themselves concerning this new behaviour, and for women to return to either sole bottle-feeding, or from sole breastfeeding to mixed feeding. In either case, any change in behaviour would entail reverting to the start of the initiation phase.

Once either breastfeeding, bottle-feeding or mixed feeding has been established, mothers progress to the final maintenance phase. During this phase it tends to be personal desires and self-efficacy that internally effect behaviour or behaviour change, and social support, social circumstances and sociodemographic characteristics that externally influence behaviour. Although breastfeeding has generally become a routine behaviour with few physical problems by the maintenance phase, the qualitative and longitudinal studies showed that personal desires (such as wanting more freedom or wanting to diet) and circumstances such as returning to work might influence a change either to mixed feeding or sole bottle-feeding. Often the change from breastfeeding to bottle-feeding during this phase is gradual, with mixed feeding being the mediating behaviour as mothers test whether their babies will take a bottle before wholeheartedly embarking on sole formula feeding. Either way, at the maintenance phase it is necessary for mothers to return to the start of the initiation phase when starting either of these new methods. Unlike at the initiation phase, however, it is not usually possible for bottle-feeding mothers at the maintenance phase to change to either mixed feeding or sole breastfeeding as by this phase, the milk has usually depleted. The only change in behaviour that does not necessitate a return to the start of the initiation phase is the change from mixed feeding to bottle-feeding during the maintenance phase. It can be assumed that once mixed feeding has become

established, bottle-feeding would itself be an established behaviour, as the participants of the qualitative study found there to be no difficulty in changing from mixed feeding to sole bottle-feeding once they had made the decision to do so.

In summary, whilst it is possible for women to pass through the three phases of the infant feeding experience proposed by the model without encountering any problems, this is unusual. More commonly, particularly during the initiation phase, women encounter difficulties with infant feeding that lead to initiation of an alternative behaviour. However, with appropriate, individually determined balance between internal processes such as self-efficacy and control, and external influences such as social support, as shown by previous research demonstrating the positive effect of support interventions on duration of breastfeeding (e.g. Jenner, 1988), it might be possible to overcome these difficulties without the need for such a transference to another behaviour. Thus, the model presented above facilitates an individual women-centred focus for understanding the infant feeding experience of first time mothers within an integrated theoretical framework. Additionally, by focusing primarily on women's perceptions of their experiences, it is possible to understand the processes involved without the need to constrain women's choices in the research process due to experimental considerations (e.g. randomized control trials), and so maintaining a women-centred approach. Further, from a practical perspective, this model may also serve to provide understanding for the sharp drop in rates of breastfeeding women in the early postpartum period (Foster et al., 1995).

While the model proposed provides a useful framework for the understanding of infant feeding experiences, there are certain limitations of the studies contained in this thesis

that must be taken into account prior to the proposal and discussion of any theoretical or practical recommendations based on the findings. The following section, therefore, identifies these limitations, in order that the confines of the implications of the research can be understood before these recommendations are made.

8.5 Limitations of the study

The longitudinal and qualitative studies at the heart of this thesis have provided two distinct but related modes of evidence upon which infant feeding can be understood. Firstly, individually, these studies have presented useful and significant findings in terms of understanding first-time mothers infant feeding experiences. Whilst the longitudinal study was contained within a theoretical framework, the qualitative study examined experiential factors to broaden and assimilate the individual constructs measured by the quantitative analysis. Secondly, therefore, the amalgamation of the results of these studies enabled the formulation of a comprehensive integrated model within which the terms of those experiences of infant feeding could be framed. Despite the significance of the results discussed above, the studies nonetheless suffered from the inevitable limitations that face researchers in applied settings. This section will work through these limitations, and the explanations for them, before progressing to the research and practical recommendations that can be drawn from the results.

The first limitation evident in the longitudinal study was that of timing. Due to the way in which the majority of participants had to be recruited, many were closer to their expected date of delivery than was planned during the development of the study.

It was hoped that participants would be in the third trimester of pregnancy to ensure that most would have thought about how they were going to feed their baby prior to recruitment. However, the closer the participants were to the birth of their baby, the less time that could elapse between the first and second stages of the study, thereby reducing the longitudinal element of the study. Further, as participants could only be contacted via mail and not directly by the researcher, it was not always possible to elicit responses from participants within the correct time span for each stage. For example, as explained in chapter six (refer to chapter 6, section 6.2) not all of the participants who returned the self-efficacy scales at stage two of the study could be entered into the analysis. As a small proportion had returned their scales after the designated time for the early postnatal period of 12 weeks (one participant returned the scales at 22 weeks), their data could not be used at this stage. With direct contact between the researcher and participants whereby the researcher could have personally administered and collected the scales, the latter problem could have been overcome. However, due to ethical restrictions this was not possible.

The second limitation of the study was the differing sizes of the breastfeeding and bottle-feeding groups. Direct comparison of breastfeeders and bottle-feeders was not an aim of the research. However, the differing perceptions of mothers toward breastfeeding and bottle-feeding as behaviours were central to both the longitudinal and the qualitative studies. Therefore, the results could have been strengthened, and a broader understanding of the infant feeding experience could have been achieved if these groups could have been more adequately compared. In this research, by far the largest proportion of participants intended to breastfeed. Although many stopped breastfeeding soon after birth, all those who stated an intention to breastfeed and who

responded to the second stage of the study, did give their babies at least one breastfeed. While this provides evidence for the positive support of breastfeeding by the first time mothers in this sample, it resulted in very low numbers of intended bottle-feeders.

Thirdly, although the sample size of the longitudinal study was certainly adequate for the study as a whole, due to the low numbers of participants in certain demographic groups, it was not always possible to carry out the intended statistical analysis (e.g. the analysis of the external variables). With a larger sample size, and broader sampling techniques it would be possible to increase the numbers of participants in order that statistical analyses could be performed. Although the generalization of results was not an ultimate aim of the study, by increasing the representation of demographic groups, it would also be possible to assess and understand the infant feeding experiences of women with a broader range of characteristics. However, due to sampling problems (for example, gaining contact with participants), it simply was not feasible to recruit a larger sample.

Although generalisability would be advantageous in the development of practice, as noted above, such generalisability was not a central aim of this thesis and the studies contained within it. Rather, this thesis set out to develop and achieved an integrated theoretically based model of infant feeding that highlighted the individuality, and consequently the women-centred nature of the infant feeding experience of the first time mothers in this sample. Further, the methodology and the research process as a whole sought to value women's views and experiences, and to allow participants choices throughout the study. In so doing, both theoretical and practical

recommendations can be made which are both evidence based (with respect to the evidence resulting from this thesis), and focused upon the individual needs of women. The following section discusses these recommendations with a view to both future research, and women-centred, evidence-based practice.

8.6 Recommendations

The recommendations that transpire from this thesis fall into two categories. Firstly, theoretically and methodologically based recommendations for future infant feeding research, and secondly, suggestions for practice. Both types of recommendation will be addressed in turn below in order to both express the utility of the model presented above, and to demonstrate the effectiveness of the methodological grounding of the research.

8.6.1 Theoretically based recommendations for future research

In order to clarify the theoretically and methodologically based recommendations of the thesis, each theoretical strand will be addressed (i.e. the TRA, SET and Social Support), followed by recommendations for research based on the utility of particular methodologies. The first theoretical position to be dealt with here is the TRA. The analyses of the data arising from the TRA data have provided strong support for the TRA as a framework for understanding both the decision phase and the start of the initiation phase in respect of infant feeding. Further, the qualitative study has shown control to be an important factor in the instigation and continuance of infant feeding. Coupled with the evidence for the role of self-efficacy expectancies throughout the

infant feeding experience, the evidence suggests that the addition of the component of perceived control as proposed by the Theory of Planned Behaviour (TPB, Ajzen, 1988) may progress understanding of infant feeding (both intention and initial behaviour). Although, as discussed in chapter two (refer to chapter 2, section 2.4), several researchers have applied the TPB to infant feeding (e.g. Duckett et al., 1998; Janke, 1994, Stockdale, 2001; Wambach, 1997), further research should compliment the existing TPB literature in three ways. Firstly, by testing the TRA in conjunction with the TPB (and ensuring that all theoretical components correspond in accordance with the principle of compatibility), it would be possible to compare the utility of these theories in advancing understanding of infant feeding decisions and initiation, and specifically, to quantify the relationship between personal attitude and control, which were highlighted as important in the model. Secondly, a future application of the TPB should measure the theoretical components in an instrument constructed in consultation with a sample of the population under investigation. Finally, rather than maintaining a specific focus on breastfeeding, the results of this study have highlighted the importance of broadening the behavioural focus to incorporate breastfeeding and bottle-feeding, in order to further understanding of the infant feeding decision. This final point also asserts the importance of providing a holistic view of the infant feeding experience, which allows women-centred methodology to be carried out, by maintaining and valuing women's choices.

The second theoretically driven research recommendation involves the further understanding of the reciprocal relationship between self-efficacy expectancies and social support. The results of the longitudinal study showed that participants generally held low self-efficacy expectancies for breastfeeding and reported that they would

require higher levels of social support for breastfeeding than for bottle-feeding. However, the exact nature of this relationship is unclear. It is proposed here that the positive features of both quantitative and qualitative methodologies could be put to use in order to specifically focus on the interrelationship between these theoretical constructs in order to further elucidate the direction and strength of this relationship. By combining these methodological perspectives as in this thesis, it would be possible both to determine the significance of the relationships between self-efficacy and social support, and understand the nature of this relationship within the context of the wider infant feeding experience. It is further argued here that self-efficacy remains a separate construct in any future research related to the infant feeding model proposed above. With regard to the first theoretical recommendation, it could be viewed that the perceived control component of the TPB (which is made up of aspects of both self-efficacy and locus of control), could adequately measure the effects of self-efficacy. However, without a theoretically 'pure' measure of self-efficacy expectancies, it would not be possible to gauge women's levels of personal mastery over infant feeding throughout the three phases of the infant feeding experience.

The third and final recommendation to be offered here is that of a qualitative study focused specifically at understanding the initiation phase, and in particular the boundaries containing the initiation phase, to be carried out in conjunction with a broader quantitative study such as, for example, the application of the TPB to infant feeding suggested above.. First and foremost, the qualitative study that was carried out for this thesis highlighted that initiation, rather than being a behaviour, is a process that has to be understood in terms of the internal and external factors involved in the infant feeding experience. Although, for example, Hoddinott and Pill (1999) focused

on women's subjective perceptions of infant feeding in order to understand choice using purely qualitative methods, the integration of an in depth qualitative study of initiation, as well as a broader quantitative examination would allow both a holistic view of the infant feeding experience to be taken, and additionally individual women's experiences to be understood in a broader context and within a theoretical framework. Further, this study also stressed the individuality of progression through the initiation phase, located the processes that guide and influence initiation, and finally identified the boundaries surrounding this phase. However, due to the different manner in which infant feeding was first conceptualised in this thesis, the current qualitative study was unable to clarify how mothers reach the decision to change their infant feeding behaviour, continue their behaviour in the face of difficulties, or reach a point of establishment. By designing a qualitative study specifically to examine the arrangements and boundaries of this phase, a more rigorous understanding of the complexities of this phase could be reached, upon which practical recommendations of this crucial phase of the infant feeding experience could be based. This would further inform the evolution of appropriate, women-centred evidence based practice, which has been a central concern and objective of this thesis.

8.6.2 Practical recommendations for women-centred, evidence-based practice

In order to make clear the practical recommendations that arise from this research, they are to be presented in this section in the order of the three phases of the infant feeding, as illustrated by the model. Therefore, these recommendations will be discussed in turn in relation to the decision phase, the initiation phase and the maintenance phase. It must be remembered that the sample investigated in this study

cannot be supposed to represent the entire population of first-time mothers due to several factors, including recruitment methods and the willingness or otherwise of certain women to participate. Therefore, the recommendations made below are not intended to replace current practice and care, but rather to offer ways in which they could be enhanced based exclusively upon the findings of this study.

The first recommendation to be made here, therefore concerns the decision phase, and is more of a counter to the practice that is currently being carried out than a proposal for new actions to be taken. The TRA analysis showed that it is personal attitude rather than the normative pressure that influences the formation of infant feeding intentions. Therefore, if the number of women who form intentions to breastfeed are to rise, rather than health professionals impressing their own views about breastfeeding, focus must be placed on developing the mother's own belief system in order to form a strong positive attitude toward breastfeeding. Further research would be required in order to understand the foundations of belief systems regarding infant feeding to determine the most influential time at which to facilitate mothers' decision making. The role of the health professionals in the decision phase must therefore entail both aiding and encouraging mothers to form infant feeding intentions, and most significantly, trusting mothers to make the best decision for their baby. Therefore, rather than taking on the role of educator (although mothers must have access to relevant information), health professionals must develop their role to that of facilitator by allowing and assisting women to arrive at the optimum decision for them. By taking on this role, health professionals will enable mothers to examine and possibly challenge their beliefs in the light of the information and resources available to them.

As shown by the results of both the longitudinal and the qualitative studies, ultimately the vast majority of participants *do* hold positive beliefs and attitudes toward breastfeeding and *do* form an intention to breastfeed their babies. These results therefore, potentially raise two views. Firstly, the health promotion efforts of recent years, to increase rates of women who intend to breastfeed have been valuable in attaining this goal. Or secondly, the focus of the support required by mothers who wish to breastfeed their babies has been misplaced, that is, it has been focused in the decision phase, when it is more urgently required in the initiation phase when crises concerning the continuation of breastfeeding arise. In either case, it is proposed here that many of the mothers in this study require more input regarding infant feeding at the initiation phase, than at the decision phase, as more effort is required to enable mothers to continue breastfeeding during this first postnatal phase in the infant feeding experience.

If, as proposed here, the initiation phase is the phase in which mothers are most in need of extra input from their health professionals, it must be further noted that the reconceptualisation of infant feeding outlined in the model potentially increases the time period in which mothers should be provided with care concerning infant feeding. It has been established in this thesis that initiation consists of more than simply the initial feed that has been deemed so important in both the infant feeding literature and postnatal practice. Whilst the results of the longitudinal and qualitative studies do not deride the consequences of the experience of the initial feed, they do propose that appropriate support to overcome difficulties surrounding initiation be available until infant feeding is established. Further evidence regarding the initiation phase that could be provided by the research recommended in the previous section could have an effect

not only on practice, but on who provides the care received by women. Although many midwives will still care for mothers past the usual time limit if they feel that this is required, the routine and often somewhat inflexible handing over of care to health visitors may need to be reviewed. If it is recognised, and supported by evidence, that the crucial time for mothers to be given care regarding infant feeding is initiation, and that this time can go well beyond the initial feed, the way in which the responsibility for care is transferred from one health professional to another may require examination.

The results of both the longitudinal and qualitative studies also provide evidence for the type of support that is required by mothers from health professionals. Quantitative analysis revealed that it was specifically informational and appraisal support that mothers expressed that they needed from midwives and health professionals. Further, the qualitative study showed that this support must be appropriate in allowing mothers to learn the new skills required for infant feeding. Appropriate support must therefore involve methods that allow mothers to take control of their actions and become independent feeders. In this way they will feel comfortable, and confident in their abilities to feed their babies either when the health professionals are not available in the hospital, and importantly, on their return home.

Although health professionals play a key role in the initiation of infant feeding, a major source of support cited by all mothers in both the longitudinal and qualitative studies was that of significant others, and in particular mothers and partners. The role that participants placed onto their significant others was that of providing emotional and tangible support, both of which were often reported as being more frequently

required than either informational or appraisal support. Although participants were able to express the sources of support that they required, this does not necessarily mean that those sources themselves know that mothers require this type of support. Furthermore, the subjectivity of the measure used in this research could not take into account the feelings and thoughts of the support providers. In the qualitative study, even at the maintenance phase, participants expressed concern that their partners could not be more involved with feeding, and that this concern was one of the influences behind their decision to introduce bottles. In order to promote mothers' receipt of the support that they require from the appropriate sources, and circumvent any difficulty that mothers might have in expressing their need for specific support, significant others such as partners and mothers could be targeted. Such targeting should involve clarification of what constitutes appropriate support, with examples of how this support could be conveyed. This could be achieved through lay literature such as leaflets, at antenatal classes, or through home visits made by health professionals, attended by relevant family members.

The endowment of the appropriate level and type of social support discussed above, could have a positive effect on women's levels of self-efficacy for breastfeeding. As discussed in the previous section, it is vital that more work is carried out to investigate the reciprocal relationship between social support and self-efficacy in relation to infant feeding. However, based on the results contained in this thesis, it is possible that with the appropriate level of support (particularly appraisal support), women will become more efficient and independent at whichever infant feeding method they have chosen, and so their level of personal mastery of that behaviour will rise. It is therefore essential that sources are targeted, and educated as to their supportive role in order that

women can be given the confidence to maintain the method that they have chosen to feed their babies.

8.7 Conclusion

This thesis set out to provide, and finally achieved an integrated women-centred model of infant feeding, based on a methodology that elevated women's views. The results of the analyses, and the model derived from them has supported four core themes within this thesis. Firstly, the model supports the integration of theoretical perspectives within a Social Cognitive framework in order to understand the internal processes involved in the carrying out of infant feeding behaviour. Secondly, the employment of mixed methodologies is supported by the nature and quality of the reciprocal evidence supplied by both the quantitative and qualitative analysis that resulted from the studies that are contained in this thesis. Not only did the quantitative and qualitative analyses support each other, but both the longitudinal and the qualitative studies independently and uniquely contributed to the understanding of infant feeding within the model. Thirdly, it was proposed that this thesis would contribute to the development of women-centred evidence-based practice by providing evidence which is itself centred on women's experiences as a basis for good practice and care. The model itself shows that the individuality of women's experiences in this sample governs progress with infant feeding, and both the theoretically and experientially based studies give rise to clear practical recommendations. Fourthly, the model proposed in this thesis is not intended to be a definitive model of infant feeding, but rather, a springboard for further women-centred infant feeding research involving both the integration of theory, and the pragmatic use of methodology. Therefore, in conclusion, by combining

theory to inform rigorous research upon which to base best practice regarding infant feeding, the infant feeding experiences of mothers and their babies could be maximized.

Appendix 1

Instrument Development Study interview schedule.

Introductory Questions:

- How are you all finding your pregnancies?
- Have you found that the antenatal classes have been helpful?

Linking Questions:

- Have you thought about how you are going to feed your babies?
- When did you make this decision?

Introduce subject of focus group/interview:

“As you know this discussion is about beliefs about breastfeeding and bottle-feeding and anyone or anything you feel has influenced your decision.”

Main questions:

- From your point of view can you think of any advantages that breastfeeding will have as a method of feeding your baby?
- Can you think of any advantages that bottle-feeding would have as a method of feeding your baby?
- Now, can you think of any disadvantages, from your point of view that breastfeeding would have as a method of feeding your baby?
- Can you think of any disadvantages that bottle-feeding would have as a method of feeding your baby?
- From your own experience has anyone in particular influenced your choice of infant feeding method/decision?
- Have any other sources influenced your decision? (*prompts: media, classes, leaflets*).
- Do you think that you will need any particular help and/or support when you breastfeed/bottle-feed your baby?
- Where or from whom will you be able to find the help and support you feel you need to breastfeed/bottle-feed your baby?
- Do you feel that there are any particular problems that could face you if you decide /having decided to breastfeed your baby?
- Do you feel that there are any particular problems that could face you if you decide /having decided to bottle-feed your baby?
- How would you feel if you were unable to breastfeed?

Closing question:

- Are there any aspects of infant feeding that you feel that we have not covered in this discussion, but that you feel are important?

“Thank-you for participating in this discussion. Your thoughts and comments been very interesting and helpful. If you have any further questions about the study, please do not hesitate to ask.”

Press Release

Appendix 2
Press Release

Public Relations Department
University of Plymouth, Drake Circus,
Plymouth, Devon PL4 8AA, United Kingdom



Contact: Paola Simoneschi, Public Relations Officer. Tel: 01752 233986

CALLING ALL FUTURE MUMS!

The decision whether or not to breastfeed baby is one of the most important decisions facing a pregnant woman. That decision, it is thought, is influenced by a number of factors ranging from the mother's own beliefs about breastfeeding to the attitude of significant people in her life.

PhD student Lynne Callaghan, from the University of Plymouth, is conducting research into the reasons behind women's decisions to breast or bottlefeed their babies. Lynne, supervised by Professor Michael Hyland and Dr Susan Lea, plans to host a series of discussion groups at the University's main campus in Plymouth's city centre. During these discussions, women will be encouraged to talk about their views on breast and bottlefeeding.

If you are more than 27 weeks pregnant with your first baby, Lynne would be delighted to welcome you to one of these small groups. Not only is it a chance to air your views on the subject, it's also an opportunity to meet other women in your situation and perhaps make some new friends.

For more details, please contact Lynne Callaghan on 01752 233294.

ends

17 November 1998

Appendix 3

Breast and bottle-feeding behavioural beliefs and sources.

Breastfeeding behavioural beliefs and sources.

Belief	Source(s) of belief
Breastfeeding provides antibodies to help fight infection.	Interview data and lay literature.
Breastfeeding will provide a healthier start for growth and development.	Interview data and lay literature.
Breastfeeding helps the uterus to contract more quickly.	Interview data and lay literature.
Breastfeeding will help the mother to lose weight	Interview data and lay literature
Breastfeeding will benefit the mother's health in later life.	Interview data and lay literature
Breastfeeding will create a close bond between the mother and her baby.	Interview data and lay literature.
Breastfeeding will cause less expense.	Interview data and lay literature.
Breastfeeding is convenient.	Interview data and lay literature.
Breastfeeding is uncomfortable in public	Interview data (2 sources).
Breastfeeding means that the baby is completely reliant on the mother.	Interview data (4 sources)
Breastfeeding makes the mother's partner feel excluded.	Interview data and lay literature.
Breastfeeding restricts the mother's freedom.	Interview data (2 sources)
Breastfeeding technique can take time to become established.	Interview data and lay literature.
Breastfeeding causes sore nipples.	Interview data and lay literature.
Breastfeeding causes milk to leak.	Interview data (2 sources).
Breastfeeding restricts the mother's diet.	Interview data (2 sources).

Appendix 3: Continued

Bottle-feeding behavioural beliefs and sources.

Belief.	Source(s) of belief.
Bottle-feeding includes the mother's partner with feeding the baby.	Interview data and lay literature.
Bottle-feeding will provide the baby with a satisfactory and safe formula from which to feed.	Interview data and lay literature.
Bottle-feeding means that the mother can hand over feeding to someone else.	Interview data (5 sources).
Bottle-feeding allows the mother to go out without the baby.	Interview data (3 sources).
Bottle-feeding allows the mother to plan her time effectively.	Interview data and lay literature.
Bottle-feeding does not restrict the mother's diet.	Interview data (2 sources).
Bottle-feeding is not painful.	Interview data (2 sources).
Bottle-feeding fills up the baby / satisfies the baby more.	Interview data (2 sources).
Bottle-feeding does not provide antibodies.	Interview data and lay literature.
Bottle-feeding causes more expense.	Interview data and lay literature.
Bottle-feeding is inconvenient.	Interview data and lay literature.
Bottle-feeding means that the mother must be very organised.	Interview data (3 sources).
Bottle-feeding may cause the baby to become overweight.	Interview data and lay literature.
Bottle-feeding may cause the baby to suffer from wind a great deal.	Interview data and lay literature.
Bottle-feeding may make the mother nervous about sterilising bottles and heating milk.	Interview data (2 sources).
Bottle-feeding is not a natural method of feeding.	Interview data and lay literature.

Appendix 4

Breast and bottle-feeding modal salient referents and sources.

Referent	Source
Mum	Interview 1 Interview 2
Father	Interview 3
Partner	Focus group 1 Focus group 2
Friends	Interview 3 Focus group 1 Focus group 2
Midwives	Interview 1 Interview 3 Focus group 1 Focus group 2
Health visitors	Interview 1 Focus group 1 Focus group 2
Doctor	Focus group 2
Other mums	Interview 1
Shop displays, lay literature	Interview 1 Focus group 1
Other mums	Interview 1

Appendix 5 **Breast and Bottle-feeding Attitude Scale**

ANTENATAL BREASTFEEDING AND BOTTLE FEEDING ATTITUDE SCALE.

Date: **Record Number:**

This questionnaire has been designed in order to understand pregnant women's attitudes toward breast and bottle-feeding. Please respond to each statement below by drawing a line on a suitable point on the scale.

SECTION 1. BREASTFEEDING.

I intend to breastfeed my baby when it is born.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
 extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born would be

natural _____ : _____ : _____ : _____ : _____ : _____ unnatural
 extremely quite slightly neither slightly quite extremely

beneficial _____ : _____ : _____ : _____ : _____ : _____ harmful
 extremely quite slightly neither slightly quite extremely

healthy _____ : _____ : _____ : _____ : _____ : _____ unhealthy
 extremely quite slightly neither slightly quite extremely

rewarding _____ : _____ : _____ : _____ : _____ : _____ unrewarding
 extremely quite slightly neither slightly quite extremely

Most people who are important to me think

I should _____ : _____ : _____ : _____ : _____ : _____ I should not

breastfeed my baby when it is born.

My breastfeeding my new baby will benefit my health in later life.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will cause my breasts to leak milk on my clothes.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will help me to lose weight.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will provide my baby with antibodies to help fight infection.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will help to create a very close bond between the baby and myself.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will cause less expense.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will take some time to establish a good technique.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will help my uterus to contract.

likely _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will restrict my freedom.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will be convenient.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will restrict my diet.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

**My breastfeeding my baby when it is born will mean that the baby is completely
reliant on me.**

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

**My breastfeeding my baby when it is born will give my baby a healthier start for its
growth and development.**

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will make my partner feel excluded.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

**My breastfeeding my baby when it is born will make me feel uncomfortable in
front of other people.**

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My breastfeeding my baby when it is born will make my nipples sore.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

Benefiting my health later in life is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Causing my breasts to leak milk on my clothes is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Helping me to lose weight is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Providing my baby with antibodies to help fight infection is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Creating a very close bond between myself and the baby is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Causing less expense is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Taking some time to establish a good technique is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Helping my uterus to contract is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Restricting my freedom is

good _____ bad
extremely quite slightly neither slightly quite extremely

Convenience is

good _____ bad
extremely quite slightly neither slightly quite extremely

Restricting my diet is

good _____ bad
extremely quite slightly neither slightly quite extremely

The baby being completely reliant on me is

good _____ bad
extremely quite slightly neither slightly quite extremely

Giving my baby a healthier start for it's growth and development is

good _____ bad
extremely quite slightly neither slightly quite extremely

Making my partner feel excluded is

good _____ bad
extremely quite slightly neither slightly quite extremely

Feeling uncomfortable in front of other people is

good _____ bad
extremely quite slightly neither slightly quite extremely

Making my nipples sore is

good _____ bad
extremely quite slightly neither slightly quite extremely

My midwife thinks

I should _____ I should not
breastfeed my baby when it is born.

My doctor thinks

I should _____ I should not
breastfeed my baby when it is born

My health visitor thinks

I should _____ I should not
breastfeed my baby when it is born.

My parents think

I should _____ I should not
breastfeed my baby when it is born.

My partner thinks

I should _____ I should not
breastfeed my baby when it is born.

My friends think

I should _____ I should not
breastfeed my baby when it is born.

Generally speaking, how much do you want to do what your midwife thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your doctor thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your health visitor thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your parents think you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your partner thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your friends think you should do?

Not at all _____ Very much

SECTION 2. BOTTLE FEEDING

I intend to bottle-feed my baby when it is born.

likely _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born would be

natural _____ unnatural
extremely quite slightly neither slightly quite extremely

beneficial _____ harmful
extremely quite slightly neither slightly quite extremely

healthy _____ unhealthy
extremely quite slightly neither slightly quite extremely

rewarding _____ unrewarding
extremely quite slightly neither slightly quite extremely

Most people who are important to me think

I should _____ I should not

Bottle-feed my baby when it is born.

My bottle-feeding my baby when it is born will allow me to plan my time effectively.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will make me nervous about sterilising bottles and heating milk.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will allow me to go out without the baby.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will include my partner with feeding.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will not be painful.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will not restrict my diet.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born may cause it to become overweight.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will mean that I can hand over the feeding to anyone I choose.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will mean that I will have to be highly organised.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will satisfy my baby more.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will not be a naturally healthy method of feeding.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will cause more expense.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will provide the baby with a satisfactory and safe formula from which to feed.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will be inconvenient.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will mean that it will not be provided with antibodies to help fight infection.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

My bottle-feeding my baby when it is born will mean that it will suffer from wind a great deal.

likely _____ : _____ : _____ : _____ : _____ : _____ : _____ unlikely
extremely quite slightly neither slightly quite extremely

Allowing me to plan my time effectively is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Making me nervous about sterilising bottles and heating milk is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Allowing me to go out without the baby is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Including my partner with feeding is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Not being painful is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Not restricting my diet is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Possibly causing my baby to become overweight is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Handing over the feeding to anyone I choose is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Having to be highly organised is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Satisfying my baby more is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Not being a naturally healthy method of feeding is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Causing more expense is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

**Providing my baby with a satisfactory and safe formula from which
to feed is**

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Inconvenience is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Not providing antibodies to help fight infection is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

Suffering from wind a great deal is

good _____ : _____ : _____ : _____ : _____ : _____ : _____ bad
extremely quite slightly neither slightly quite extremely

My midwife thinks

I should _____ I should not
bottle-feed my baby when it is born.

My doctor thinks

I should _____ I should not
bottle- feed my baby when it is born.

My health visitor thinks

I should _____ I should not
bottle-feed my baby when it is born.

My parents think

I should _____ I should not
bottle- feed my baby when it is born.

My partner thinks

I should _____ I should not
bottle-feed my baby when it is born.

My friends think

I should _____ I should not
bottle-feed my baby when it is born.

Generally speaking, how much do you want to do what your midwife thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your doctor thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your health visitor thinks you should do?

Not at all _____ Very much

Generally speaking, how much do you want to do what your parents think you should do?

Not at all _____ : _____ : _____ : _____ : _____ : _____ : _____ Very much

Generally speaking, how much do you want to do what your partner thinks you should do?

Not at all _____ : _____ : _____ : _____ : _____ : _____ : _____ Very much

Generally speaking, how much do you want to do what your friends think you should do?

Not at all _____ : _____ : _____ : _____ : _____ : _____ : _____ Very much

GENERALIZED SELF-EFFICACY SCALE

Name:

Date: Record Number:

	Not at all true	Barely true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
2. If someone opposes me, I can find means and ways to get what I want.	1	2	3	4
3. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
4. I am confident that I could deal efficiently with unexpected events.	1	2	3	4
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
6. I can solve most problems if I invest the necessary effort.	1	2	3	4
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
8. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
9. If I am in a bind, I can usually think of something to do.	1	2	3	4
10. No matter what comes my way, I'm usually able to handle it.	1	2	3	4

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Appendix 7: Antenatal Breast and Bottle-feeding Self-Efficacy Scale (Stage 1).

ANTENATAL BREASTFEEDING & BOTTLE FEEDING SELF-EFFICACY SCALE.

Date: Record Number

Please answer the statements below. Please ensure that you answer every statement, and that you circle only one number per statement.

1. These statements are about problems that may or may not happen to you when you are breast or bottle feeding your baby, and how much or little you think they will be a problem for you.

	Not at all true	Barely true	Moderately true	Exactly true
1. I will be able to spot the signs of infection before an abscess can develop when breastfeeding my baby.	1	2	3	4
2. I am sure that my baby will not refuse my breast.	1	2	3	4
3. When breastfeeding my baby, I will be able to spot the signs of infection before mastitis has the chance to develop.	1	2	3	4
4. When bottle feeding, overfeeding my baby will not be a problem for me.	1	2	3	4
5. When bottle feeding, warming my baby's milk to the correct temperature will not be problem for me.	1	2	3	4
6. Positioning my baby at the breast will not be a problem for me.	1	2	3	4
7. Mixing the formula correctly will not be a problem for me when bottle feeding my baby.	1	2	3	4
8. I am sure that my baby will not refuse the bottle.	1	2	3	4
9. I will be able to avoid nipple pain when breastfeeding my baby.	1	2	3	4
10. Planning ahead when bottle feeding will not be a problem for me.	1	2	3	4

2. These statements are about how well you think that you might deal with the problems above if they happen to you.

	Not at all true	Barely true	Moderately true	Exactly true
1. If I do have an abscess, I feel confident that I will be able to continue breastfeeding.	1	2	3	4
2. If my baby refuses my breast, I feel certain that I will be able to persist in order to breastfeed successfully.	1	2	3	4
3. If I get mastitis, I will still be able to breastfeed.	1	2	3	4
4. Even if I do overfeed my baby when bottle-feeding, I feel sure that I will be able to overcome this problem.	1	2	3	4
5. Even if I have difficulty warming my baby's milk to the correct temperature, I am sure that I will be able to overcome this problem.	1	2	3	4
6. If I find that I have a problem positioning my baby at the breast, I feel sure that I shall be able to successfully resolve this problem.	1	2	3	4
7. Even if I have difficulty mixing the formula correctly when bottle feeding my baby, I am sure that I will be able to overcome this problem.	1	2	3	4
8. If my baby refuses the bottle, I am certain I will be able to persist in order to bottle-feed successfully.	1	2	3	4
9. If I get sore nipples, it will not prevent me from breastfeeding my baby.	1	2	3	4
10. If I find that I have difficulties planning ahead when bottle feeding my baby, I am certain that I will be able to use my coping skills in order to resolve this problem.	1	2	3	4

Appendix 8.
Postnatal Breast and Bottle-feeding Self-Efficacy Scale.

POSTNATAL BREASTFEEDING & BOTTLE FEEDING SELF-EFFICACY SCALE.

Date: Record Number:

IMPORTANT: Please read these instructions carefully.

- ❖ If you are currently breastfeeding your baby at all, or giving your baby expressed breastmilk, please answer all of the statements.
- ❖ If you have solely bottle fed your baby since birth, please only answer the statements in sections 2 & 4.
- ❖ If you have both breast and bottle fed your baby at some time since the birth, please answer all of the statements. Although you may not be breastfeeding now, it is useful to know how you feel about coping with or avoiding the problems below in the light of your experience.

SECTION 1: Problems which may or may not occur when breastfeeding.

	Not at all True	Barely true	Moderately true	Exactly true
1. I will be able to spot the signs of infection before an abscess can develop when breastfeeding my baby.	1	2	3	4
2. I am sure that my baby will not refuse my breast.	1	2	3	4
3. When breastfeeding my baby, I will be able to spot the signs of infection before mastitis has the chance to develop.	1	2	3	4
4. Positioning my baby at the breast will not be a problem for me	1	2	3	4
5. I will be able to avoid nipple pain when breastfeeding my baby.	1	2	3	4

SECTION 2: Problems which may or may not occur with bottle feeding.

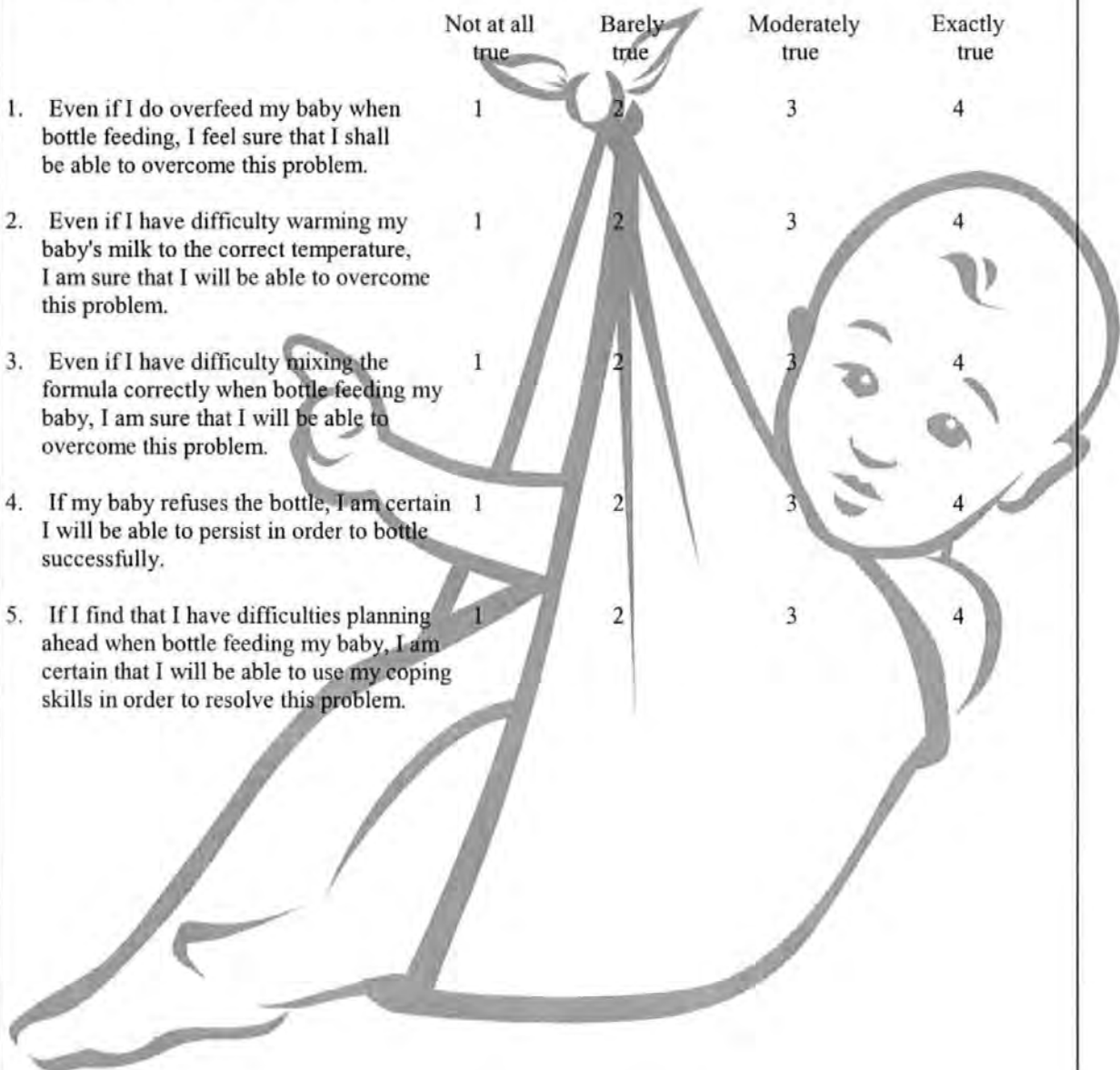
	Not at all True	Barely true	Moderately true	Exactly true
1. When bottle feeding, overfeeding my baby will not be a problem for me.	1	2	3	4
2. When bottle feeding, warming my baby's milk to the correct temperature will not be a problem for me.	1	2	3	4
3. Mixing the formula correctly will not be a problem for me when bottle feeding my baby.	1	2	3	4
4. I am sure that my baby will not refuse the bottle.	1	2	3	4
5. Planning ahead when bottle feeding will not be a problem for me.	1	2	3	4

SECTION 3: Dealing with problems when they occur with breastfeeding.

	Not at all true	Barely true	Moderately true	Exactly true
1. If I do have an abscess, I feel confident that I will be able to continue breastfeeding.	1	2	3	4
2. If my baby refuses the breast, I feel certain that I will be able to persist in order to breastfeed successfully.	1	2	3	4
3. If I get mastitis, I will still be able to breastfeed.	1	2	3	4
4. If I find that I have a problem positioning my baby at the breast, I feel sure that I shall be able to successfully resolve this problem.	1	2	3	4
5. If I get sore nipples, it will not prevent me from breastfeeding my baby.	1	2	3	4

SECTION 4: Dealing with problems as they occur with bottle feeding.

	Not at all true	Barely true	Moderately true	Exactly true
1. Even if I do overfeed my baby when bottle feeding, I feel sure that I shall be able to overcome this problem.	1	2	3	4
2. Even if I have difficulty warming my baby's milk to the correct temperature, I am sure that I will be able to overcome this problem.	1	2	3	4
3. Even if I have difficulty mixing the formula correctly when bottle feeding my baby, I am sure that I will be able to overcome this problem.	1	2	3	4
4. If my baby refuses the bottle, I am certain I will be able to persist in order to bottle successfully.	1	2	3	4
5. If I find that I have difficulties planning ahead when bottle feeding my baby, I am certain that I will be able to use my coping skills in order to resolve this problem.	1	2	3	4



Appendix 9.
Problems with Infant Feeding Scale.

POSTNATAL PROBLEMS WITH INFANT FEEDING SCALE.

Date:..... **Record Number:**

The problems below may or may not have happened to you when you have been breast or bottle-feeding your baby. Please indicate whether or not you have experienced each problem, and if you have, how well you feel that you coped with each problem that you faced. The first five problems relate to breastfeeding, and the remaining five relate to bottle feeding.

Problem	Have you experienced this problem?		How well do you feel that you coped with this problem?			
	Yes (✓)	No (✓)	Not at all Well	Hardly well	Moderately well	Very well
Abscess			1	2	3	4
Refusing breast			1	2	3	4
Mastitis			1	2	3	4
Positioning			1	2	3	4
Nipple Pain			1	2	3	4
Overfeeding			1	2	3	4
Warming milk to correct temperature			1	2	3	4
Mixing formula correctly			1	2	3	4
Refusing the bottle			1	2	3	4
Planning ahead			1	2	3	4
Other (please specify)			1	2	3	4

Appendix 10
Antenatal Breast and Bottle-feeding Social Support Scale.

ANTENATAL BREASTFEEDING AND BOTTLE FEEDING SOCIAL SUPPORT SCALE.

Date: **Record number:**

This questionnaire has been designed in order to understand both who provides support, and how often it is required by new mothers when they are breast and bottle feeding. Please respond to each statement below. An example has been done for you. The main supporter can be anyone who you feel would give you that support (e.g. your mum, midwife, partner etc.).

Situation in which support may be required for breastfeeding.	Who would give you the most support?	How often do you think you would need this support?		
		Never	Sometimes	Frequently
<i>A shoulder to cry on when having problems with breastfeeding.</i>				
Someone to call on when alone with the baby during the months that you are breastfeeding.				
Having someone to make you a cup of tea, make dinner, go shopping etc. for you, in order that you can devote the necessary time breastfeeding your baby.				
Someone to give you advice as to what to do if experiencing problems with breastfeeding.				
Someone to give you advice concerning breastfeeding methods and techniques.				
Someone to keep things in order (e.g. laundry, general routine) during the months that you are breastfeeding your baby.				
A shoulder to cry on when having problems with breastfeeding.				
Someone to reassure you when you are worrying about breastfeeding your baby.				
Someone to reassure you that you are breastfeeding correctly and not doing anything wrong.				

Situation in which support may be required for bottle-feeding.	Who would give you the most support?	How often do you think you would need this support?		
		Never	Sometimes	Frequently
Someone to call on when alone with the baby during the months that you are bottle feeding.				
Having someone to make you a cup of tea, make dinner, go shopping etc. for you, in order that you can devote the necessary time <i>bottle feeding your baby</i> .				
Someone to give you advice as to what to do if experiencing problems with bottle feeding.				
Someone to give you advice concerning bottle feeding methods and techniques.				
Someone to keep things in order (e.g. laundry, general routine) during the months that you are <i>bottle feeding your baby</i> .				
A shoulder to cry on when having problems with bottle feeding.				
Someone to reassure you when you are worrying about bottle feeding your baby.				
Someone to reassure you that you are bottle feeding correctly and not doing anything wrong.				

Appendix 11: Postnatal Breast and Bottle-feeding Social Support Scale

POSTNATAL BREASTFEEDING AND BOTTLE FEEDING SOCIAL SUPPORT SCALE.

Date: Record Number:

This questionnaire has been designed in order to understand both who provides support, and how often it is received by new mothers when they are breast and bottle feeding. Please respond to each statement below. An example has been done for you. The main supporter is anyone who you feel has given you this support (e.g. your mum, midwife partner etc.).

IMPORTANT:

- If you have solely breastfed your baby since birth, answer only those statements that concern breastfeeding.
- If you have solely bottle fed your baby since birth, answer only those statements that concern bottle feeding.
- If you have both breastfed and bottle fed your baby, please answer all of the statements.

Situation in which support may be required for breastfeeding.	Who would give you the most support?	How often do you think you would need this?		
		Never	Sometimes	Frequently
<i>A shoulder to cry on when having</i>				
Someone to call on when alone with the baby during the months that you are breastfeeding.				
Having someone to make you a cup of tea, make dinner, go shopping etc. for you, in order that you can devote the necessary time breastfeeding your baby.				
Someone to give you advice as to what to do if experiencing problems with breastfeeding.				
Someone to give you advice concerning breastfeeding methods and techniques.				
Someone to keep things in order (e.g. laundry, general routine) during the months that you are breastfeeding your baby.				
A shoulder to cry on when having problems with breastfeeding.				
Someone to reassure you when you are worrying about breastfeeding your baby.				
Someone to reassure you that you are breastfeeding correctly and not doing anything wrong.				

Situation in which support may be required for bottle feeding.	Who gives you the most support?	How often do you think you would need this?		
		Never	Sometimes	Frequently
Someone to call on when alone with the baby during the months that you are				
Having someone to make you a cup of tea, make dinner, go shopping etc. for you, in order that you can devote the necessary time bottle feeding your baby.				
Someone to give you advice as to what to do if experiencing problems with bottle feeding.				
Someone to give you advice concerning bottle feeding methods and techniques.				
Someone to keep things in order (e.g. laundry, general routine) during the months that you are bottle feeding your baby.				
A shoulder to cry on when having problems with bottle feeding.				
Someone to reassure you when you are worrying about bottle feeding your baby.				
Someone to reassure you that you are bottle feeding correctly and not doing anything wrong.				

Appendix 12: Antenatal Sociodemographic Variables Questionnaire.

ANTENATAL BREASTFEEDING & BOTTLE FEEDING
SOCIODEMOGRAPHIC VARIABLES QUESTIONNAIRE.

Date: Record Number:

Tell us about YOU!

Age:

Years

Months

Stage of pregnancy:

weeks.

Due date of baby:

(If known).

Marital status:

☐

Single

☐

Cohabiting

☐

Married

Other (please specify)

Education: Please indicate which qualifications you and your partner hold (if applicable).

You

☐

GCSE(s)

☐

'A'Level(s)

☐

NVQ(s)

☐

Access

☐

First degree

☐

Higher degree(s)

Other (please specify)

Your partner

☐

GCSE(s)

☐

'A'Level(s)

☐

NVQ(s)

☐

Access

☐

First degree

☐

Higher degree(s)

Other (please specify)

Occupation:

You

Your partner

Intention:

Do you intend to: ☐ breastfeed ☐ bottle-feed ☐ undecided

If your decision is to breastfeed, for how long do you intend to breastfeed?

I intend to breastfeed for ☐ months ☐ undecided.

Was your baby planned? ☐ Yes ☐ No

How happy are you and your partner about your pregnancy?

You

Not at all happy 1 2 3 4 5 6 7 Extremely happy
neither

Your partner

Not at all happy 1 2 3 4 5 6 7 Extremely happy
neither

Have you / are you going to attend antenatal classes?

☐ Yes ☐ No

If yes, what sort of classes are they?

☐ NHS ☐ NCT ☐ Active birth
Other (please specify) _____

Do you plan to give birth

☐ in hospital ☐ at home
Other (please specify)? _____

On the whole, have you been well during your pregnancy to date?

☐ Yes ☐ No If no, please specify:

**POSTNATAL BREASTFEEDING & BOTTLE FEEDING SOCIODEMOGRAPHIC
VARIABLES QUESTIONNAIRE 1.**

Date: **Record Number:**

Please answer the following questions.

Age:
Years Months

Age of baby: **baby's date of birth** _____
Weeks

Marital Status: _____
Single Cohabiting Married Other (please specify)

Have you / are you going to attend postnatal classes?

Yes No

If yes, what sort of classes are they?

NHS NCT _____
Other (please specify)

On the whole, have you been well since the birth of your baby?

Yes No

If no, please specify: _____

Appendix 13 (continued): Postnatal Sociodemographic Variables Questionnaire 2.

POSTNATAL BREASTFEEDING & BOTTLE FEEDING SOCIODEMOGRAPHIC
VARIABLES QUESTIONNAIRE 2.

Date: Record Number:

Please answer the following questions.

Age:
Years Months

Age of baby: baby's date of birth _____
Months

Marital Status: _____
Single Cohabiting Married Other(please specify)

Have you / are you going to attend postnatal classes?
 Yes No

If yes, what sort of classes are they?
 NHS NCT _____
Other (please specify)

On the whole, have you been well since the birth of your baby?
 Yes No

If no, please specify: _____

Appendix 14: Details of Birth Questionnaire .

DETAILS OF BIRTH QUESTIONNAIRE.

Date: Record Number:

Was your baby born

☐

In hospital

☐

At home

Other (please specify).

How was your baby born / delivered?

☐

**Vaginal
delivery**

☐

**Planned
caesarean**

☐

**Emergency
caesarean**

Other (please specify)

Did your baby's delivery require any extra assistance?

☐

Yes

☐

No

If your baby's delivery did require extra assistance, what type of assistance was required?

☐

Forceps

☐

Ventouse

Other (please specify).

Was your baby born breech (bottom or feet first)?

☐

Yes

☐

No

Were there any other problems with the birth?

☐

Yes

☐

No

If yes, please specify: _____

How long was your labour?

Hours.

Did you require an episiotomy?

☐

Yes

☐

No

Did you require stitching after the birth?

☐

Yes

☐

No

What type of pain relief did you use during labour, and how effective do you think it was?

Type of pain relief.	Did you use this type?	How effective do you feel it was? Please circle one number for each type of pain relief used.						
		Not at all effective			neither			Extremely effective
Entonox (gas & air)		1	2	3	4	5	6	7
Pethidine		1	2	3	4	5	6	7
Epidural		1	2	3	4	5	6	7
Mobile epidural		1	2	3	4	5	6	7
Transcutaneous electrical nerve stimulation (TENS)		1	2	3	4	5	6	7
Breathing & relaxation		1	2	3	4	5	6	7
Water		1	2	3	4	5	6	7
Massage		1	2	3	4	5	6	7
Other (please specify)		1	2	3	4	5	6	7
None								

Who was present at the birth of your baby?

Overall, how satisfied were you with the care that you received whilst

	Not at all satisfied			Neither		Extremely satisfied	
	1	2	3	4	5	6	7
in labour							
immediately after the birth of your baby							

Appendix 15.
Infant Feeding Details Questionnaire 1.

INFANT FEEDING DETAILS QUESTIONNAIRE 1

Date: **Record Number:**

Please answer the questions below.

1. Are you currently

☐ breastfeeding?

☐ bottle-feeding?

☐ supplementing
breastfeeding with formula?

☐ expressing breastmilk?

Other? (please specify) _____

2. If you are currently solely bottle-feeding, did you breastfeed your baby at all after the birth?

☐ Yes

☐ No

For how long? _____

3. Overall, do you consider yourself to be mainly

☐ breastfeeding?

☐ bottle-feeding?

4. How soon after the birth did you first breastfeed your baby?

☐ Immediately? _____ hours? _____ days?
(please specify) (please specify)

☐ Not applicable.

5. How long did you stay in hospital after the birth of your baby?

_____ hours
(please specify)

_____ days
(please specify)

☐ Not applicable

6. How satisfied do you feel with the information / care that you received from health care professionals concerning

Not at all
satisfied

Neither

Extremely
satisfied

breastfeeding

1

2

3

4

5

6

7

☐ Not applicable

bottle feeding

1

2

3

4

5

6

7

☐ Not applicable

in the days following the birth?

7. If since the birth of your baby, you have changed from breastfeeding to bottle feeding, what was the main reason for your change?

(please specify) _____

☐ Not applicable

8. If since the birth of your baby, you have not breastfed at all, what was the main reason for this?

(please specify) _____

☐ Not applicable

Appendix 15 (continued): Infant Feeding Details Questionnaire 2.

INFANT FEEDING DETAILS QUESTIONNAIRE 2.

Date: Record Number:

Please answer the questions below.

1. Are you currently

☐ breastfeeding?

☐ bottle-feeding?

☐ supplementing
breastfeeding with formula?

☐ expressing breastmilk?

2. Did you breastfeed your baby at all since birth?

☐ Yes

☐ No

For how long?

(Please specify) _____

3. Are you also giving your baby solid food?

☐ Yes

☐ No

From what age have you been giving your baby solid food? _____ (weeks)

(Please specify)

4. To date, how satisfied do you feel with the information / care that you have received from health care professionals concerning

Not at all
Satisfied

Neither

Extremely
satisfied

breastfeeding?

1 2 3 4 5 6 7

☐ Not
applicable

bottle-feeding?

1 2 3 4 5 6 7

☐ Not
applicable

weaning?

1 2 3 4 5 6 7

☐ Not
applicable

5. If since the birth of your baby, you have changed from breastfeeding to bottle feeding, what was the main reason for your change?

(please specify) _____

☐

Not applicable

6. If since the birth of your baby, you have not breastfed at all, what was the main reason for this?

(please specify) _____

☐

Not applicable

7. What was the main reason for deciding to start giving your baby solid food?

(please specify) _____

☐

Not applicable

Appendix 16.

Qualitative Study Interview Schedule

Core Questions and Probes

1: In the first set of questionnaires, you stated that you wanted to breastfeed/bottle feed your baby when he/she was born. How did you make that decision?

Probes:

Had you always wanted to BF/BOF?

Did other people that you know BF/BOF their babies?

Why did you decide not to BF/BOF?

2: When your baby was born, did you feed your baby in the way that you had planned i.e. breastfed/bottle fed?

Probes:

When did you first BF/BOF your baby?

How did you feel when you first BF/BOF your baby?

Were you happy with your choice at the time?

If changed from original decision

Why did you change your decision?

Were you happy that you had changed your decision?

3. How are you feeding your baby now?

Probes:

If same method.

How do you feel about BF/BOF your baby?

Have you noticed any differences in feeding your baby between now and when you first started? E.g. routine, sleep patterns- how has that affected you?

If now using different method.

What was your main reason for changing from BF?

Did you experience any particular problems with BF?

How did you feel about making this change?

– *was it a difficult decision?*

– *did you feel supported in this decision.?*

How do you feel now that you are BOF your baby?

Appendix 16 (continued).

4. Looking back on your experience, is there anything about feeding your baby that you would liked to have changed / done differently?

Probes:

How well do you think that you have coped with problems?

Given more help and advice?

Asked for help more?

Chosen a different method?

5. You've now had _____ experience of breastfeeding/bottle feeding. How do you/ do you feel that this has influenced how you feel about being a mum?

Probes:

Has your experience changed any of your views about breastfeeding / bottle feeding?

Do you think that the way that you have fed your baby has had an effect on your relationship?

6. If you decide to have more children in the future, do you think that the experiences that you have had of feeding your baby will influence how you feed future children?

Probes:

Do you think that you would BF/BOF future children?

Would you have any worries/concerns about BF/BOF future children?

7. How have you felt about taking part in this research?

Probes:

Is there any way that we could make you feel more a part of the research?

Who do you think should be shown the results of the study?

What would be the main point that you would like to get over to people reading this study?

Appendix 17

Pilot Study

The following pages report on the antenatal and postnatal pilot studies, and the implications that these studies have on the process and implementation of the longitudinal study. The overall aim of both pilot studies was to ensure that the measures used, and the analyses planned would work effectively in the longitudinal study. Moreover if any potential difficulties were encountered with the instruments in the pilot, the researcher could attempt to avoid these problems in the longitudinal study. This chapter also includes the pilot interview for the qualitative study that was introduced in chapter 4 (refer to chapter 4, section 4.9).

Piloting of the instruments to be used in the longitudinal study is a fundamental element of the research process as, “if a malfunction is not spotted until after the data have been collected, it *may* have an influence on the results of the study,” (Christensen, 2001, p. 317). It was also intended that the pilot study would provide the opportunity for the researcher to familiarise herself with and finalise the procedure prior to the longitudinal study (Christensen, 2001). The reliability and validity of the scales would be established, and items consistently missed by participants would be examined. Further, it was essential to ensure that participants understood the items and questions posed to them in order that they could complete the study successfully.

Although it would have been optimal to have chosen a subsample of the population to be studied in the main longitudinal study, and to have followed them longitudinally, due to time constraints, this was not possible. Instead, it was proposed that two separate studies would be conducted, comprising of twenty primigravida women and twenty primiparous women, to form an antenatal and a postnatal study respectively. The results of these two pilot studies are presented below, taking each scale and questionnaire separately. Any amendments required to scales resulting from the pilot are also provided.

Prior to commencing the pilot studies, ethical approval was sought and granted by both the Human Ethics Sub-Committee at the University and the NHS Local Research Ethic Committee. The study was also registered with the Research and Development Office at the local hospital at which the study was to be based.

1. Antenatal recruitment

Apart from the overall aims of the pilot study outlined above, it was additionally intended that the *antenatal* pilot study would enable the recruitment strategy to be finalised for the main study. The inclusion criteria for the antenatal pilot were that participants should be primigravida women of 16 years of age or over. The age threshold was required due to ethical guidelines imposed on the study. The recruitment methods were of two types: by word of mouth, and by administration of questionnaires to women following their routine antenatal ultrasound examination at the local regional hospital at which the main longitudinal study was to be based. Each recruitment method is explained in turn below.

Participants were recruited by word of mouth by the researcher asking colleagues and friends if they knew of any women who were pregnant with their first baby and who might be interested in participating in the research. If the woman expressed interest (by making contact with the researcher either by telephone or by email), she was provided with a questionnaire pack containing a set of antenatal questionnaires, a participant information sheet and consent form, and a freepost envelope for the return of the completed questionnaires.

A meeting was arranged with the Head of Midwifery at the hospital in order to finalise the recruitment strategy at the hospital. It was at this meeting that permission was given to complete the antenatal pilot study at the antenatal clinic as recruitment by word of mouth had not delivered the required number of responses (see below). After discussions with staff in the antenatal clinic, it was decided that the investigator would introduce herself to prospective participants following successful ultrasound examinations, and ask them if they would like to take part in the study. All staff in the clinic were informed of the aims and method of the study and the inclusion and exclusion criteria pertaining to participants.

On successful completion of their ultrasound examination, each woman is required to wait in the reception area for their notes and any photographs that they require of their baby. This waiting time allowed the researcher to introduce herself, give a brief outline of the study and stress the importance of knowing the participant's views about both breast and bottle-feeding. Each potential participant was provided with an information sheet, a consent form, and a questionnaire pack to look at in order to help her decide whether or not she would like to take part in the study. The researcher then went back to her desk for a few minutes in order that she was able to read the information that was given to her, and

that no immediate pressure was placed on the woman to participate. Each woman was informed as to where the researcher would be sitting whilst she was reading the information in order that she could ask any questions that arose about the study. If after this time the woman agreed to participate, she was asked to complete the consent form stating that she agreed to take part in the study, and to provide the names of her General Practitioner (GP), Community Midwife, and Consultant Obstetrician (if applicable). The latter information was required so that the researcher could write to the health professionals caring for the participant to inform them of her participation in the study (a requirement of the NHS Local Research Ethics Committee).

2. Changes in recruitment strategy and study

During the initial stages of data collection for the pilot study in the antenatal clinic, only four sets of scales were returned (three of which were complete) from 21 sets that had been administered. Although all but one of the participants recruited through word of mouth returned the questionnaire sets, as the significant proportion of recruitment was to take place in the antenatal clinic, it therefore became apparent that some changes needed to be made in order to improve the response rate. To make the scales and questionnaires more attractive to participants they were illustrated with clip art pictures or watermarks related to a mother and baby theme. None of the pictures used were directly related to either breastfeeding or bottle-feeding as it was considered that, for example, a picture of a mother breastfeeding her baby might hinder the participation of women intending to bottle-feed and vice versa. An illustrated front cover using coloured paper, and a less formal introduction explaining the purposes of the study were also added. Apart from the cosmetic changes a footer was also added to each page of the questionnaires and scales asking the

participants “Have you answered all of the questions?” The addition of this footer was due to five participants omitting a significant proportion of items, causing their scales to be omitted from the study. In order to avoid further data in the longitudinal study from being rejected due to scales being incomplete, advice was sought from an international researcher experienced in working in the area. The researcher contacted had experience both of working with large samples of women in maternity care, and specifically had recently published some work based on the TRA. Consequently, it was resolved that where items were omitted from the attitude and self-efficacy scales, the average score of participants for that particular item would be used in its place (Kloeblen, personal communication, August 30, 2000). In this way, valuable data would not be lost. The changes made to the questionnaires increased the response rate in the antenatal clinic from 19% to 34%.

3. Antenatal pilot study results

The final sample for the antenatal pilot study consisted of 21 primigravidas recruited using the methods detailed above. Eight (38%) of participants were recruited by word of mouth, and the remaining 13 participants (62%) were recruited at the antenatal clinic. Each scale will be examined in turn below in the order that they were presented to participants in the questionnaire pack.

3.1 Sociodemographic Variables Questionnaire

The sociodemographic variables questionnaire was designed to elicit vital information about the participants and their partners. As discussed in chapter four (refer to chapter 4,

section 4.6), this information included general details such as age, qualifications and occupation, through to details focusing specifically on the pregnancy and impending birth.

Descriptive statistics were used to analyse participants' age and stage of pregnancy at the time of participation in the study. The mean age for the sample was 25.76 years with representation from both prospective teenage mothers, the youngest being 16 years of age, and older mothers, the eldest being 38 years of age. Therefore, the range for this sample was 22 years. There was also a wide range in stage of pregnancy from 16 weeks to 40 weeks (range = 24 weeks), at which time the pregnancy is considered to be at term. The majority of participants who were recruited in the antenatal clinic were attending the routine ultrasound scan (as discussed above), that ideally takes place between 18-20 weeks gestation. However, discrepancies with dates and late scans (for example to observe whether the foetus is in the breech position in order to prepare for possible assisted delivery), and recruitment by word of mouth, account for the wide range in gestational ages between participants. The mean gestational age for this sample was 25.24 weeks.

Descriptive statistics were also used to investigate participants' indication of how happy they and their partners felt about the pregnancy. The items used to measure happiness regarding pregnancy were two Likert-type scales ranging from one (not at all happy) to seven (extremely happy). All participants expressed their own happiness with the pregnancy (mean score = 6.52), but two participants were unable to indicate their partner's happiness with the pregnancy as they were single. The results of the analysis for partner's happiness with pregnancy omit the scores of the single participants (N=19). It was apparent that there was very little difference between how happy participants feel about their

pregnancy (mean = 6.52) and how happy they think that their respective partners feel about the pregnancy (mean = 6.24).

The remaining measures on the sociodemographic variables questionnaire, such as participants' and partners' qualifications were analysed using frequencies and percentages. The main marital status of participants is marriage (47.6%), followed by cohabiting (38.1%) and finally single (9.5%). Unfortunately, one participant did not indicate her marital status on the questionnaire, but it was apparent from answers to subsequent questions that she did have either a partner or a husband. All participants successfully provided their current occupation, and that of their partner (where applicable).

The remaining questions were focused specifically toward the participants' pregnancy, the forthcoming birth of their baby, and their infant feeding intentions. The majority of participants' pregnancies were planned (76.2%) as opposed to unplanned (23.8%). Most participants intended to breastfeed their babies when they were born (81%). Only one participant intended to bottle-feed (4.8%), and 3 participants (14.3%) were undecided. Regarding attendance at antenatal classes, 90.5% of participants had either attended or were intending to attend such classes. The types of classes attended or anticipated to be attended by participants are shown in Table one below. As can be seen, one participant stated that she had either attended or was planning to attend a different type of class and added that this was an aquanatal class (exercise in water usually run by community midwives and/or physiotherapists).

Table 1: Types of antenatal class attended by antenatal pilot study participants

Type of class	%	N
NHS	81	17
National Childbirth Trust	14.3	3
Active Birth	19	4
Other	4.8	1

Concerning the location of the birth, 19 participants (90.5%) stated that they planned to give birth in hospital. Of the two participants (9.5%) who were planning a home birth, one added that a water birth was intended. Seventy six percent of participants in the study stated that they had been well during their pregnancy to date. Of the five remaining participants who stated that they had not been well, the health problems that they had encountered were diverse. Table two (below) shows the variety of health problems encountered and the number of participants suffering from the problem.

Table 2: Health Problems experienced by antenatal pilot study participants during pregnancy

Condition	Frequency
Morning sickness	3
Hyperemesis gravidarum ¹	1
Extreme tiredness	1
Water infection	1
Thrush	1
Piles	1
Constipation	1
High blood pressure	1
Sacroiliac joint pain ²	1
Split Symphysis pubis joint ³	1

¹ Hyperemesis gravidarum, "an uncommon serious complication of pregnancy, characterised by severe and persistent vomiting, the aetiology of which is not fully understood," (Tiran, 1997, p. 128).

² Sacroiliac joint pain: pain, "concerning the sacrum and the ilium," (Tiran, 1997, p. 244)

³ Split Symphysis pubis joint: problem with, "the fibrocartilaginous junction of the two pubic bones," (Tiran, 1997, p. 263).

As can be observed from the number of conditions listed in Table two, participants suffered from multiple problems, with only two participants suffering from a single condition during their pregnancy. Overall, the participants did not appear to experience any problems in completing the Antenatal Sociodemographic Variables Questionnaire. No items were consistently missed by participants, and the data achieved by the measurements on the questionnaire was sufficient for the intended statistical analysis. The finalised Antenatal Sociodemographic Variables Questionnaire can be viewed in the appendices.

3.2 Breast and Bottle-feeding Attitude Scale

The Breast and Bottle-feeding Attitude Scale was firstly checked with regard to validity. Participants responded appropriately using the scales provided, assuring the face validity of the scale. Although content validity was sought by the method of item generation used (refer to chapter 4, section 4.2.3), it was necessary to ensure that this was sufficient for the sample participating in the antenatal pilot. Therefore, in order to ensure that, “there was a good match between the test specification and the task specification,” (Rust & Golombok, 1999, p. 215), it was vital to check the scale in order to determine whether participants had consistently omitted any items. If the scale contained items that were not relevant to the participants, this would prevent the scale from accurately measuring the theoretical components of the TRA. It was found that for both the breastfeeding and the bottle-feeding sections of the Attitude Scale, the normative belief and motivation to comply items with respect to the role of their Health Visitor had not been completed by a number of participants. After consultation with several primigravidas concerning this discovery, and due to the researcher’s own personal experience, it became apparent that most pregnant women (particularly primigravidas), do not have contact with their Health Visitor until

discharged by their midwife some days or weeks after the birth. It was therefore decided that the normative belief and motivation to comply items relating to Health Visitor would be omitted from this analysis and the final scale. The breastfeeding and bottle-feeding sections of the scale will now be discussed in turn.

Alpha coefficients were calculated for each subsection of the breastfeeding attitude scale to test for the internal consistency of the items. As can be observed in Table three, the alpha coefficients are sufficient to be assured as to the internal reliability of each subscale, and they are consistent with comparable research (e.g. Kloeblen et al., 1999).

Table 3: Alpha coefficients calculated for subsections of the Breastfeeding Attitude Scale

Subscale	alpha coefficient
Attitude	.9038
Behavioural beliefs	.7340
Outcome evaluations	.3154
Normative beliefs	.7708
Motivation to comply	.6709

As described in chapter 4 (refer to chapter 4, section 4.3.2), each item in the behavioural beliefs section has a corresponding item in the outcome evaluation section, as is also the case with normative beliefs and motivation to comply. In order to determine the relationship between behavioural beliefs and attitudes as well as normative beliefs and subjective norm, it was necessary to calculate products between the scores of these corresponding items. These cross products were then summed to give an overall score for each participant.

Item-total correlations were calculated for the attitude subscale to determine item discrimination (Rust & Golombok, 1999). Due to the cross products method of calculating

the scores of behavioural beliefs and normative beliefs (detailed above), it was not appropriate to calculate the item total correlations for the subsections of behavioural beliefs, outcome evaluations, normative beliefs and motivations to comply. All item total correlations on the attitude subscale were above the threshold used for discrimination of items of 0.2 (Rust & Golombok, 1999).

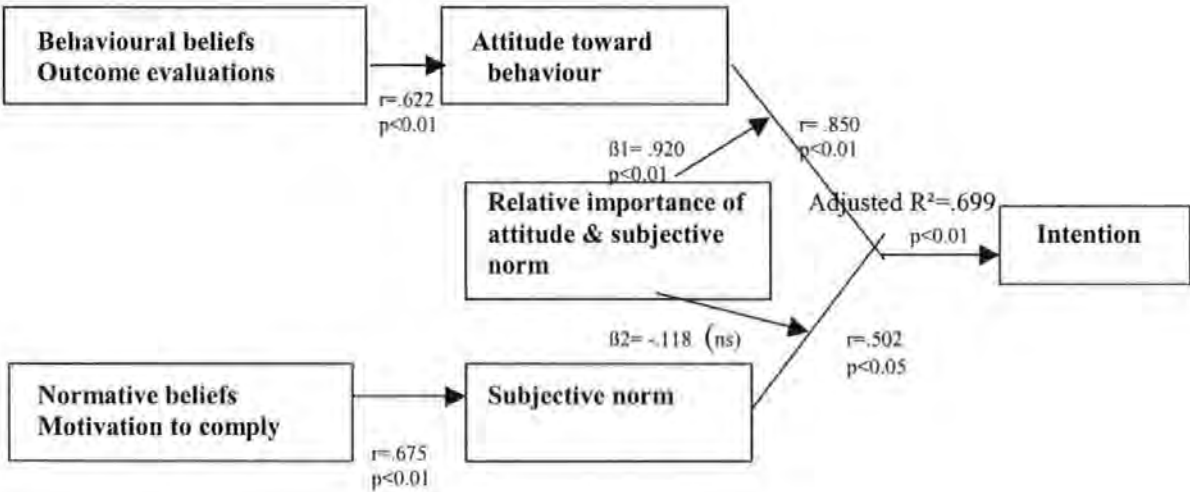
Inter-item correlations were calculated for the attitude, behavioural belief and outcome evaluation subscales in order to ensure independence of items. The resulting matrices showed that although all items were sufficiently correlated, there was one inter item correlation of 0.9 or above (the criterion being used to define independence of items), which showed a perfect correlation between outcome evaluations four and thirteen ($r = 1.0$). This result shows lack of independence between items 4 and 13, and may indicate that the items are measuring the same effect. Interestingly, outcome evaluation 4 ("providing my baby with antibodies to help fight infection") and outcome evaluation 13 ("giving my baby a healthier start for its growth and development") are both concerned with the physiological benefits of breastfeeding. It may therefore be that this sample considers both physiological outcomes as being equally important. However, the correlations between the corresponding behavioural beliefs (behavioural beliefs 4 and 13) was far below the 0.9 threshold ($r = 0.299$). This shows that the sample has differing beliefs as to how likely or unlikely they think it is that breastfeeding will result in the physiological outcomes stated above. It was decided to keep both outcome evaluation 4 and 13 in the scale as the latter correlation (between their corresponding behavioural beliefs) maintains their independence in the context of behavioural beliefs which in turn influences the cross product between the behavioural belief and corresponding outcome evaluation used in the overall analysis of the scale. A note was made, however, to be vigilant for this effect in the main study.

The SPSS output displayed a warning that outcome evaluation 5 (“creating a very close bond between myself and my baby”) had zero variance, i.e. that all participants had responded to this item in the same way (in this sample, all participants had evaluated this outcome as extremely good). Again, there were no similar problems with this outcome evaluation’s corresponding behavioural belief (“my breastfeeding my baby when it is born will help to create a very close bond between the baby and myself”). Therefore, although all participants agreed that the outcome itself was extremely good, they did not all have identical beliefs regarding the likelihood of its occurrence. Consequently, due to the variability in responses to the corresponding behavioural belief, and the small sample size of the pilot study, it was decided that the item should remain in the scale. Again, however, a note was made to be vigilant for possible difficulties with this item in the main study.

Figure 1 (below) shows the relationships between the components of the TRA (Ajzen and Fishbein, 1980), using the results of the Breastfeeding Attitude Scale. Prior to analysing results, appropriate assumptions of the statistical analyses to be used were checked and verified. With regard to the behavioural components of the model, there is a significant positive correlation between behavioural beliefs and attitudes ($r = .622, p < 0.01$) and also a significant positive correlation between attitudes toward breastfeeding, and participant’s intention to breastfeed their baby when it is born ($r = .850, p < 0.01$). Concerning the normative components of the model, there is a significant positive correlation between normative beliefs and participants’ subjective norm ($r = .675, p < 0.01$). The correlation between subjective norm and participants’ intention to breastfeed their babies is also significant ($r = .502, p < 0.05$), although not as highly significant as that between normative beliefs and subjective norm. There is, therefore, a stronger relationship between

participants' normative beliefs and subjective norm than there is between their subjective norm and intention to breast-feed their baby when it is born. As there is a stronger relationship between attitude and intention ($r = .850, p < 0.01$) than subjective norm and intention ($r = .502, p < 0.05$), this may provide an indication of the greater ability of attitude over subjective norm to predict participants' intention to breastfeed.

Figure 2: Diagram showing the relationships between the attitudinal and normative components with regard to antenatal pilot study participants' intention to breastfeed.



Prior to carrying out the Multiple Linear Regression, assumptions and checks were made to ensure that the data was adequate for such an analysis to be performed. In order to check the assumption of normal distribution, a plot of residuals was created. Although the plot showed deviance from the normal distribution, due to the larger sample size expected in the longitudinal study it was not considered appropriate to carry out a transformation of the data. The Durbin Watson (DW) Statistic was also checked and showed independence of residuals (DW statistic = 1.993). Further, prior to carrying out multivariate analysis, a Pearson Product Moment correlation was calculated between the two potential IVs in the Multiple Linear Regression (attitude and subjective norm), which showed a significant

positive correlation ($r = .667, p < 0.01$). To discover if this lack of independence between the two IVs posed a multicollinearity problem for the Multiple Linear Regression, a multicollinearity diagnostic was performed. However, the tolerance level for attitude and subjective norm was considered adequate (tolerance = .555) for multicollinearity not to be considered a problem, meaning that the proposed Multiple Linear Regression analysis could proceed.

The results of the Multiple Linear Regression including both attitude and subjective norm are included in figure 1 above, in order to show the relative importance of both the IVs in predicting intention. It can be seen that by including both attitude and subjective norm in the model, the two IVs account for 69% of the variance in participants' intention to breastfeed their new babies (Adjusted $R^2 = .699, F_{2,18} = 24.272, p < 0.01$). The standardised Beta coefficients are illustrated in Figure 1 above as β_1 and β_2 for the relative importance of the attitudinal and normative components respectively. The attitudinal component has a standardised Beta coefficient of $\beta_1 = .929 (p < 0.01)$ showing a strong influence in predicting participants' intentions to breastfeed their new babies. The normative component has a standardised Beta coefficient of $\beta_2 = -.118 (p = .484)$ displaying a relatively weak negative influence in predicting participants' intention to breastfeed their new babies.

Both the bivariate and multivariate statistical analyses confirm the utility of the TRA model shown in figure 1 (above) in understanding participants' intention to breastfeed their babies. Although the TRA's ability to allow understanding of the infant feeding choices and subsequent behaviour cannot be assessed here, the above results suggest that further analysis of this type in the longitudinal study would be productive. Further, the strong

relationships between the relevant theoretical components shown by the Pearson Product Moment correlations indicate that the measures used in the breastfeeding section of the Breast and Bottle-feeding Attitude Scale do indeed correspond with respect to the behavioural elements of action, target, context and time (Ajzen, 1988; Ajzen & Fishbein, 1980). Further, it could also be argued that as criterion-related validity cannot be checked (as there are no existing scales with which to compare the current scale), the strong relationships between the subscales representing the theoretical components of the scale are an illustration of the scale's predictive validity (Rust & Golombok, 1999). Therefore, the breastfeeding section of the Attitude scale is considered to be acceptable to be used as an instrument in the first stage of the longitudinal study.

The alpha coefficients and the number of items in each subscale of the bottle-feeding attitude scale can be observed in Table 4 below. Analogous to the breastfeeding scale, the alpha values of the subsections of the bottle-feeding section of the Attitude Scale were considered of sufficient magnitude to be confident of the internal consistency or reliability of the subscales.

Table 4: Alpha coefficients calculated for subsections of the Bottle-feeding Attitude scale.

Subscale	Alpha coefficient
Attitude	.8677
Behavioural beliefs	.7142
Outcome Evaluations	.6822
Normative Beliefs	.7955
Motivation to comply	.7793

As was the case with the breastfeeding attitude scale, inter-item correlations were calculated for the subscales of attitude, behavioural beliefs and outcome evaluations. The

resulting matrices, show that there are no inter-item correlations of 0.9 or above, and so it can be concluded that the bottle-feeding attitude shows the required level of independence of items. Item-total correlations were also calculated for the attitude subscale to test for discrimination of items. The results showed that all item-total correlations in this subscale were above the 0.2 threshold (Rust & Golombok, 1999).

Figure 2: Diagram showing the relationship between the attitudinal and normative components with regard to antenatal pilot study participants' intention to bottle-feed their new baby.

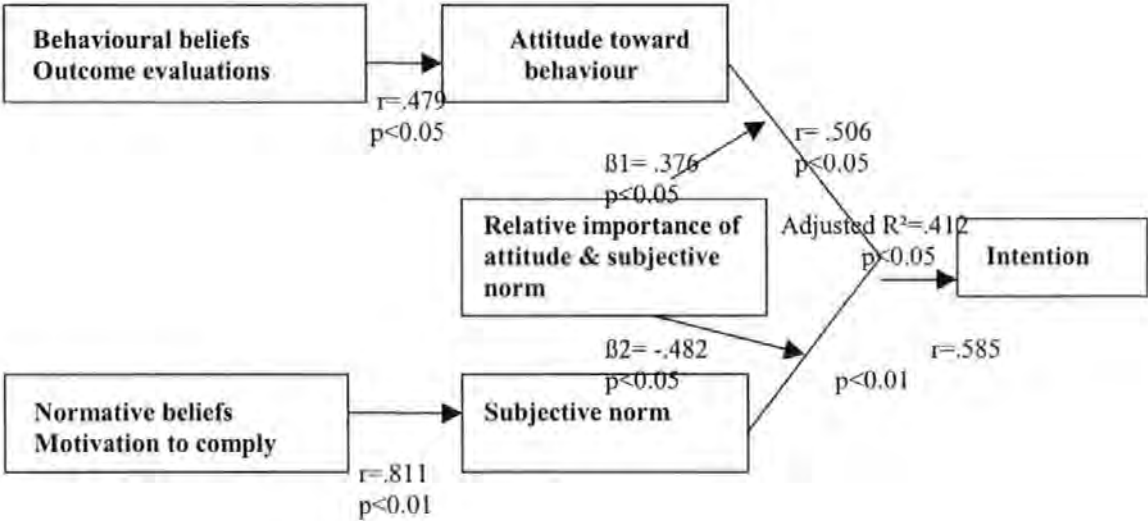


Figure 2 (above) illustrates the relationships between the components of the TRA using the results of the Bottle-feeding Attitude Scale. Regarding behavioural components, there is a significant positive correlation between behavioural beliefs and attitudes toward bottle-feeding ($r = .479$, $p < 0.05$) and also a significant positive correlation between attitudes and participants' intention to bottle-feed their new baby when it is born ($r = .506$, $p < 0.05$). The scores of the normative component showed a strong significant positive correlation between normative beliefs and subjective norm ($r = .811$, $p < 0.01$) and a significant positive correlation between subjective norm and intention to bottle-feed ($r = .583$, $p < 0.01$).

Prior to carrying out a Multiple Linear Regression, the plot of residuals was consulted. Although the plot showed slight deviation from the normal distribution, due to the large sample size expected in the longitudinal study, the deviation was not sufficient to warrant transformation of the data. The DW statistic, although high, was within the range (1 to 3) considered to show independence of residuals (DW statistic = 2.829). The correlation between the two potential IVs of attitude and subjective norm was also calculated prior to the Multiple Linear Regression in order that any incidence of multicollinearity could be detected. The results of the correlation show there to be no incidence of multicollinearity ($r = .269$, $p = .239$, ns), allowing both attitude and subjective norm to be entered as IVs into the regression analysis.

The results of the regression analysis are displayed in figure 2 (above). It can be seen that the model including attitude and subjective norm as the IVs and intention as the Dependent Variable (DV) accounts for 41% of the variance in participants' intention to bottle-feed their new babies (Adjusted R Square = .412, $F_{2, 18} = 8.020$, $p < 0.05$). By observing the relative weights of the behavioural and normative components of the model, it can be seen that the components provide a relatively equal and significant contribution to the prediction of intention (attitude $\beta_1 = .376$, $p < 0.05$; subjective norm $\beta_2 = -.482$, $p < 0.05$).

The above analyses show that the TRA is an appropriate approach to understanding participants' intention to bottle-feed. Further, as was the case with the breastfeeding results (above), the strong relationships between the theoretical components revealed by the results of the Pearson Product Moment correlations indicate that these components do comply with the Principle of Compatibility (Ajzen, 1988; Ajzen & Fishbein, 1980).

Therefore, due to the results of the bivariate, multivariate and item analyses, it was deemed appropriate to accept the bottle-feeding section of the Breast and Bottle-feeding Attitude Scale for use in the first stage of the longitudinal study.

3.3 Self-Efficacy Scales

Participants responded appropriately on the scales of both the GSES and the behaviour-specific self-efficacy scales, indicating satisfactory face validity of the scales. Content validity was also assured, not only by the method of item generation in the scale construction phase (refer to chapter 4, section 4.2.3), but also as participants did not consistently omit items, demonstrating that items were appropriate, and therefore, “a good match between the test specification and the task specification,” (Rust & Golombok, 1999, p. 215).

5.3.3.1 Generalised Self-Efficacy Scale (GSES)

The GSES is an established scale that has been used in many studies and with a variety of populations (e.g. Gillespie, Peltzer & Maclachlan 2000; Leganger, Kraft & Roysamb, 2000). Therefore, although internal consistency was checked (as no other study could be found that had administered the GSES to a sample of the population under investigation here), it was not necessary to conduct item analyses such as those carried out for the behaviour-specific scales. Cronbach’s alpha was calculated to observe the internal consistency of scores ($\alpha = .8505$) and was deemed sufficient in magnitude to be assured of consistency (as compared, for example with Leganger et al.’s 2000 value of $\alpha = .82$).

Descriptive statistics were also calculated for the participants' responses to the scale, and can be observed in Table 5 below.

3.3.2 The Breast and Bottle-feeding Self-Efficacy Scale

As discussed in chapter 4 (refer to chapter 4, section 4.4), the Breast and Bottle-feeding Self-Efficacy Scale was based on the construction of the GSES by generating items about both avoiding and coping with problems with breast and bottle-feeding. Avoid and cope items for both breastfeeding and bottle-feeding were integrated on the scale. However, in order to analyse the scores it was necessary to assess breastfeeding items and bottle-feeding items separately. Alpha coefficients were calculated for both the breastfeeding scores ($\alpha = .7865$) and the bottle-feeding scores ($\alpha = .8324$). Both alpha values were considered to be adequate for the researcher to be confident of the required degree of internal consistency within each scale.

Inter-item and item-total correlations were also calculated for both sections of the Breast and Bottle-feeding Self-Efficacy Scales. Calculations showed that there were no inter-item correlations of $r = 0.9$ or above for either breastfeeding or bottle-feeding self-efficacy scores, indicating the required level of independence of items. Two item-total correlations from the breastfeeding scale were below the 0.2 threshold being used in this study (Rust & Golombok, 1999). It was determined that decisions relating to the possible removal of items would be suspended until analysis of the postnatal pilot study data. Descriptive statistics were also calculated for both scales, and can be observed in Table 5 below.

Table 5: Descriptive statistics of antenatal pilot study participants' scores on the GSES and the Breast and Bottle-feeding Self-Efficacy Scale.

Statistics	GSES	Breastfeeding self-efficacy	Bottle-feeding self-efficacy
Mean	30.0	23.8	29.8
Median	30.0	24.0	29.0
Mode	30.0	24.0	29.0 ^a
Standard deviation	3.9497	5.1828	5.0261
Sum	630	500	626

a. Multiple modes exist. The smallest value is shown.

Pearson Product Moment correlations were calculated between the overall scores for each of the three self-efficacy scales to observe inter-scale reliability. As discussed in chapter 3, although the way in which the items used on the breast and bottle-feeding self-efficacy scales were constructed was based upon the GSES (i.e. each breast or bottle-feeding problem was measured with regard to coping with and avoiding potential problems), it was not anticipated that there would necessarily be a relationship between participant's overall scores on the breast and bottle-feeding scales, and those on the GSES. However, it was important to ascertain whether there were any relationships between the scale scores to determine if the data reflects the differences between behaviour-specific and generalised self-efficacy. If there is not relationship between the behaviour specific and the generalised scales, this does not present a problem for the use of the scales in the longitudinal study, but simply highlights the differences between the types of the self-efficacy expectancies.

The correlations between the overall GSES scores and the breastfeeding self-efficacy scores ($r = .208, p = .367$), and the GSES and the bottle-feeding self-efficacy scores ($r = .073, p = .753$) were both low and not statistically significant. This indicates, as expected, that there is no relationship between the participants' scores on the GSES and those on the breast and bottle-feeding self-efficacy scales. However, the correlation between the scores

on the breastfeeding and the bottle-feeding self-efficacy scales was highly significant ($r = .586, p < 0.01$), indicating a strong relationship between participants' scores on these scales.

Although the sample size in the pilot study is relatively small, it appears from the aforementioned analysis that the breast and bottle-feeding self-efficacy scales are measuring a phenomenon that is different to that measured by the GSES. Therefore, as discussed above, it could be that the strength of behaviour specific and generalised self-efficacy expectancies are different in the participants taking part in this pilot study.

Although the correlations between the GSES and both behaviour-specific scales could not ascertain inter-scale reliability based on the GSES itself (from which the other scales had been derived), the significant positive correlation between the breast and bottle-feeding self-efficacy scales indicated inter-scale reliability between the behaviour-specific scales themselves. Therefore, due to the above results and the theoretically based differences between the scales, it was asserted that both the antenatal breast and bottle-feeding scales should be retained for administration in the longitudinal study.

As discussed in chapter 3, studies often measure both generalised and behaviour-specific self-efficacy (e.g. Leganger et al., 2000; Lowe, 1993). Although, with larger samples, significant correlations have been found between the GSES and behaviour-specific scales (e.g. Leganger et al., 2000), the behaviour-specific scales have tended to consist of one or two "global" items, and were not belief based as in the Breast and Bottle-feeding Self-Efficacy Scales (above). Further, it has also been found that the behaviour-specific scale rather than the GSES predicts the behaviour-specific intention (Leganger et al., 2000). Therefore, with the larger sample size to be recruited for the longitudinal study, it is expected that the relationship between the GSES and the Breast and Bottle-feeding Self-

Efficacy scales will strengthen with the increase in participants. However, for the purpose of the study it is essential that the behaviour-specific scales are strongly related (as shown in the pilot study) in order to understand infant feeding intention.

3.4 The Breast and Bottle-feeding Social Support Scale

The breast and bottle-feeding social support scales measure the sources from which women feel support is given for breastfeeding and bottle-feeding (for example, mother or partner) and the frequency with which women feel that they might need such support. Four types of social support are measured, these being emotional, tangible, informational and appraisal support, each of which is represented by two items.

3.4.1 Sources of social support

Each participant indicated the individual or group that they felt would be the main source of each type of support. Eleven categories of sources of support emerged from the data. One category, NCT (National Childbirth Trust) was not indicated as a source of support for bottle-feeding, but only for breastfeeding. This was not surprising, as the NCT are advocates of breastfeeding and have their own breastfeeding counsellors who are trained by their organisation. All other sources were indicated as sources of support for both breastfeeding and bottle-feeding.

It is interesting to note that for both breastfeeding and bottle-feeding, partner and husband were most frequently cited as sources of emotional and tangible support, whilst midwives were more commonly cited as sources of informational and appraisal support. A number of

participants provided more than one possible source of support for some items. For both breastfeeding and bottle-feeding, these secondary sources of support were principally divided between family of the participant as source of emotional and tangible support, and health professionals as sources of informational and appraisal support.

All participants were able to provide sources of each type of social support clearly on the scale. It was apparent from the pilot study that participants often provided multiple sources of support, although only one source was requested in the instructions on the scale. Rather than restrict longitudinal study participants to providing only one source of support for each item (which would reduce the amount of possible data), it was decided that secondary or further sources of support cited would be dealt with separately in order to clarify the analysis. Overall, it was considered that the way in which sources of social support had been elicited in pilot study was appropriate for use in the longitudinal study.

3.4.2 Perceived need of social support

Participants were asked to indicate how often they felt that they would require each type of support as either “never”, “sometimes”, or “frequently.” The frequencies of the type of social support required by participants when breastfeeding and bottle-feeding were examined.

Participants were able to clearly express their need for the different types of social support appropriately on the scale, indicating a sufficient level of face validity. As participants did not consistently omit items it was considered that content validity was also adequate for this scale. Unfortunately, criterion validity could not be checked (due to there not being an

existing corresponding scale), and predictive validity could not be verified (due to the small sample size) for the social support scale. However, the reliability and validity checks made were deemed sufficient for the format of the items on the Antenatal Breast and Bottle-feeding Social Support Scale to be considered suitable for use in the longitudinal study.

3.5 Antenatal pilot study summary

In summary, the antenatal pilot study provided a useful test of the scales and questionnaires, and the recruitment strategies required in the first stage of the longitudinal study. In addition, as only one set of items was dropped from the scales (the Health Visitor normative belief and motivation to comply items on the attitude scales), it also awarded confidence to the method of item generation and scale development used in this study (refer to chapter 4). By listening to women and their views, scales and questionnaires have been produced which are not only appropriate for use with first time pregnant women, but which also provide reliable measures of the variables under investigation. The next, postnatal phase of piloting, involved the testing of the questionnaires and scales to be administered at stages two and three of the longitudinal study.

4. Postnatal Pilot Study Recruitment

The main aim of the postnatal pilot study was to ensure that the questionnaires and scales to be used in the postnatal stages of the longitudinal study could be used effectively by participants. Although all theoretical scales would have been tested in the antenatal pilot, it was considered vital to pilot these scales (with the exception of the Breast and Bottle-

feeding Attitude Scale which would only be administered at the antenatal stage of the longitudinal study) on a postnatal sample in order to mimic the data collection of the longitudinal study as closely as possible (Christensen, 2001).

Primiparous women of 16 years of age or over were recruited for this study. Recruitment methods were of two types: by word of mouth, and by distribution of questionnaires by a Health Visitor at a local practice. As was the case with the antenatal pilot study, colleagues and friends were asked if they knew of any women who had a first baby of 6 months of age or younger. Women who indicated that they were interested in participating by making contact with the researcher, either by e-mail or telephone, were provided with a set of questionnaires as well as the pilot study participant information sheet, the consent form, and a freepost envelope in order that the completed questionnaires could be returned.

A local G.P. practice was also approached and agreed to help with this part of the study by distributing questionnaire packs via the Health Visitor during routine postnatal appointments. As was the case with recruitment by word of mouth, all participants recruited using this method were provided with a questionnaire pack, an information sheet, consent form and a freepost envelope.

Eighteen primiparous women took part in the postnatal pilot study. Eleven were recruited by word of mouth, and seven were recruited from the local GP surgery by the Health Visitor. Thirty-five questionnaire packs were administered, producing a response rate of 51%.

5. Postnatal Pilot Results

5.1 Sociodemographic Variables Questionnaire

In order to pilot the questionnaires effectively, it was necessary to ask for more sociodemographic information than would be required at the postnatal follow-up in the longitudinal study. This was because such information had not already been obtained, as participants in the postnatal pilot had not been required to take part in the antenatal pilot. The sociodemographic variables questionnaire used for the postnatal pilot study was therefore an amended version of that intended to be used for the postnatal stages of the main longitudinal study. Unexpectedly, however, two participants participated in both stages of the pilot study. The first of these participants was recruited for both studies by word of mouth, and the second participant was recruited for the antenatal pilot at the antenatal clinic, and for the postnatal pilot study, by the health visitor at the local practice.

Descriptive statistics revealed the mean age of participants in this sample to be 29.94 years of age, with a range of 16 years (i.e. 22 to 38 years of age). The mean age for participants in this study is higher than that for the antenatal pilot, and the range is substantially smaller, with no representation of teenage mothers as there was in the previous study. Unfortunately, the age of the babies of the participants could not be analysed using descriptive statistics, as proposed, because mothers gave the ages of their babies in either weeks or months. Weeks and months could not be converted to a common measurement as it could not be ascertained as to whether all participants would view, for example, four weeks as constituting a month. A note was made to ensure that participants taking part in the postnatal stages of the longitudinal study were designated to respond in *either* weeks or

months, depending upon the stage of the study. The dispersal of marital status was similar to that of the antenatal study, with participants in the category 'married' having the highest frequency (61.1%), followed by cohabiting (27.8%), and finally single (11.1%).

Participants' and their partners' occupations were completed successfully and showed a variety of careers and jobs.

Descriptive statistics were also used to examine participants' indication of how happy they believed both themselves and their partners to be about the pregnancy. As was the case with the antenatal pilot, the items used to measure these variables were two Likert-type scales ranging from 1 (not at all happy) to 7 (extremely happy). The mean score for participant's indication of their own happiness with the pregnancy was 6.4, and their response as to their partner's happiness was 6.5. Similar to the antenatal sample, there were two single participants in the postnatal sample. However, unlike the antenatal study in which the single participants indicated their partner's happiness with pregnancy, the postnatal single participants did not indicate a response. Therefore, the descriptive statistics concerning participants' happiness regarding pregnancy is an analysis of the responses of the whole postnatal sample, whereas the statistics concerning partners' happiness with pregnancy is an analysis of participants' responses who indicated that they have a partner (N=16).

The final questions on the sociodemographic variables questionnaire were aimed at finding out about the participants' pregnancy, how they intended to feed their baby, and about any antenatal or postnatal classes that they were attending prior to the birth or had attended subsequent to the birth of their baby. Ninety-four percent of participants stated that they had intended to breastfeed their baby, with only one participant stating an intention to

bottle-feed. The majority of pregnancies had been planned (72.2%), with only 5 pregnancies that were unplanned. Participants' attendance at antenatal classes is shown in Table 6 below. Most participants (83.3%) stated that they had attended such classes. The participant who stated that she had attended a different type of class from those listed on the questionnaire added that this was a class at her local doctor's surgery.

Table 6: Types of antenatal class attended by postnatal pilot study participants

Type of class	Percentage (%)	Frequency (N)
NHS	66.7	12
National Childbirth Trust	22.2	4
Active Birth	16.7	3
Other	5.6	1

Regarding birth location, one participant stated that she had intended to have a home birth, whereas the remaining participants indicated that they had intended to deliver their babies in hospital. Only one participant stated that she was unwell during her pregnancy, and added that this was due to, 'bad morning sickness all through pregnancy.' Three participants (16.7%) indicated that they had been unwell since the birth of their babies. One participant had suffered from anaemia, and another had suffered from carpal tunnel syndrome,⁴ as well as back and joint pain. Unfortunately, one participant who indicated that she had not been well since the birth of her baby did not provide information as to the nature of the condition. However, it was considered that as most of the participants who had suffered from some form of illness had indicated the nature of the illness that this item was effective and would remain as part of the questionnaire in the longitudinal study.

⁴ Carpal Tunnel Syndrome, "tingling and numbness in the hand resulting from pressure on the median nerve as it passes through the carpal tunnel at the wrist," (Tiran, 1997, p.40).

Ten participants (55.6%) responded that they were intending to or had attended postnatal classes. Eight participants (44.4%) intended to attend NHS classes, one of whom indicated that she would also like to attend NCT classes. Of the remaining two participants, one was attending classes at her local doctors' surgery, and the other participant stated that she was still deciding which type of postnatal class she would like to attend. Due to the success of the format of the Postnatal Sociodemographic Variables Questionnaire in obtaining the required data, it was retained for use in the longitudinal study.

5.2 Details of Birth Questionnaire

The Details of Birth Questionnaire was designed to enable understanding of participants' experience of labour and delivery, and any effect that this may have had on choice of infant feeding method and progress. All participants gave birth in hospital, and all but one of the participants (94.4%) delivered vaginally. The remaining participant's baby was delivered by emergency caesarean. Five participants (27.8%) required an assisted delivery; in each case ventouse extraction was used. Only one baby was breech (i.e. feet or bottom down), and it was indicated that this baby was one of the sample that required an assisted delivery. Thirty-three percent of participants required an episiotomy to aid delivery, and 72.2% needed stitching of the perineum following delivery. One participant added that she requested that her perineum heal naturally rather than be aided by stitching.

Length of labour experienced by participants varied enormously. As the participant whose baby had been delivered by emergency caesarean indicated that she did not experience

labour, descriptive statistics were calculated for length of labour experienced for the remaining participants (N=17). The mean length of labour for the sample was 15.69 hours, the shortest being 4 hours and the longest being 56 hours (range = 52 hours).

Pain relief used by participants during labour and delivery was also recorded. Participants were also asked to rate the effectiveness of each type of pain relief that they used on a 7-point Likert type scale ranging from 1 (not at all effective) to 7 (extremely effective). Details of participants who used each type of pain relief and descriptive statistics of perceived effectiveness of each type of pain relief were examined. Only the scores indicated by participants who responded that they used each type of pain relief were included in the descriptive statistics.

Analysis revealed that all participants used some form of pain relief during labour. The participant who indicated that she used a form of pain relief other than those conventionally used added that this was a herbal rescue remedy called "Bachflowers." Fifteen out of the 17 participants who experienced labour used at least two types of pain relief, the remaining two participants using just one form.

Finally, participants were asked to rate their satisfaction with the care that they had received both in labour and immediately after the birth of their baby using a 7-point Likert-type scale ranging from 1 (not at all satisfied) to 7 (extremely satisfied). The mean scores for intrapartum and immediate postnatal periods were 6.2 and 5.5 respectively, indicating that most participants were happy with their care.

Overall, all participants successfully completed the Details of Birth Questionnaire. No items were consistently missed, and the data elicited from the questionnaires proved to be suitable for analysis. Two changes were made to the questionnaire based on advice given to the researcher by health professionals sitting on the local Maternity Services Liaison Committee. Firstly, the list of possible forms of pain relief was reduced to those available at the hospital at which the longitudinal study was to be based. Secondly, it was suggested that the item asking participants about the type of delivery they had experienced should be changed from “elective” caesarean to “planned” caesarean, in order to make the terminology more user friendly. Once these amendments had been made, the Details of Birth Questionnaire was considered appropriate for use in the longitudinal study.

5.3 Infant Feeding Details Questionnaire

The infant feeding details questionnaire was constructed to provide details concerning which methods of infant feeding participants had chosen since the birth of their babies, and reasons for any changes in this decision. As was the case with the analysis of the Details of Birth questionnaire above, frequencies and descriptive statistics were used to examine the data.

Methods of feeding being used by participants at the time of completing the questionnaire were varied, with half of the sample adopting more than one method of feeding simultaneously. Seven participants indicated that they were solely bottle-feeding, and two participants responded that they were exclusively breastfeeding at the time of the study. Only one participant indicated that she had not breastfed at all since birth and was currently bottle-feeding and weaning her baby onto solids. Of the remaining eight

participants, all were giving breast milk in some form. Four were supplementing breastfeeding with formula, two were breastfeeding and expressing breast milk, one was supplementing with formula and expressing, and one participant indicated that she was breastfeeding, supplementing with formula and expressing breast milk to be given to her baby in a bottle.

Of those participants who were currently bottle-feeding, but had breastfed at some time since the birth ($N=7$), the shortest duration of breastfeeding was 24 hours (one participant) and the longest was two months (two participants). Unfortunately, as participants had provided details of duration of breastfeeding in both weeks and months, descriptive statistics could not be used. As discussed earlier in the chapter, it could not be assumed that all participants would agree as to the number of weeks that would constitute a month, meaning that duration of feeding provided in months and in weeks could not be evaluated together. A note was made to rectify this problem in the main study by indicating to participants that they should respond in units of weeks adjacent to the space where they would provide their response. Participants who had changed from breast to bottle-feeding were also asked to provide a reason for this change. All participants to whom this applied responded appropriately to this question. During the postnatal pilot study it became apparent that it would be appropriate to ask participants who had not breastfed at all to state their reason for their decision, and therefore, a question was added to the questionnaire. It was not necessary to analyse this qualitative data for the pilot study, but rather to ensure that appropriate and sufficient responses were obtained. As this item was suitably answered by all participants who fitted the criteria, it was considered adequate for inclusion in the questionnaire in the longitudinal study.

Participants were also asked which method they believed to be the main method that they were currently using to feed their baby. Ten participants (55.5%) stated that their main method of feeding was bottle-feeding, and seven (38.9%) stated that their main method was breastfeeding. The remaining participant responded that she believed that she was using both methods equally. Apart from the seven participants who had previously stated that they were solely bottle-feeding, the participant who was weaning and bottle-feeding, and two of the participants who were supplementing breastfeeding with formula believed bottle-feeding to be their current main method of feeding their babies.

The length of time between the birth and initiation of breastfeeding was also recorded by those participants who had breastfed after the birth (N=17). Six participants breastfed their babies immediately after delivery. A further six participants breastfed after one hour, one after two hours and one after four hours. The final three participants sustained longer durations between delivery and initiation of breastfeeding recorded as one day, 30 hours and two days. The shortest stay in hospital after delivery was 8 hours, whereas the longest stay following delivery was seven days.

Descriptive statistics were used to examine participants' scores of their satisfaction with the standard of care that they received from health professionals regarding breast and bottle-feeding (where applicable). Participants were asked to respond to two 7-point Likert-type scales ranging from one (not at all satisfied) to seven (extremely satisfied). Seventeen participants responded to the question concerning care regarding breastfeeding (one participant did not consider this applicable to her as she had bottle-fed since birth). The mean score for care regarding breastfeeding was 5.29. The range of these scores was 5, with a minimum score of 2, and a maximum score of 7. Eleven participants responded to

the question concerning care regarding bottle-feeding. Five participants did not consider this question to be applicable to them as they had not bottle-fed since birth, and two participants omitted the item although it was unclear as to the reason for this omission. The mean score for care regarding bottle-feeding was 4.09. The minimum score was 1, and the maximum was 7 providing a range of 6.

Aside from the problem with the units used to determine duration of breastfeeding, the infant feeding details questionnaire was completed successfully by most participants. All items on the questionnaire were therefore retained for use in the questionnaire in the longitudinal study.

5.4 The Breast and Bottle-feeding Social Support Scale

The postnatal breast and bottle-feeding social support scale differed from the antenatal social support scale only in the instructions given to participants. As before, participants were asked to indicate the source and the frequency with which they felt they would need to be provided with four different types of social support. However, in the postnatal study, participants who had solely breastfed their babies were instructed to complete only those questions concerning breastfeeding. Likewise, participants who had solely bottle-fed since the birth of their baby were asked to complete only those items relating to bottle-feeding. Participants who had both breast and bottle-fed their babies since birth were asked to complete all items regarding both breast and bottle-feeding.

5.4.1 Sources of social support

Each participant specified the individual or group that they believed to be the main source of each type of support measured by each item. Sixteen participants completed the breastfeeding social support scale. One participant did not complete the scale despite having breastfed for 24 hours after the birth, and the remaining participant, having bottle-fed her baby since the birth, was not required to complete the breastfeeding scale. As was the case in the antenatal pilot, eleven categories of sources of social support emerged from the analysis of the data. However, the postnatal data did not contain a category for GP, but instead contained a category for 'myself' indicating that participants would rely on themselves for support.

Frequencies of sources of social support for bottle-feeding were examined. Twelve participants completed the bottle-feeding social support scale. Four of the remaining participants had either exclusively breastfed, or had both breastfed and used expressed breast milk, and so were not required to complete the scale. Unfortunately, the remaining two participants did not complete the scale despite having supplemented their babies' diet with formula. A note was made to remind participants in the longitudinal study to read the instructions carefully prior to completing each scale.

By examination of the frequencies of sources of social support, it would appear that participants consider midwives to be the main source of both informational and appraisal support for breastfeeding, whereas health visitors were more frequently reported as being the main source of informational and appraisal support for bottle-feeding. Although it is possible that this difference between the sources of informational and appraisal support

could be due to the perceived role of midwives and health visitors by the sample, it may be the experience of the participants that have led them to make these responses. A number of participants changed to bottle-feeding at a time when they would have been cared for by their health visitor, after being discharged by their midwife. It is therefore understandable that they would consider health visitors to be a greater source of support for bottle-feeding than for breastfeeding and vice versa. This example illustrates the importance of knowledge of the infant feeding experience of women when examining specific psychological constructs, and the usefulness of the women-centred perspective of this study.

5.4.2 Perceived need of social support

As was the case with the antenatal pilot, participants were asked to specify how often they believed that they would need each type of support as either “never”, “sometimes” or “frequently” in relation to breast and bottle-feeding. The frequencies of the perceived need for each type of social support by participants for both breastfeeding and bottle-feeding were examined. One of the major differences between participants’ perceived need of social support for breast and bottle-feeding is the proportion of participants who felt that they did not need each type of support for each infant feeding method. It is noticeable from the results that only one participant believed that she did not require one type of social support whilst breastfeeding, whereas for each type of bottle-feeding support, at least one participant responded that they would not require this support.

The postnatal pilot study participants successfully completed the social support scale without consistently omitting items. Therefore, the postnatal form of the Breast and Bottle-

feeding Social Support Scale was considered suitable for use in stages two and three of the longitudinal study.

5.5 Self-Efficacy Scales

5.5.1 Generalised Self-Efficacy Scale (GSES)

The scores for each item of the GSES were analysed by calculation of Cronbach's alpha to ensure the internal consistency of the scores. The result of the reliability analysis for this study was considered sufficient ($\alpha=.8366$) in comparison both with Leganger et al.'s (2000) score ($\alpha = .82$), and that obtained from analysis of the scores from the antenatal pilot study ($\alpha = .8505$). The alpha coefficients from the antenatal and postnatal data suggest that the scores from both the antenatal and postnatal pilots have corresponding internal consistency, and, therefore, the scale is suitable for use in both the antenatal and postnatal stages of the longitudinal study. Table 7 (below) exhibits descriptive statistics used to examine participants' overall scores on the scale.

5.5.2 The Breast and Bottle-feeding Self-Efficacy Scale

Participants were given instructions as to which sections of the breast and bottle-feeding self-efficacy scale to complete according to their infant feeding experience. Those participants who were currently breastfeeding (and had only breastfed since birth) were asked to complete only those sections relating to breastfeeding. Participants who were currently bottle-feeding, but who had breastfed their babies at some time since the birth

were asked to complete all of the sections. Participants who had solely bottle-fed their babies since birth, and who had not breastfed at all were requested to complete only those sections relating to bottle-feeding.

Twelve participants completed the breastfeeding section of the self-efficacy scale. As discussed above, one of the participants in the study had not breastfed since birth, and as such was not required to complete this section of the scale. All of the other five participants had breastfed at some time since the birth, but were currently bottle-feeding. All but one of the sample completed the bottle-feeding sections of the scale. The participant who omitted this section of the scale was currently breastfeeding and expressing breast milk, and so was not required to complete the scale. Alpha coefficients were calculated for both the breastfeeding ($\alpha = .8889$) and bottle-feeding ($\alpha = .8816$) sections of the scale respectively. The resulting alpha values reflected a satisfactory level of internal consistency within each scale.

Inter-item and item-total correlations were calculated for both the Breast and Bottle-feeding Self-Efficacy Scales. All inter-item correlations of the breastfeeding scores were less than 0.9, indicating independence of items. Three of the inter-item correlations calculated for the bottle-feeding scores, however, showed a perfect correlation ($r = 1.0$), indicating that these items might be measuring the same variable. However, as there had been no bottle-feeding inter-item correlations in the antenatal pilot, when a slightly larger sample had been tested, it was decided that these items should remain in the scale, although the researcher would remain vigilant to problems with these items in the longitudinal study.

As was the case for the antenatal pilot, all bottle-feeding item-total correlations were above the 0.2 threshold, indicating discrimination of items. However, two breastfeeding items resulted in item-total correlations of less than 0.2. Although it was decided that one of these items (item five) would remain in the scale, as the item-total correlation relating to this item in the antenatal pilot exceeded the 0.2 threshold, the other item that fell below the threshold (item nine), also fell below 0.2 in the antenatal pilot. Therefore, a decision had to be made as to whether or not this item needed to be excluded from the scale. The main difficulty in excluding an item from one of the behaviour-specific scales is that each item in the “avoid” section of the scale has a corresponding “cope” item and vice versa. Item nine is a “cope” item relating to problems with positioning the baby at the breast. The corresponding “avoid” item exceeded the 0.2 threshold in both the antenatal pilot ($r = .5010$) and the postnatal pilot ($r = .7806$). Further, the internal reliability of the scale would not be significantly improved by deletion of item nine from the scale. Due to the complex construction of the behaviour-specific self-efficacy scales, and the inconsequential improvement in the internal consistency of the scale on removal of the item, it was considered appropriate to retain item nine in the breastfeeding self-efficacy scale, with a note of caution to remain vigilant for any problems with this item in the longitudinal study. Descriptive statistics for each scale can be observed in Table 7 below. The inconsistent number of participants who completed each scale, due to the differing infant feeding experiences of the participants, and the adequate results gained from the antenatal pilot study, meant that it was deemed inappropriate to carry out Pearson Product Moment correlations between the overall scores of the GSES and the breast and bottle-feeding self-efficacy scales. However, from the analyses presented above it was deemed suitable to

maintain the Postnatal Breast and Bottle-feeding Self-Efficacy Scale for use in the postnatal stages of the longitudinal study.

Table 7: Descriptive statistics of postnatal pilot study participants' scores on the GSES and the Breast and Bottle-feeding Self-Efficacy Scale

Statistics	GSES	Breastfeeding Self-Efficacy	Bottle-feeding Self-Efficacy
<i>Mean</i>	32.7778	28.25	34.8824
<i>Median</i>	31.0	28.0	36.0
<i>Mode</i>	30.0	33.0	32.0 ^a
<i>Standard deviation</i>	3.7971	6.3978	4.1666
<i>Range</i>	11.0	23.0	14.0

a. Multiple modes exist. The smallest value is shown

5.6 Problems with Infant Feeding Scale

The Problems with Infant Feeding Scale was designed in order to assess the occurrence within the sample of the problems which participants were asked to consider in the Breast and Bottle-feeding Self-Efficacy Scale. Participants were asked whether or not they had experienced each problem, and then to assess how well they felt that they coped with each problem that they had encountered. Figures 3 and 4 below show the frequency of breastfeeding and bottle-feeding problems respectively in the sample. Although at least one participant had encountered each of the bottle-feeding problems presented, a greater proportion of participants suffered problems whilst they were breastfeeding their babies. The two “other” problems described by participants (both of which concerned bottle-feeding) were, “dropping night feeds,” and, “leaving milk at home when going out.” All participants successfully completed the Problems with Infant Feeding Scale, enabling the original format to be used in stages two and three of the longitudinal study.

Figure 3: Graph to show breastfeeding problems experienced by postnatal pilot study participants

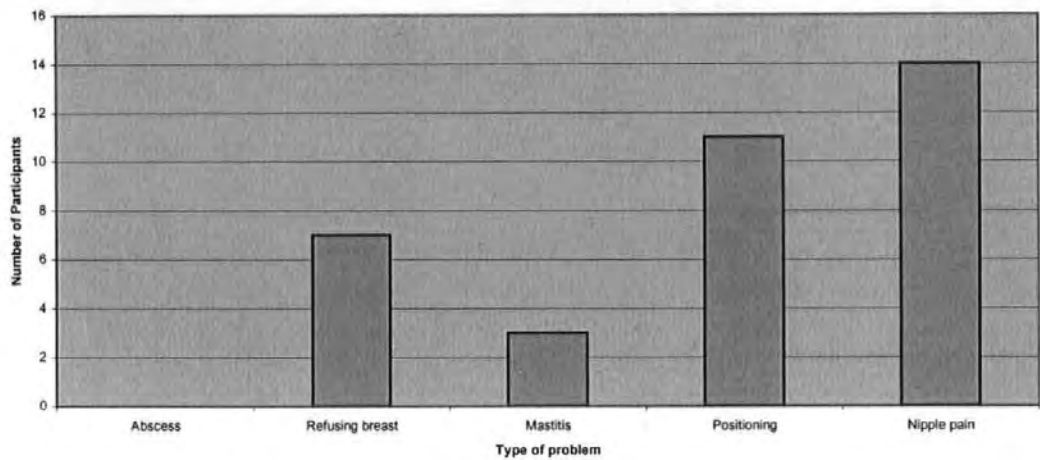
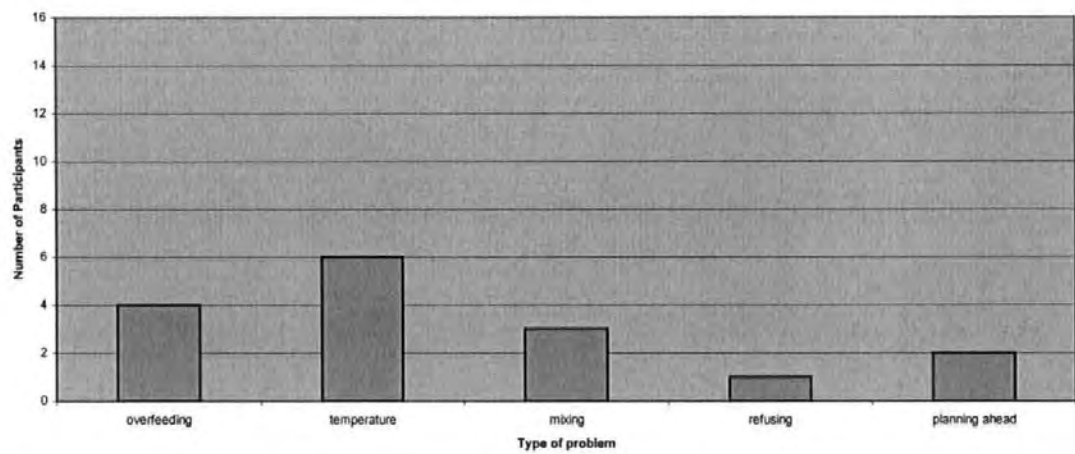


Figure 4: Graph to show bottle-feeding problems experienced by postnatal pilot study participants



The following section presents the piloting of the qualitative interview schedule introduced in chapter one carried out to assess the utility of the schedule.

6. Qualitative Pilot Study

It was necessary to pilot the interview schedule prior to carrying out the main qualitative study in order to ensure that the questions asked could be understood by participants, and that the required level of detail of response was obtained using the questions and associated probes. To pilot the schedule it was decided that the first participant to be recruited for the main qualitative study would be treated as the pilot. Although the results of the qualitative study will be presented in a later chapter (refer to chapter 7, section 7.4), it is essential that the recruitment procedure is detailed here to understand how the participant utilised for the pilot was recruited.

6.1 Qualitative study recruitment

The first 50 participants, who were about to enter the second stage of the longitudinal study, were sent a sheet attached to the questionnaire pack inviting them to take part in the qualitative study. On the sheet, it was stressed to participants that they had no obligation to take part in this further study, and that, if they wished, they could continue to take part only in the quantitative study. If they did want to take part in the qualitative study, participants were asked to provide their telephone number in the space provided on the sheet. On receiving the stage two questionnaire set, if the participant indicated that she was interested in being interviewed, the researcher contacted her by telephone to arrange a convenient time and place for the interview. The first interview arranged by the researcher was used as a pilot for the interview schedule, details of which are provided below.

6.2 Qualitative pilot interview

The aim of piloting the interview schedule was to ensure that participants would understand and respond appropriately to the questions on the interview schedule prior to data collection for the qualitative study. As such, it was necessary to reproduce the procedure to be used in the qualitative study as accurately as possible to fully test the schedule, and to allow the pilot study to be optimally employed (Christensen, 2001). The participant chosen to pilot the schedule was the first to both return her stage two questionnaire pack to the researcher, and to state that she wished to take part in the qualitative study. For the purpose of the pilot, the participant will be named "Sarah".

Sarah was 25 years old, married, and had delivered her baby boy 3 months prior to the interview. Sarah had breastfed since her baby was born and was still exclusively breastfeeding when the interview was conducted. The interview took place at Sarah's home at her request. On arriving at Sarah's home, the researcher reminded her of the aims of the qualitative study, and asked her to read and sign the consent form. Sarah was also given a gift token as thanks for participating in the qualitative study. On consenting to have the interview tape recorded, the researcher set up the recording equipment and started the interview.

The interview itself lasted for 45 minutes. Sarah answered all of the questions with little need for further probing. During debriefing following the interview, Sarah indicated that she had enjoyed taking part in both the longitudinal and qualitative studies. Indeed and perhaps, not surprisingly, Sarah seemed to enjoy talking about her baby, and many aspects of motherhood as well as infant feeding. Therefore, the researcher found that rather than

using the probes to encourage the participant to talk, she needed to use them in order to confine the conversation to the topic of infant feeding. The researcher also found that once the interview was over (i.e. all questions on the schedule had been answered), a lengthy conversation continued between researcher and participant about topics related to infant feeding that had not been covered during the interview. Using this first interview with Sarah as the pilot was therefore extremely beneficial to the researcher as she was then aware that probes might need to be used in the way described above, and that tape recording should not automatically end simply because the interview schedule had been completed.

The data was transcribed verbatim and preliminary coding carried out to ensure that the data was adequate for the planned analysis. During transcription, it was noticed that due to unavoidable noise (e.g. baby crying), some of the interview was unclear, and therefore data was lost. A note was subsequently made to ensure that the researcher was aware of any background noise during the interview, and either repeat the question or reposition the microphone as applicable.

7. Pilot Study Summary

This chapter has reported the piloting of the scales and questionnaires developed in chapter four on both an antenatal and a postnatal sample, and the piloting of the interview schedule to be used for the qualitative study. It was discussed in the introduction to this chapter, that it is optimal to recreate the specifics of a study in order to accurately pilot it (Christensen, 2001). However, the constraints of time did not permit a longitudinal study to be carried

out at the pilot stage. However, by conducting both an antenatal and a postnatal pilot study, the efficiency of the scales and questionnaires was sufficiently tested with regard to both reliability and validity.

Although the main focus of the quantitative pilot studies was not the analysis of results, but the testing of the instruments, analysis was carried out as far as possible with the data. It was essential that the analyses to be carried out on the data in the main study was planned according to the research questions being asked of the data (refer to chapter 3, section 3.4). By piloting the analyses, any potential problems could be rectified, and possible alternatives sought. Further, in the case of the TRA analysis, the relationships between the theoretical components of the models for both breastfeeding and bottle-feeding impart confidence for the use of the theory in the longitudinal study. Additionally, the strong correlations between the components also provide a form of predictive validity, lending added assurance to the use of the scale.

Concerning the piloting of the interview schedule, due to the ease with which Sarah was able to answer the questions on the schedule, and the adequacy of the data elicited (despite the minor problems encountered above), it was considered that the interview schedule was appropriate to be used in the qualitative study. Further, due to the success of the pilot interview, it was decided that the data obtained from this interview would also be used in the main qualitative study. The minor problems highlighted by running a pilot interview, however add further weight to the argument of the importance of accurate pilot testing prior to data collection (Christensen, 2001).

The pilot study phase overall also provided the time needed to build relationships with staff in the hospital, and to initiate and test a recruitment procedure. Although, as will be discussed in chapter five (refer to chapter 5, section 5.1.1), the recruitment procedure does in fact go through another change during the initiation of the longitudinal study, becoming known at the hospital and in the local community through the pilot study provided the researcher with an invaluable opportunity to present the study and make it known to health professionals prior to the start of the longitudinal study. This contact also allowed the researcher to both make use of the clinical expertise of health professionals in administering and constructing questionnaires (e.g. the Details of Birth Questionnaire), and to fully understand the experience of participants (e.g. by administration of questionnaires in the antenatal clinic).

**CALLING ALL FIRST TIME
MUMS!
BREAST OR BOTTLE?
WE WANT TO KNOW
YOUR VIEWS!**

Do you sometimes feel that all you ever do is listen to advice about your pregnancy? Well, as a mum of two myself, I know what that can be like, and so have started a study which gives first time mums the opportunity to put forward their views about breast and bottle feeding. If you are pregnant with your first baby, then we are looking for you!

All we ask is that you fill in 3 sets of questionnaires: 1 while you are pregnant, 1 when your baby is 4-6 weeks old, and 1 when your baby is 4-6 months old. All of these questionnaires can be sent and returned by post (at no charge) and there will also be an opportunity to take part in interviews if you wish. Everyone who completes questionnaires will be sent a small gift. If you are interested in taking part, please talk to me, Lynne Callaghan, either before or after your tour. I will be sitting at a table in the café in the maternity unit.

I look forward to meeting you!

Appendix 19.
Longitudinal Study Information Sheet.

Participant Information Sheet dd/mm/yy.

TAKING PART IN RESEARCH

Study Title: Towards a women-centred approach to infant feeding research.

You are being invited to decide if you would like to take part in a research project about breast and bottle-feeding. Here is some information to help you decide whether or not to take part. Please take time to read the following information carefully and discuss it with friends, relatives, your GP and your midwife if you wish. Please contact Lynne Callaghan (01752-xxxxxx) at any time if there is anything you do not understand or if you would like more information. Take time to decide whether or not you wish to take part. Thank-you for reading this.

GENERAL INFORMATION:

QUESTION	ANSWER
What kind of information will I have to provide?	Should you agree to take part in the study, you will receive three sets of questionnaires asking questions about, for example, your attitudes to and your experiences of breast and bottle-feeding. You will receive the questionnaires when you are pregnant, when your baby is 4-6 weeks old, and when your baby is 4-6 months old.
Will I gain any benefits from taking part?	Every time you complete a set of questionnaires, you will receive a small gift as thanks for having taken part in the study. Also, by finding out how you make this important decision, it is hoped that a significant contribution to the current scientific knowledge of this subject will be made in order to promote optimum provision of services for women.
Do I have to take part?	No. It is up to you to decide whether to take part or not. Even if you do decide to take part, you are free to withdraw at any time and without giving a reason. This will not affect the standard of the care you will receive. Your doctor or midwife will not be upset if you decide not to take part.

Appendix 19 (continued).
Participant Information Sheet dd/mm/yy.

INFORMATION ABOUT THE STUDY:

What is the study all about?	The aim of this study is to find out how you make the decision to breastfeed or bottle feed your new baby, and any changes in this decision from pregnancy until your baby is 4 to 6 months of age.
What do I have to do?	Should you agree to take part in this study, you should read and sign the attached consent form. You will notice that this asks for the name and address of your doctor, midwife and consultant. It is necessary that I contact the health professionals that care for you and your baby to let them know that you are taking part in the study. The first set of questionnaires will be given to you when you have completed the consent form, the second will be sent to you when your baby is 4-6 weeks old, and the third set of questionnaires will be sent when your baby is 4-6 months old. Each set of questionnaires will take no longer than 50 minutes to complete. All postage will be paid for. All that we ask is that you complete the questionnaires and return them to me as soon as possible.
Is there any other way that I can become involved with this research?	In order to fully understand how and why women in your situation decide how to breast or bottle-feed, it is hoped to interview a number of women who are already involved in the study. It is intended to carry out these interviews when your baby is 4-6 weeks old, and again when your baby is 4-6 months old. You will be sent details of these interviews with the second set of questionnaires. You do not have to take part in these interviews, and can just take part in the questionnaire study if you wish.
Can I find out more about the study	Yes. If you have any questions at all about the study, you can call the researcher, Lynne Callaghan at any time on Plymouth xxxxxx. If you leave a message I will get back to you as soon as possible.

Appendix 20
Longitudinal Study Consent Form.

CONSENT FORM

Record Number:

CONSENT FORM

Title of Project: *Towards a women-centred approach to infant feeding research.*

Name of Researcher: Lynne Callaghan

Please initial or tick the boxes below.

- I confirm that I have read and understood the above information sheets dated
dd/mm yy for the above study. ☐
- I understand that my participation is voluntary and that I am free to withdraw at
any time without my medical care or legal rights being affected. ☐
- I understand that my G.P., my midwife and my consultant will be informed of
my participation in this study. ☐
- I give permission for the researcher to contact the Child Health Information
Department to ensure the health of myself and my baby before any further
questionnaires are sent. ☐
- I agree to provide my name and address in order that further questionnaires
and other correspondence regarding the study can be sent. ☐
- I agree to take part in the above study. ☐

Name of patient:

Date:

Signature:

Researcher: Lynne Callaghan

Signature:

Date:

Appendix 20 (continued).
CONSENT FORM

Address of patient: _____

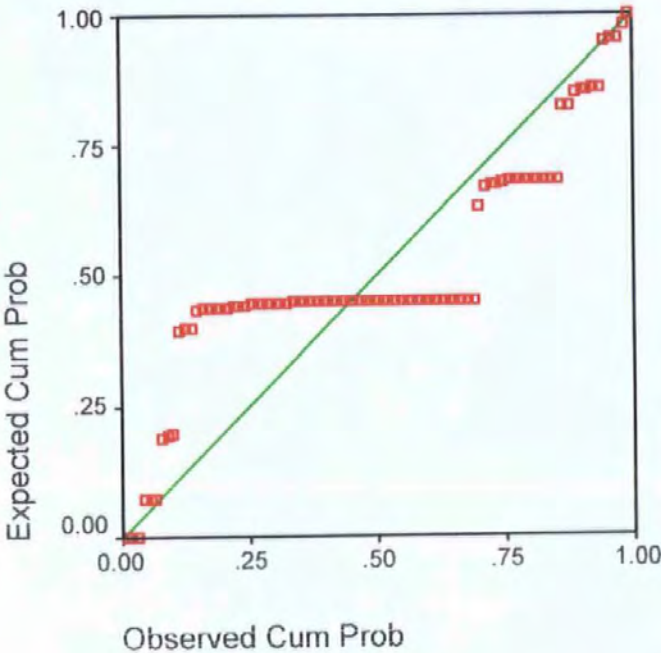
Name and address of G.P.: _____

Name of midwife: _____

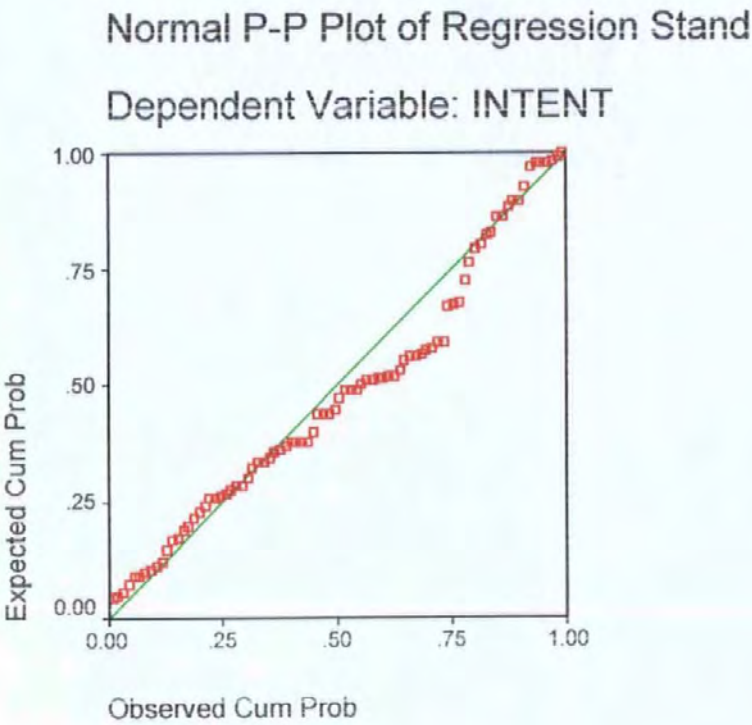
Name of consultant: _____

Appendix 21:
Normal probability plot for TRA MLR analysis

Normal P-P Plot of Regression Stanc
Dependent Variable: INTENT



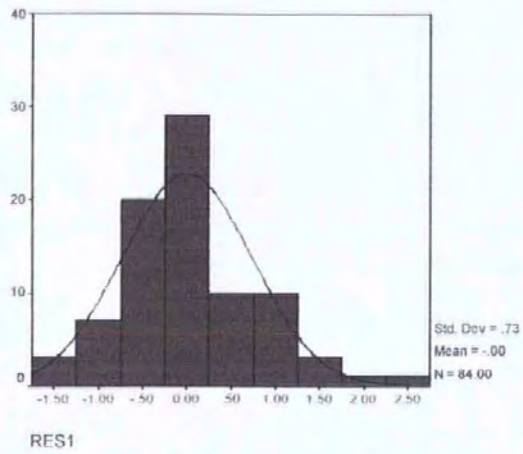
Appendix 22:
Normal probability plot for TRA Bottle-feeding MRL Analysis



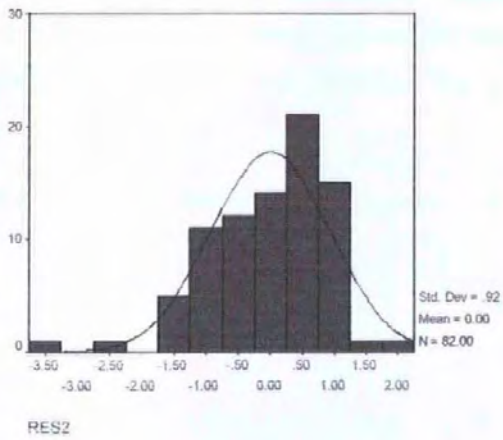
Appendix 23
Longitudinal Study Self-Efficacy Analysis

Examples of residual plots for ANOVA

i. Histogram of Residuals for GSES study stage i



ii. Histogram of Residuals for breastfeeding self-efficacy, study stage i



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The importance of attitudinal and normative beliefs on primigravidas' intention to breast and bottle feed

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This study, based on Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA), seeks to explain the relationship between primigravidas' beliefs regarding infant feeding, their intention to breast or bottle feed their babies, and their subsequent infant feeding behaviour. A scale designed to measure the components of the TRA in relation to breast and bottle feeding was administered to 80 primigravidas, and contact was made at two to three months postpartum to assess subsequent infant feeding behaviour. The role of the attitudinal and normative components of the TRA in predicting intention was investigated, and assessment was made of the effectiveness of both behavioural and differential measures of intention in predicting participants' infant feeding behaviour. Findings are discussed in relation to developing women-centred theory and practice.

Changing Activity Levels during Pregnancy

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A longitudinal study investigated how women's experiences of pregnancy affect their patterns of physical activity. Data were collected at 12, 16, 25, 34 & 38 weeks gestation from 51 nulliparous women. Total Daily Activity Level was assessed by semi-structured interviews and actiwatch recording. Mean activity at 34 weeks gestation was significantly lower than at 16 or 25 weeks and a further significant decrease occurred between 34 & 38 weeks. Barriers to maintaining habitual activity included: physical symptoms of pregnancy; nature of advice received; and maternal perceptions of risk. The paper will discuss these barriers in the light of the pregnancy experience and the provision of antenatal advice.