

THE UNIVERSITY OF HULL

**3D Ultrasound in Pregnancy: Discourses, Women's  
Experiences and Psychological Understanding**

being a Thesis submitted for the Degree of Doctor of Philosophy

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by

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## **Abstract**

This study explores discourses around private three- and four-dimensional (3/4D) ultrasound scans in pregnancy, the experiences of women who have 3/4D scans and what impact these scans may have on pregnant women.

A critical discourse analysis of scanning company websites was undertaken to explore the discourses, identities and genres set up on the websites. Longitudinal interviews exploring women's experiences of 3/4D scans were analysed using interpretative phenomenological analysis. Case studies, using longitudinal questionnaire and interview data, were used to investigate the psychological impact of 3/4D scans on pregnant women.

The critical discourse analysis revealed mixed discourses, identities and genres. While 3/4D scans are not overtly medical, they nevertheless contain medical aspects. They are promoted as enhancing bonding and reassurance. In the interview analysis, two superordinate themes emerged: 'Getting to know the baby' and 'Experiences of pregnancy'. While the women's physical and emotional experiences of pregnancy varied considerably, there were more convergences in the desire to 'get to know' the fetus and how women approached this. While routine and 3/4D scans played an important role, fetal movement also emerged as a significant factor. The case studies showed that the psychological impact was not consistent. Scans had no effect on fetal health locus of control, may have reduced anxiety about specific issues for some women and may have had a

positive impact on some components of bonding for some women. It is not possible to state categorically that they reduce anxiety or increase bonding. The psychological impact of 3/4D scans appears to be individually mediated and depends on pregnancy experience and individual psychological differences, highlighting the significance of individual factors in both research and practice.

Two opposing discourses portray 3/4D scans as either beneficial, by enhancing reassurance and bonding, or problematic, by undermining women's embodied knowledge and experience and being potentially risky. This study suggests that neither of these two conflicting discourses are reflected in women's experiences. The women in this study were not motivated primarily by bonding or reassurance when choosing 3/4D scans, but considered them a nice experience; on the other hand, the scans do not seem to have had a detrimental impact either.

The interview analysis suggests that women acquire knowledge about the fetus through scans and fetal movement and combine these to make sense of the fetus. This study also provides evidence that the concept and measurement of bonding during pregnancy is problematic and that professional and academic perspectives are not necessarily reflected in women's experiences.

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## **Publications**

### **Peer-reviewed paper**

Walsh, J., Hepper, E.G., Bagge, S.R., Wadephul, F. and Jomeen, J. (2013) Maternal-fetal relationships and psychological health: emerging research directions. *Journal of Reproductive and Infant Psychology* 31(5):490-499

### **Peer-reviewed conference paper**

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### **Invited conference papers**

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Wadephul, F., Jomeen, J. and Glover, L. (2012c) Women's experiences of 3D ultrasound scans in pregnancy. A qualitative study. Paper presented at the Faculty of Health and Social Care seminar series, 17 October, University of Hull

Wadephul, F. (2013a) Fetal imaging – imagining the unborn? Women's experiences of 3D ultrasound scans. Paper presented at the Postgraduate Interdisciplinary Research Seminar series, 13 March, University of Hull

Wadephul, F. (2013b) Women's experiences of 3D ultrasound scans. Paper presented at the Contemporary Interventions in Maternity Care event, 21 March, University of Hull

Wadephul, F. (2013c) Three-dimensional ultrasound scans in pregnancy: six case studies. Paper presented at the PhD Spotlight event, 30 October, Faculty of Health and Social Care, University of Hull

### **Conference posters**

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Wadephul, F., Jomeen, J. and Glover, L. (2012b) A critical discourse analysis of private 3D ultrasound providers' websites. Poster presented at the annual conference of the Society for Reproductive and Infant Psychology, 12-13 September, Oxford, UK

Wadephul, F., Jomeen, J. and Glover, L. (2012d) Women's experiences of 3D ultrasound scans. Poster presented at the annual conference of the Royal College of Midwives, 13-14 November, Brighton

# **Chapter 1 Introduction**

## **1.1 Ultrasound in pregnancy**

### **1.1.1 The use of ultrasound in pregnancy**

Ultrasound scanning makes use of sound waves to produce an image of the structures of the body. It was first developed in the 1940s and has been used routinely during pregnancy since the early 1980s. In the UK, the majority of pregnant women now have at least one scan during pregnancy to date the pregnancy and detect fetal anomalies (Manning, Shah & O'Brien 2007). These scans are offered by the National Health Service (NHS) and usually involve 2-dimensional (2D) ultrasound.

### **1.1.2 Three- and four-dimensional ultrasound scans**

Developed in the 1990s, three-dimensional (3D) ultrasound scans use computer software to show the fetus in a more three-dimensional image which is coloured to give a sepia/golden effect. Four-dimensional (4D) scans add the dimension of time, providing moving images. These scans offer enhanced surface rendering, making it easier to visualise fetal structures, particularly the face; 4D scans make it easier to observe facial expressions.



Currently, 3D and 4D scans have limited clinical use, though they do offer some advantages over 2D scans when imaging some soft tissue anomalies, such as cleft lip (Kurjac et al. 2007; Campbell 2002). Consequently, 3/4D ultrasound is used to a limited extent within the NHS and not offered routinely to pregnant women.

In the UK, the use of 3/4D ultrasound quickly moved from a diagnostic context into a commercial setting. Commercial clinics have been offering 2D scans since the late 1990s (Chudleigh 1999), and from 2003 3/4D scans have become widely available commercially (Roberts 2012a). These scans are ideally carried out between 25 and 30 weeks of pregnancy in order to obtain the best images. They do not have an explicitly diagnostic purpose, but are marketed as 'bonding scans' or 'reassurance scans'. Commercial scanning companies typically offer expectant parents the opportunity to take home not just 3D images, but also DVDs of the 4D scan and other merchandise with the 3D image, such as key rings and mugs. The cost of a 3/4D scan in the UK ranges from around £60 to several hundred pounds depending on the package chosen.

### **1.1.3 Why do research into 3D and 4D scans?**

There is a considerable body of research not just into the diagnostic aspects of ultrasound scans, but also into their psychological impact on pregnant women and their partners and into how pregnant women experience scans. It is generally assumed that ultrasound scans enhance bonding and reassurance in pregnancy, though the research is not conclusive, as will be discussed in Chapter 3. Similar claims are made regarding the positive impact of 3/4D scans, but to date there is

very limited research into these scans and consequently we know very little about their psychological impact or about why women choose private 3/4D scans, what they expect from them and how they experience them. While most pregnant women do not have 3/4D scans, a considerable proportion do. Commercial scanning companies advertise 3/4D scans with claims about their positive effect on bonding and reassurance; the validity of these claims has not been sufficiently studied. It is therefore important that we know more about the effects of these scans.

It is reasonable to assume that the impact and experience of these scans is different to routine 2D scans. Not only is the quality of the image different, showing a more detailed and seemingly realistic image of the fetus as well as facial expressions, but the context of private 3/4D scans is also very different from routine 2D scans as they are performed later in pregnancy, do not have an explicit diagnostic purpose and are actively chosen, and paid for, by pregnant women.

#### **1.1.4 This study**

This study uses three research approaches to explore issues around 3/4D scans. A critical discourse analysis of scanning company websites examines discourses around private 3/4D scans. Pregnant women's reasons for choosing 3/4D scan and their expectations and experiences of these scans are studied using interpretative phenomenological analysis of interviews. The psychological experience and impact of these scans is explored through case studies utilising quantitative and qualitative data. While the interpretative phenomenological analysis and case

studies explore women's experiences, these do not occur in a vacuum, but are affected by wider societal discourses relating to pregnancy and motherhood. The critical discourse analysis of websites is used to explore these discourses.

This is the first longitudinal study into women's experiences of 3/4D scans and the first study to explore the psychological impact of *private* 3/4D scans, as well as the first critical discourse analysis of commercial scanning company websites.

## **1.2 Organisation of the thesis**

Chapters 2 and 3 review different aspects of the literature. Chapter 2 explores the historical and contemporary context of ultrasound scans, giving a brief historical overview of the medicalisation of pregnancy, the changing image of the fetus and the development of ultrasound, and positioning 3/4D scans within this context. Chapter 3 reviews the literature on the psychological concepts of anxiety, bonding and control in pregnancy as they relate to both 2D and 3/4D ultrasound scans in pregnancy. Building on the literature reviews, Chapter 4 presents the research questions, aims and objectives, and an overview of the study, with a discussion of the different elements of the research.

Chapter 5 presents a critical discourse analysis of scanning company websites, with a focus on the identities, discourses and genres which are evident on the websites. As the evidence for the interpretative phenomenological analysis and

case studies was collected at the same time and, to some extent, uses the same sources, Chapter 6 gives details of the study design, sampling and data collection procedures and ethical considerations for both. The interpretative phenomenological analysis of the interviews is presented in Chapter 7, and Chapter 8 contains the case studies of individual pregnant women.

Chapter 9 provides a synthesis of the critical discourse analysis, interpretative phenomenological analysis and case studies and an overall discussion of the issues raised, while Chapter 10 contains the overall conclusions.

## **Chapter 2    Ultrasound scans: historical and contemporary context**

### **2.1    Introduction**

Ultrasound scanning did not arise in a vacuum but within a historical, social and cultural context. This chapter sets the historical context for the development of ultrasound, proposing that the medicalisation of pregnancy and the changing image of the fetus have been instrumental in the rise of obstetric ultrasound, and that these have, in return, been shaped by ultrasound. The chapter goes on to discuss the effect of routine scans on women's experience of pregnancy and perceptions of the fetus as well as implications for the commercialisation of pregnancy. Finally, the historical, social and cultural context of the development of ultrasound is used to identify specific cultural, social and psychological issues surrounding private three- and four-dimensional scanning.

### **2.2    Historical context**

#### **2.2.1    The medicalisation of pregnancy**

Until the 17<sup>th</sup> century, pregnancy and childbirth were firmly in the private, female domain and largely under the control of women – pregnant women themselves

and those women who attended them during labour (Cahill 2001). This gendered division of labour was supported by cultural prohibitions. Whereas midwives routinely used touch to assess the cervix and performed internal versions (turning the fetus into a more favourable position) if necessary, men were generally prohibited from touching women's genitalia, which inevitably curtailed what they could do during pregnancy and childbirth (Tatlock 1992).

Pregnancy was surrounded by uncertainty, not just regarding the outcome, but also confirmation and length of pregnancy (McClive 2002). Pregnancy was confirmed by quickening, the first fetal movements felt by the woman (McClive 2002; Duden 1993) and consequently it was only pregnant women who could confirm pregnancy (Oakley 1984). Until hormonal pregnancy tests became available in the 1920s, 'the social as well as the physical life of the fetus was determined in its relation to the mother: it became a living being, a baby, when it communicated its presence to her, and through her, to us, to society' (Rothman 1994:113). Quickening was an important milestone with social as well as legal implications regarding paternity, abortion, infanticide and even executions (McClive 2002; Duden 1993).

Duden (1993), who analysed a German doctor's records of consultations with female patients in the first half of the 18<sup>th</sup> century, suggests that women at that time experienced their bodies and pregnancy very differently: they 'suffered from experiences that have lost all meaning for us. They report on an "ebbing" and "flowing" and "curdling" and "hardening" and, above all, on an interior orientation

of their being that is mysterious today but which in their own time was immediately understandable, not only to other women, but also to the physician' (Duden 1993:8). Pregnancy changes were 'perceived by touch and verbally expressed by the corresponding metaphors' (Duden 1993:86). The body was essentially perceived in a haptic state, i.e. through the sense of touch. It was recognised that women were the only ones who had direct experience of these changes. This privileged knowledge gave women some control: they had 'the power to testify to an experience which was not just private but intimately nonshareable' (Duden 1993:94).

In 17<sup>th</sup> century Britain, male practitioners began attending labouring women, initially in addition to midwives (Wilson 1995). 'Man-midwives', however, increasingly challenged the role of midwives (Harris, Connor, Bisits & Higginbotham 2004; Tatlock 1992), particularly through their higher status and possession of instruments like forceps. Women were excluded from using forceps; the 'technological innovation of the forceps thus legitimized male physicians' entry to and ultimately control over the previously female domain of midwifery' (Harris et al. 2004:25). However, initially only wealthy women were likely to employ male practitioners, who were otherwise only called in case of complications (Cahill 2001; Tatlock 1992). The involvement of male practitioners in childbirth gradually increased, though it was still very rare for women to consult professionals, male or female, during pregnancy. Through access to university education and newly established hospital obstetric departments, men had

privileged access to theoretical knowledge unavailable to midwives (Erikson 2007; Tatlock 1992).

The rise of male practitioners and attempts to scientifically study reproductive processes were greatly influenced by the principles of the Enlightenment. A major turning point was the wide-spread acceptance of Cartesian philosophy with its separation of the material and physical world (Cahill 2001; Oakley 1984). Whereas before body and mind/spirit were seen as one and therefore subject to a 'religious embargo' prohibiting detailed study of the body, particularly dissection, Descartes' mind/body dualism permitted study of the body – as separate from the mind, which was still firmly in the religious domain – and therefore allowed a better understanding of human anatomy and physiology (Cahill 2001).

The emphasis on objective, scientific facts and the legal role of the confirmation of pregnancy, in which the dependence on women's evidence was increasingly seen as problematic, led to attempts to confirm pregnancy independently (McClive 2002; Oakley 1984). Male practitioners began to appropriate the female privilege of touch in the form of abdominal palpation and internal examinations (Duden 1993). Male practitioners also began to use the speculum, which, though known in ancient Greece and Rome, had not been used widely until its re-introduction in the early 19<sup>th</sup> century. Whereas midwives generally considered the use of the speculum superfluous and uncomfortable for women, relying instead on the privilege of touch, male practitioners saw it as a way of providing direct visual access to the woman's cervix and womb (Tatlock 1992). Thus the speculum



'serves symbolically to legitimise the male medical gaze, the right of medical men to examine the interior of the female body and thus to know what the female patient herself does not know' (Tatlock 1992:757). The use of the speculum marks a shift to *looking* as the norm (Erikson 2007). Women's bodies become 'rendered objects of institutional knowledge, a knowledge contested and prescribed within "masculine" universities, regulated and deployed by male boards of health, and endlessly reproduced by sterile and unsexed specula, those keys that had opened the female body and locked it into place within professional "masculine" medicine' (Tatlock 1992:759).

Despite this, pregnancy was still seen as an essentially natural state and routine medical supervision was considered unnecessary until the 19<sup>th</sup> century (Oakley 1984). As definite determination of gestational age was impossible, women's views and knowledge of their own bodies were still crucial (Duden 1993; Oakley 1984). The growing involvement of male practitioners increased the focus on the fetus. Tatlock (2002), who compared two midwifery books from the late 17<sup>th</sup> and early 18<sup>th</sup> century, written by a midwife and a physician respectively, describes that while for the midwife Siegemund saving the mother's life was the priority (considering a stillbirth a 'successful birth' as long as the mother survived), the physician Ettner seemed to be concerned mainly with the child. It appears that whereas midwives would have been primarily focused on the women themselves, male practitioners might have been more influenced by religious concerns (saving the unborn, and therefore unbaptised, child's soul) as well as secular factors (the fetus as a social entity, representing the father's heir).

In the early 20<sup>th</sup> century, government policy in the UK focused for the first time on pregnancy and antenatal care. Concern about the physical state of army recruits in the Boer war led to suggestions that the health of adults depended on their health as a child, which in turn depended on the health of infants and their mothers (Oakley 1982). Thus pregnancy and childbirth became an important concern of the state, leading to a strong emphasis on education of mothers and the establishment of the first antenatal clinics. The early decades of the 20<sup>th</sup> century also saw the beginning of a reconceptualisation of pregnancy as medically problematic. Women's knowledge and reliance on their experiences was increasingly dismissed, and the need for expert advice and medical supervision was emphasised (Barker 1998).

Medical and scientific advances played an increasing role in pregnancy. X-rays were widely used on pregnant women until the 1950s and to a limited extent until the 1970s. Obstetric knowledge, particularly about hormones, increased considerably in the 1930s and 1940s. The development of pregnancy tests in the 1920s made it possible to accurately confirm pregnancy relatively early. Health professionals could 'claim a knowledge superior to that possessed by the owners of wombs themselves, as to the presence of a guest, invited or uninvited, within' (Oakley 1984:98).

Concurrent with the scientific advances in pregnancy, in the early 20<sup>th</sup> century women also began to campaign on specific issues related to pregnancy and childbirth. The Woman's Co-operative Guild, for example, actively campaigned for

increased use of anaesthesia and hospital births (Lewis 1990). In 1928 the National Birthday Trust Fund was set up with the aim of improving maternity care and increasing the availability of analgesia which could be administered by midwives (Beinart 1990). The 1930s and 1940s saw an increase in organized lobbying for intervention, particularly 'twilight sleep' (a combination of morphine and scopolamine) for pain relief in labour (Riessman 1992; Lewis 1990). In this way, women themselves helped to consolidate a medical model of pregnancy. The second World War brought with it a concept of national responsibility for the welfare of the population. Antenatal care was defined more broadly, emphasising good nutrition, and bringing with it a focus that shifted from purely medical aspects to include social factors.

Despite some advances in technology and knowledge, pregnancy and childbirth were still shrouded in mystery until the 1950s, when knowledge of uterine function and labour processes increased (Schwarz 1990). Oakley (1984) notes a distinct change around this time: the re-definition of pregnancy and labour as potentially pathological, which had begun earlier in the century, was now firmly established. 'Physical conditions that had previously been coded "natural" – like pregnancy and childbirth, aging, and death itself – now needed to be managed' (Erikson 2007:197). In an analysis of obstetric textbooks of the time, Schwarz (1990) found a marked change in how pregnancy and labour were conceptualised within the medical profession. Previously, intervention was only deemed necessary if problems occurred. In the 1950s, however, reproduction became increasingly pathologised and only considered 'normal' in retrospect.

Consequently, it was considered necessary to observe and monitor pregnancy and labour in order to detect deviations from what was 'physiologically normal' and therefore indicated the need for intervention. Schwarz (1990) argues that obstetricians became engineers rather than mechanics. Whereas mechanics attend to specific problems, engineers ensure the smooth running of a machine: 'childbirth engineering tries to optimize natural processes' (Schwarz 1990:58). Their role became preventative rather than just curative.

In 1950s Britain, a 'doctor knows best' attitude prevailed; little or no information about labour and birth was available to lay people (Moorhead 1996). Childbirth was seen as private – a taboo subject only talked about by professionals or in midwifery and medical journals; consequently only professionals' views were considered legitimate (Kitzinger 1990). Women were expected to get on with pregnancy quietly and privately, and fulfil their duty to 'do pregnancy properly' (Moorhead 1996:12). Women had little say over what happened during labour. During this time, women (and midwives) increasingly campaigned for more control in pregnancy and childbirth through organizations such as the National Childbirth Trust (NCT), set up in 1956, and the Association for the Improvement of Maternity Services (AIMS), set up in the 1960s. A growing number of books described women's experiences of birth and provided women with information (e.g. Kitzinger 1962). There was greater emphasis on psychological aspects, such as the presence of men during labour and postnatal bonding, which was arguably easier to achieve than addressing the problems with the underlying structure of the medical system and clinical care (Oakley 1984).

Despite or perhaps even aided by those campaigns, technology became increasingly important in the 1960s and 1970s. Fetal monitoring, induction of labour and other interventions were common and an increasing number of pain relieving drugs were used – often without women’s knowledge or consent (Moorhead 1996). The 1960s also saw the introduction of ultrasound into maternity units. Used experimentally in the USA in the 1940s, ultrasound was used in the late 1950s by the obstetrician Ian Donald in Glasgow, initially for the investigation of abdominal tumours. It was soon used to check fetal growth and presentation, gestational age and pelvic size (Oakley 1984). The development of ultrasound is described further in Section 2.2.3.

The historical context of the medicalisation of pregnancy provides the backdrop not only for the development of ultrasound scans, and how they are used, but also to understanding the way representations of, and attitudes to, the fetus have changed during this time.

### **2.2.2 The changing image of the fetus**

Like pregnancy, the fetus was also surrounded by uncertainty. Until the 18<sup>th</sup> century, the unborn was an ‘unseen and unverifiable presence’ (Duden 1993:14), its invisibility protected by a widespread taboo. Whereas illustrations of other parts of the body became increasingly detailed and often based on dissections (Erikson 2007), illustrations of the fetus were typically of stylised, fully-formed children, retaining ‘the qualities of an ideogram ... a symbol rather than a facsimile’ (Duden 1993:36). The Enlightenment and Cartesian thought ended the ‘taboo of

invisibility' of the fetus (Duden 1993), and changed perceptions and representations of the fetus as well as advancing understanding of fetal development. Fetuses, obtained from abortions and miscarriages or from women who died during pregnancy or birth, were dissected and studied, aided by improvements in techniques and advances in technology such as the microscope. Anatomical illustrations, notably those by William Hunter and Samuel Thomas von Sömmerring in the late 18<sup>th</sup> century, showed human embryos and fetuses as they would have looked in the womb, rather than stylised children. Fetuses were now also shown separate, outside the womb rather than in the womb and in the woman (Erikson 2007), which suggest that the fetus was beginning to become more of an individual, a 'person' even in utero.

Knowledge of the fetus increased exponentially from the early 20<sup>th</sup> century onwards, aided greatly by technological developments, such as X-rays, which made it possible for the first time to actually 'see' the fetus still in the womb, revealing knowledge which was not directly accessible to pregnant women themselves. Whereas early anatomical images were hidden from the public sphere and accessible only to some wealthy, educated men (Erikson 2007), fetal images moved into the public sphere during the 20<sup>th</sup> century (Erikson 2007; Duden 1993; Petchesky 1987). In the early 20<sup>th</sup> century, the general public became a focus for health education and health campaigns aiming to increase knowledge of the relationship between the body and health. Consequently, the public became increasingly familiar with images of the internal body, in exhibitions, books, magazines and other media (Erikson 2007).

Technological and medical advances made images easier to produce and reproduce, as well as more attractive. In 1962, *Look* magazine published a series of photographs of an embryo/fetus at different stages of development (Petchesky 1987). Three years later, *Life* magazine published the now iconic fetal photographs by Lennart Nilsson, showing 'living' fetuses inside the uterus; they were in fact images of aborted fetuses (Boucher 2004). *Life* published a further series of photographs by Nilsson in 1990 using digital photography (Duden 1993). With these images, showing the fetus in a non-medical setting, the fetus moved firmly into a social, and public, domain. Within this context, ultrasound has emerged as something that could be offered to pregnant women, not just as a medical technique but also as a means of seeing with social, cultural and psychological significance.

### **2.2.3 Development of ultrasound**

Until the late 1960s, ultrasound equipment was unwieldy and uncomfortable for women (Erikson 2007; Taylor 2004), sometimes requiring women to lie under a heavy membrane full of water or to sit in a tub of water (Taylor 2004). The information obtained was difficult to interpret, often just consisting of graphed lines. In 1965, Siemens introduced real-time scanners, which provided moving pictures (Taylor 2004). Being able to see movement, including the heart beat, gross muscle movement and breathing, had distinct clinical benefits (Erikson 2007).

Obstetric ultrasound initially struggled to become established. Equipment was expensive, and professional objections included concerns over safety and cost, and the belief that clinical examination was sufficient or superior (Oakley 1984). In the 1970s, equipment became smaller with hand-held transducers and better image resolution (Erikson 2007). By the late 1970s, many maternity units were equipped with ultrasound machines, though only some used them routinely (Moorhead 1996).

Ultrasound provided new types of information about the fetus, for example breathing movements, patterns of fetal activity and various physiological and behavioural processes, as well as information about fetal vitality and growth (Oakley 1984). Images were not clear enough to detect fetal abnormalities until the late 1970s and early 1980s. A decade later, further advances in image quality were made: 'By the end of 1991, different shades of gray give a plastic quality to the picture, something that is still absent in 1988' (Duden 1993:32/33). During the 1980s, obstetric scans became routine in many industrialised countries (Harris et al. 2004), including the UK. Today, in the UK pregnant women are offered an anomaly scan around 20 weeks and, in many areas, an earlier dating scan, usually around 12 weeks.

Most historical accounts of ultrasound end in the early/mid 1970s, a time when ultrasound moved from being an experimental practice to a standard, though not yet routine, procedure in many hospitals (Taylor 2004). However, many of the elements of how scans are conducted now were only developed after this period.



In the 1970s, in attempts to persuade hospitals to invest further in antenatal ultrasound, sonographers 'put on a show' for parents, including showing them the monitor, giving detailed information about what the images showed, and involving partners and other family members (Taylor 2004). 'What we might tend to think of as the "nonmedical" aspects of the obstetrical ultrasound examination emerged, in other words, *alongside* the more narrowly "medical" applications and were indeed an important *part* of the process by which the technology and the procedure became established within medicine' (Taylor 2004:195).

## **2.3 Emerging themes**

### **2.3.1 Medicalisation**

Two entwined strands run through the history of medicine and reproduction: attempts by the medical profession to gain control, and women's attempts to retain control and make choices in their reproductive lives. Or, as Oakley (1984:276) put it, the 'dialectic of consumer protest and medical control'. Similarly, Lewis (1990) describes a gap between women's perceptions and demands regarding maternity care and what is offered by professionals and policy makers. What underlies this gap seems to be different views of pregnancy and childbirth: a life event and rite of passage compared to a medical event, 'success' measured in terms of personal fulfilment and satisfaction, rather than in statistical aggregates of morbidity and mortality.

Medicalisation can be defined as the 'process whereby a particular area of social behaviour (pregnancy) comes to be separated off from social behaviour in general and reconstituted as a specialist, technical subject under the external jurisdiction of some expert authority' (Oakley 1984:1). Thus pregnancy has been redefined as a medical event (Riessman 1992). Oakley (1984) identifies two stages in the medicalisation of pregnancy and childbirth, which have already been highlighted above: (1) From the Enlightenment onwards up to the middle of the 20<sup>th</sup> century, pregnancy became incorporated into the medical discourse but was still considered a natural state. Even at the beginning of the 20<sup>th</sup> century few women had any contact with a doctor during pregnancy (Barker 1998). (2) From the 1950s, pregnancy was re-conceptualised as pathological, 'a medical phenomenon akin to illness' (Oakley 1984:12) and therefore in need of close monitoring.

Medicalisation occurred within a wider social, cultural and economic context. It should also be noted that women have not been passive victims in this process, but have actively participated in some aspects, which has brought them both gains and losses (Riessman 1992). For example, as discussed in Section 2.2.1, in the past women have campaigned for increased access to hospital birth and analgesia. Nevertheless, the medicalisation of pregnancy has had profound effects on how women experience pregnancy, how pregnancy is viewed by health professionals, pregnant women and society (including the media), the perception and conceptualisation of the fetus, and issues of knowledge, power and authority.

Medicalisation leads to the 'iatrogenic labelling' of life stages, which occurs when society accepts 'that people require routine medical ministrations for the simple fact that they are unborn, newborn, infants, in their climacteric, or old. When this happens, life turns from a succession of different stages of health into a series of periods each requiring different therapies' (Illich 1975:44). Thus 'people have become patients without being sick' (Illich 1975:48). Using Habermas's concepts, Hyde and Roche-Reid (2004) suggest that the lifeworld of labour and childbirth has been colonised by the technocratic system of obstetrics. The medical model has become a master narrative, the only 'fully constituted' perspective on contemporary pregnancy (Brubaker & Dillaway 2009). Medicalisation has become so fully embedded in our culture that it has changed what is seen as natural and normal (Dillaway and Brubaker 2006).

### ***Perception of the body and pregnancy***

Medicalisation has changed how we generally perceive our bodies and how pregnant women specifically perceive their bodies and pregnancy (Duden 1993). Not only does the consciousness of pregnancy start earlier and differently (with pregnancy tests instead of quickening), but the emphasis on measurement and norms and the re-definition of pregnancy as always potentially pathological, has changed women's experience of pregnancy. Women, and health professionals, tend to think in terms of possible problems and interventions; scientific management is considered necessary to 'ensure' a safe outcome. Instead of a sensual, warm, touchable and familiar experience, women's bodies become 'a field of operations for technocratic and bureaucratic interventions' (Duden

1993:28). No longer an intimate, female experience, a 'bodily reality unknown to men' (Duden 1993:81), pregnancy has moved from the private to the public sphere (Oakley 1984), which has significant implications for how knowledge is perceived and utilised.

### ***Knowledge and power***

There has been a profound shift in what is considered authoritative knowledge. In the past, women's embodied knowledge was privileged. Technology has since enabled health professionals to obtain information which is not directly available to pregnant women (Barker 1998). In this process, women's confidence in their embodied knowledge has been eroded and information derived from technology has increasingly become accepted as authoritative knowledge (Browner and Press 1997). Jordan (1997:58) states that the 'power of authoritative knowledge is not that it is correct but that it counts'; it has been socially constructed and is accepted as correct, natural and reasonable within a particular group.

As medical, technology-derived knowledge has become authoritative knowledge, 'expert professionals claim to know something about her future child, much more, in fact, than she could ever find out by herself. Long before she actually becomes a mother she is habituated to the idea that others know better and that she is dependent on being told' (Duden 1993:29). This is likely to have a marked effect on women's sense of control and agency during pregnancy. The need for, and dependence on, experts has resulted in a change in the balance of power and put health professionals in a position of authority. As a result, care and responsibility

is handed over to health professionals (Riessman 1992; Illich 1975), something which Brubaker & Dillaway (2009) suggest has become a ritual of pregnancy. Whereas some women reject these cultural norms, most will adhere to them.

### ***Rituals and risk***

Duden (1998) argues that interventions, antenatal tests and scans have become the new rituals of pregnancy: attempts to guard against uncertainty and risk. Despite medical and technological advances, pregnancy is still characterised by a 'deeply embodied and visceral uncertainty' (Armstrong 2003:3). In an age which puts great value on certainty and gives the illusion that we can control nature, this deep uncertainty can give rise to considerable anxiety, both for the individual and at a societal level. Armstrong (2003) argues that we try to assuage this uncertainty 'according to the best principles of Enlightenment rationality; that is, by pursuing knowledge and precision. In doing so, pregnant women are subject to a quantification and abstraction of their experience of pregnancy' (Armstrong 2003:4).

However, technology can provide a false sense of security and certainty. Despite medical and scientific advances, we cannot control everything or banish uncertainty. Medical professionals' jurisdiction over certain conditions 'extends considerably beyond its demonstrated capacity to 'cure' them' (Riessman 1992:124). Medicalisation might thus give rise to unrealistic expectations regarding medicine's ability to provide cures – or to 'ensure' the safety of the pregnant woman and her fetus. The significance of this is that these unrealistic

expectations might make it more difficult for women to cope when problems arise (Gregg 1995).

### **2.3.2 Fetal representations**

In parallel with the medicalisation of pregnancy over the last few hundred years there have also been considerable changes in our knowledge, representations and perceptions of the fetus.

#### ***Knowledge of the fetus***

Since the 17<sup>th</sup> century there has been ‘a shift not only in *who* knew the fetus – from women and midwives to physicians and scientists – and *how* they knew the fetus – from touching to looking – but there was also a shift in the nature of the fetus seen – from the dead to the living, from hand-drawn illustrations to real-time moving images with beating hearts’ (Erikson 2007:201/202). Whereas once the pregnant woman was the only one who had access to knowledge about the fetus through intimate physical, bodily sensations, she now depends on others to provide her with information. The image of the fetus has also changed, both in the sense of how we perceive it and, literally, the image, the representation of the fetus. It has become an icon, a symbol of pregnancy and life, with profound effects at both the societal and the individual level. The fetus, who until the 18<sup>th</sup> century was the unknown (and essentially unknowable) unborn, depicted symbolically inside the womb, inside the pregnant woman, has by the end of the 20<sup>th</sup> century become autonomous and separate, depicted outside the womb, as if free-floating in space.

### ***The private and public fetus***

Fetal images have different meanings in public and private (Petchesky 1987). Private ultrasound images are often the first picture in the baby album, part of documenting a child's life, and are used to construct a social identity for the child even before birth (Mitchell 2001). The public image of the fetus is ubiquitous, instantly recognisable and emotionally powerful (Duden 1993; Petchesky 1987). The 'public fetus' is not simply biological fact, but socially constructed. Nilsson's photographs exemplified the 'desire to dissolve the frontier between the viewer's eye and the unborn' (Duden 1993:14), enabling us to see what had not been seen before.

The public fetal image has also been central in anti-abortion campaigns, such as in the 1984 film *The Silent Scream*, which Petchesky (1987) suggests had its origins in two case studies presented by Fletcher and Evans (1983), who proposed that ultrasound images could persuade women not to have abortions. Anti-abortion campaigns use public fetal images to construct fetal personhood (Taylor 2008; Petchesky 1987) and claim that 'life begins at conception and we have the pictures to prove it' (Boucher 2004:73).

### ***The fetus as individual, person and patient***

Fetuses have become increasingly represented as separate, often as if floating in space – with the mother becoming empty space (Rothman 1994). In showing the fetus as separate and autonomous, the pictures in *Life* and *Look* render the pregnant woman absent. Fetal autonomy has led to the concept of the fetal

patient (Williams 2005; Zechmeister 2001; Petchesky 1987), subject to norms, assessment of risk, screening and surgery (Moorhead 1996; Duden 1993). In the 'epoch of fetal dominance' (Duden 1993:99) the fetus is seen increasingly as a person, a 'life', as well as a potential patient, strengthening demands for control of pregnant women and legal protection of the fetus (Zechmeister 2001; Duden 1993; Petchesky 1987). This creates the potential for conflict between the woman and the fetus (Harris et al. 2004; Armstrong 2003; Petchesky 1987). Pregnant women are under considerable pressure to provide an optimal 'maternal environment' (Rothman 1985) for a 'perfect' baby, leading to what Armstrong (2003) calls the 'perfection imperative'. Paradoxically, whereas the fetus is portrayed as autonomous and separate from the woman, she still has full responsibility for the well-being of the fetus. If the fetus is a patient, pregnancy needs medical surveillance in order to 'ensure' a safe outcome.

### ***The fetus as commodity***

Strangely, it can also be argued that as well as becoming a person, the fetus has been constructed increasingly as a commodity (Taylor 2000). Boucher (2004) suggests that the public fetus is, by its very nature, a commodity, used not only politically (especially in anti-abortion campaigns), but also commercially, in advertising and publicity (Petchesky 1987). The Nilsson photographs have been manipulated to look attractive and as 'baby-like' as possible – very different from the 'real' view of the fetus in the womb. These images are produced for, and consumed by, a mass audience (Boucher 2004). Privately, too, the fetus has become increasingly commodified, largely due to new screening and diagnostic



tests which serve as 'quality control' (Armstrong 2003; Rothman 1994). Rothman (1985:188) suggests that we 'see our children as products, the products of conception. Even while they still move within us, they are not part of us – we have learned to see them as other, as separate, as products'.

### **2.3.3 Commercialisation**

Medicalisation and the image of the fetus emerge as important themes from the historical context. A further theme, a lens through which pregnancy interventions and ultrasound can be viewed, is the commercialisation of pregnancy. Over the last century many aspects of life have become increasingly commercialised and pregnancy is no exception, reflecting wider patterns of living in a capitalist consumer society. Pregnant women are a lucrative market (Foucault 2005; Clarke 2004; Armstrong 2003); products targeted at them include equipment bought in anticipation of the baby as well as products and services used during pregnancy.

#### ***'Good mothering'***

Buying goods for unborn children is an extension of parents buying for their children – so commonplace in our society that we give it little thought. Some might worry about *what* parents buy, *how much* they buy or what they *cannot* buy, but it is taken as a given that we need to consume on behalf of our children. Historically, this is a recent phenomenon. The early 20<sup>th</sup> century saw a sharp rise in the amount and range of mass-produced goods specifically for children, with marketing directed primarily at mothers. There was considerable unease regarding the erosion of the moral boundary between the sacred sphere of

domesticity and the profane world of business (Cook 1995). This dilemma was solved by reframing consumption as a responsibility and duty of motherhood (Cook 1995).

There is still unease about the close proximity of children and commercialism (Miller 1997) and consumption on behalf of children is still often legitimised by reframing it as being in their best interest, in terms of health and education (Taylor 2000). Gatrell (2005:61), for example, comments on the proliferation of glossy parenting magazines offering information 'about 'necessary' products relating to the education and health of children' – essential for being a 'good mother'. Parents' duty to consume in the interest of their children's health and education has now extended to the fetus: increasing numbers of pregnant women buy fetal heart rate monitors (despite warnings over safety [Chakladar & Adam 2009]), 'prenatal learning' systems – and private ultrasound scans. Furthermore, 'good parenting', before and after birth, seems to increasingly involve the use of technology (Foucault 2005).

### ***Reducing risk and uncertainty***

Consumption can be used to attempt to reduce uncertainty and take control (Armstrong 2003; Taylor 2000) – which can also be seen as part of 'good mothering'. Pregnancy, even if it has been planned, always encompasses a degree of uncertainty (Klassen 2004). Armstrong (2003:18) suggests that uncertainty in pregnancy is 'an especially vexing [issue] in today's world of instant gratification and heightened expectations of personal control'. Pregnancy challenges notions

of control and agency, which increases anxiety for many women, who often address this through intellectual preparation (gaining knowledge from books, magazines, courses), and treat pregnancy as a cognitive mental task, using rational thought and logic to reduce uncertainty and anxiety in what Armstrong (2003) calls 'pregnancy scholarship'. With the strong emphasis on risk (Symon 2006), both in the lay literature and from health professionals, many pregnant women feel they have to 'get it just right' as the stakes are so high. The desire to reduce uncertainty is also reflected in the increase in sales of special equipment, from pregnancy tests to fetal heart monitors.

### ***Construction of identity***

Consumption on behalf of children also aids in the construction of the identity of the future child, the pregnant woman and her partner. Construction of fetal personhood enables consumption on behalf of the fetus – it is easier to buy for a personified fetus rather than the unknown. For example, knowing the sex of the fetus facilitates the purchase of clothes and decorating of the nursery. Consumption on behalf of the fetus also reinforces construction of the fetus as a person by recognising it as an individual consumer; consumer goods are used to establish a social presence for the fetus. Early confirmation of pregnancy through tests helps to conceptualise the fetus (or rather, embryo) as 'a baby' much earlier, therefore consumption on behalf of the 'baby' can take place over a much longer period.

Women construct identities through the way in which they 'consume' pregnancy and birth (Taylor 2000). Pregnancy becomes a 'master status', the 'salient aspect of a woman's individual identity' (Armstrong 2003:14). In order to join the 'motherhood club', many women engage in consumption: pregnancy magazines and books, maternity clothes, vitamin supplements, antenatal courses, pregnancy yoga, private ultrasound scans etc. Consumption becomes the 'key means through which types of mothering are constructed and negotiated' (Clarke 2004:56), creating a pregnant woman's identity and a pregnant group identity (Armstrong 2003). It thus constructs not just the identity of the fetus and the pregnant woman (and her partner), but also of pregnancy itself; it becomes part of the rite of passage of pregnancy. The implications of this are that obstetric ultrasound has become an important part of pregnancy not just for medical, but also for social and psychological reasons.

## **2.4 Ultrasound in context**

### **2.4.1 Women's experiences of ultrasound**

Little information is available about how ultrasound was initially experienced and viewed by women; early research on ultrasound in the 1960s and 1970s focused on medical aspects. Occasionally research papers commented on women's comfort (or discomfort) during a scan, but none of them directly asked women how they felt about scans (Oakley 1984). Early scans were often uncomfortable and women would not have been able to see the monitor, were told little about

the findings during scans and were usually alone. As ultrasound became more established, the procedure began to focus more on women's experiences and needs (Section 2.2.3).

One of the earliest studies into the psychological effects of scans (Janus & Janus 1980) investigated the perceptions and misconceptions of patients, not all pregnant, undergoing abdominal scans in the late 1970s. Many did not know what to expect, knew little about ultrasound and were consequently anxious about the procedure. However, 90% of the pregnant women experienced the scan as positive. A detailed study, in which 20 women undergoing scans in the second and early third trimester were interviewed and observed during scanning, reported that women enjoyed seeing the baby on the monitor and were generally less anxious after the scan (Milne & Rich 1981). However, some women showed increased anxiety a few days later due to concerns about limbs not seen clearly on the monitor. Prior to the scan, more than half of the women were worried that it might harm the fetus, be painful or invasive.

In the early 1980s, research focused on the effect of high compared to low feedback during scans (i.e. seeing the monitor versus not seeing the monitor, and detailed versus minimal feedback) on maternal anxiety, feelings about the fetus and attitudes to scans (Field, Sandberg, Quetel, Garcia & Rosario 1985; Reading, Cox, Sledmere & Campbell 1984; Campbell et al. 1982; Reading & Cox 1982). The general conclusion was that women had positive experiences of ultrasound, particularly with high feedback. These studies will be discussed further in Chapter

3. Campbell and colleagues (1982) noted that in the early 1980s it was already common for women to see the monitor and receive feedback. A report by the Royal College of Obstetricians and Gynaecologists (1984) recommended that the scan should be conducted sensitively and that a relative should be able to accompany the pregnant woman.

However, these recommendations were not always implemented. Stewart (1986:40) quotes from a letter to *Mothering* magazine: 'I had to ask to see the screen, a request which was met by tuts, moans, and mutterings about all the people who had to be scanned that day.' A survey by the NCT (Smith 1985) also found that many women criticised poor communication during the scan. Hyde (1986) found that almost a third of women having a scan at one particular hospital expressed dissatisfaction with not being able to see the monitor and a lack of information provided during the scan. However, at this time most scans were carried out by radiographers, who would have contravened guidelines by the Radiographers' Board if they discussed clinical information with women (Meire 1986).

Despite attempts to include women more in the scan procedure, the focus was still very much on the medical purpose of scans. However, even early research indicated that, despite some dissatisfaction with the procedure, women generally enjoyed scans (Campbell et al. 1982; Milne & Rich 1981; Janus & Janus 1980; Kohn, Nelson & Weiner 1980). Only a minority of women regarded the scan as a purely medical procedure (Hyde 1986). It seems that, right from the start and despite

what we would now consider sometimes insensitive and unhelpful procedures, ultrasound was seen by women in different ways from other medical interventions; it 'caught the public imagination in a manner not typical of medical procedures, i.e. as a potentially positive experience for the recipient, and possibly a social event in which those close to her may be involved' (Hyde 1986:587).

As it became increasingly common for women to receive detailed feedback, see the monitor and be accompanied by others, scans began to be seen more as social events. Ultrasound became routine in many maternity units in the UK in the 1980s and was soon considered a normal part of pregnancy. Many couples now began to look forward to scans and often express a desire for more scans (Clement, Wilson & Sikorski 1998). Ultrasound had moved from the medical into the social domain, or rather, into both (Draper 2002). Van Dijck (2005:101) suggests that the ultrasound scan is 'concurrently a medical diagnostic check-up, a psychosocial event, and a photographic ritual'.

There were early suggestions, mainly by medical professionals, that ultrasound could have positive benefits on antenatal bonding, anxiety and health behaviour (Fletcher & Evans 1983; Reading & Cox 1982; Kohn et al. 1980). Since then, most of the quantitative research into ultrasound's psychological effects has focused on investigating these claims; findings have been ambiguous and will be discussed further in Chapter 3. Pregnant women often report experiencing scans as pleasurable and emotional, as well as making the baby, and the pregnancy, more

real (Ekelin, Crang-Svalenius & Dykes 2004; Harris et al. 2004; Dykes & Stjernqvist 2001; Mitchell 2001; Clement et al. 1998).

### ***Men's experiences of ultrasound***

It is notable that men as fathers have not been mentioned so far. They do not appear in the literature until the late 20<sup>th</sup> century, when ultrasound, literally, allows them to get a look in. Some more recent studies have included men's perspectives (e.g. Ekelin et al. 2009; Ekelin et al. 2004; Eurenus, Axelsson, Gällstedt-Fransson & Sjöden 1997; Sandelowski 1994), while a minority focused exclusively on men's experiences of ultrasound, notably Draper (2002). Provided results are normal, men like women, generally seem to experience scans as enjoyable and exciting (Ekelin et al. 2009; Ekelin et al. 2004; Williams & Umberson 1999; Eurenus et al. 1997). Scans also have the potential to make the pregnancy and the fetus more real for men (Draper 2002) and give them information they normally do not have access to (Williams & Umberson 1999; Sandelowski 1994).

#### **2.4.2 Routine scans**

Ultrasound scans have been introduced as a medical procedure and it could be, and indeed has been, argued that initially ultrasound scans were part of the medicalisation of pregnancy. However, their acknowledged role as a social event in the current context of maternity care could now potentially situate them as part of women's agenda for more control and choice. Yet, scans, and women's positive attitudes to them, need to be considered within a wider perspective. As scans are now routine, women generally consider them beneficial and harmless (Thorpe,



Harker, Pike & Marlow 1993). The mere fact that they are available can make it very difficult for women to decline them, especially if they come under pressure to agree to a scan (Nicol 2007).

As a means of monitoring pregnancy, ultrasound has been an integral part of medicalisation and is considered a normal part of the contemporary experience of pregnancy. Scans affect women's embodied experience of pregnancy by presenting the fetus as a separate entity for which the woman bears responsibility (Harris et al. 2004). Mitchell (2001:175) found that for many women in her study 'the fetus encountered during the ritualized, technological, and public quickening of ultrasound transformed both the lived sensation of pregnancy and its social reality.' The fetus, previously hidden, is on show; part of the exclusive relationship between pregnant woman and fetus is eroded, pregnancy is no longer an intimate, female experience, a 'bodily reality unknown to men' (Duden 1993:81). Edwards and Murphy-Lawless (2006) suggest that even if new technologies, like ultrasound, are non-invasive, they can be invasive in different, more subtle ways as they affect women's thinking and expectations.

Ultrasound has been reinforced and normalised through 'ways of thinking about anatomy, the development of technologies that "look", a privileging of the visual in medical domains, and seeing as a metaphor for truth' (Erikson 2007:187). Now, looking inside a pregnant woman has become commonplace, a normal part of pregnancy. Thus the routine use of ultrasound has reinforced the shift in authoritative knowledge from the embodied knowledge of pregnant women to

the technology-derived knowledge of professionals (Erikson 2007; Browner & Press 1997; Duden 1993). Once, pregnant women knew from touching and feeling; with ultrasound scans, medical professionals know through seeing. Pregnant women can only access this visual knowledge through the mediation of professionals; even if they themselves can see the ultrasound screen or have a picture of the scan, these need to be interpreted by the professional, particularly in the case of 2D ultrasound. Milne and Rich (1981:29), for example, note how some women in their study could recognise some fetal features by the end of the scan, but 'even at this stage the authority of the technician in interpreting the image was never challenged'.

Visual information, which seems to represent reality objectively, is considered superior to other ways of knowing and other evidence is discredited (Petchesky 1987). Seeing is knowing, seeing is believing. In the case of ultrasound, this means that 'the woman's *felt* evidence ... is discredited, in favor of the more "objective" data on the video screen' (Petchesky 1987:289). Many pregnant women and their partners comment that seeing the fetus on the ultrasound screen 'makes the baby real' (e.g. Harris et al. 2004). Armstrong (2003:9) suggests that this is 'the modern equivalent of quickening – a shift in the pregnant woman's emotional relationship with the fetus/baby'. It also indicates that the visual knowledge obtained from the scan seems to devalue experiential knowledge (Harris et al. 2004; Zechmeister 2001; Mitchell & Georges 1997). Ultrasound has played an important role in the shift of authoritative knowledge, enabling 'obstetricians to dispense with mothers as intermediaries, as necessary informants on fetal status and life-style. It is now

possible to make direct contact with the fetus, and to acquire a quite detailed knowledge of her or his physiology and personality before the moment of the official transition to personhood – the time of birth’ (Oakley 1984:155).

Duden (1993:8) suggests that visualising the fetus has taken over from other ways of gaining knowledge: ‘Forced to see, to represent, to imagine, we have a restricted sensorium for the invisible shapes inside us. The Enlightenment has removed from our bellies, as from our minds, any reality that is not perceived by the eye.’ Interestingly, we rarely see images of other internal parts of the body; our primary sensation of most internal processes is still kinaesthetic rather than visual (Armstrong 2003). Internal images of other parts of the body, e.g. by endoscopy, are not part of popular culture like ultrasound. By contrast, pregnancy is a ‘bodily process that takes place inside the body and that yields abundant physical sensations, but today ... is a visual phenomenon as much as a visceral one’ (Armstrong 2003:8).

However, as Duden (1993:55) acknowledges, ‘woman’s flesh, in spite of all evidence to the contrary, remains quick even in the age of the fetus’. It could be argued that despite medicalization and technology, these ‘older’ means of ‘getting to know’ the fetus, ways of gaining direct, sensual knowledge of the fetus, are still important to women. In a phenomenological description of her own experiences in pregnancy, van der Zalm (2002) describes touching her baby, being touched by her baby, feeling the movements, simply ‘being with child’ in a still, intimate ‘communion in the human sense’: ‘From my baby’s touch from within, I begin to

find its being.' This more sensual, tactile way of knowing has not been studied extensively and does not seem to be valued by science in a contemporary context. We do not even seem to have the language to describe it. Milne and Rich (1981) suggest that women might combine ultrasound images with enteroceptive knowledge acquired through feeling and touching. However, little is currently known about the roles ultrasound and haptic/enteroceptive experience play in how women establish a bond with their fetus.

Reliance on other people's expertise and knowledge of her own body might decrease a pregnant woman's confidence in her own knowledge and her body's messages and intuitive awareness (Stewart 1986). Dependence on experts affects the balance of power, puts health professionals in a position of authority and potentially disempowers women (Illich 1975). However, women also seem to use ultrasound to gain control (Petchesky 1987). Control appears to be a key concept in relation to ultrasound and the theoretical and empirical literature on control will be discussed further in Chapter 3.

It has been suggested that ultrasound has become a new ritual and rite of passage of contemporary pregnancy (Armstrong 2003; Mitchell 2001; Duden 1998), used to guard against uncertainty and risk, and replacing what we now consider superstitious rituals. Research evidence for routine ultrasound is ambiguous (Harris et al. 2004; Baillie, Hewison & Mason 1999). And yet, ultrasound has become part of the contemporary experience of pregnancy in the UK. There seems to be a strong *need to know*. For example, even women who would not consider

an abortion in case of abnormality detected by scans often choose to have scans because they want to know. Ultrasound seems to be one way of making pregnancy, still steeped in uncertainty even in the 21<sup>st</sup> century, just a little bit less uncertain. As scans have become routine, not having a scan may be perceived as taking a risk and being irresponsible: 'Simply by having an ultrasound scan, the woman is demonstrating that she is a 'good mother' – responsible, altruistic, and willing to reduce risks to the fetus' (Mitchell 2001:174).

As discussed in Section 2.3.2, ultrasound has transformed the public image of the fetus, turning it into an autonomous being, a person, as well as a potential patient and a commodity. On a private level, it has enabled the transformation of the 'anonymous fetus' into a member of the family, with a place in the family album (Ekelin et al. 2004; Mitchell 2001). Petchesky (1987) has argued that as well as constructing the fetus as a person, ultrasound images can also objectify the fetus, possibly leading to detachment. Duden (1993) suggests that the public fetus and its socially constructed meanings overshadow pregnancy. Antenatal tests make it difficult for women to become attached to their pregnancy and the fetus until it has been established that 'everything is ok' (Rothman 1985). Antenatal tests, including ultrasound, create a contradiction; women are encouraged to bond with the baby, meet its needs and begin a relationship, but are expected to abort a fetus with abnormalities – thus giving rise to the 'tentative pregnancy' (Rothman 1985). As new contemporary technologies, particularly three- and four-dimensional ultrasound, have now entered the marketplace, these contradictions may potentially be amplified further.

### **2.4.3 Private 3/4D ultrasound scans**

Private 3/4D scans have been widely available since 2003 (Roberts 2012a), offering supposedly more realistic and 'baby-like' images of the fetus. Their clinical use is currently limited (Kurjac et al. 2007; Campbell 2002). They are therefore not offered routinely to women in the UK, but are available from commercial scanning companies. There is considerable debate within the medical community about these commercial, 'boutique', clinics (ISUOG 2009; Watts 2007; Campbell 2006a; Gorincour, Tassy & LeCoz 2006; Chervenak & McCullough 2005; Voelker 2005; Rados 2004; Campbell 2002; Chudleigh 1999). There are concerns about safety due to increased exposure and intensity of scans, as well as about a lack of training and appropriate protocols, especially if anomalies are found, and potential conflicts of interest. In the US there are also concerns that women might choose 3/4D scans instead of diagnostic scans. In New Mexico, for example, private clinics require proof of regular antenatal visits before a 3/4D scan is carried out in order to avoid this occurring (Kroløkke 2009). Others suggest that this is as unlikely as parents assuming that a visit to a photographer with their children replaces seeing a paediatrician (Armstrong, personal communication, July 2010). There is less debate about this issue in the UK due to the different structure and organisation of health care services.

#### ***Differences between routine 2D scans and private 3/4D scans***

There are some distinct differences between routine 2D and private 3/4D scans. The most obvious one is the difference in image quality: 3/4D scans generally make it possible to see surface structures more clearly. The addition of movement

(4D) also enables the observation of changing facial expressions and fetal behaviour (Campbell 2002). Consequently there has been speculation that expectant parents will react more to 3/4D images (e.g. Campbell 2002) and it has been suggested that 3/4D images are easier for lay people to interpret (Timor-Tritsch & Platt 2002) and that women are therefore less dependent on expert interpretation, though Roberts (2012a) observes that they are not always easy to interpret and still need some initial translation by the sonographer.

Unlike routine scans, these scans are not carried out with the explicit purpose of detecting fetal abnormalities or for any other clinical reason. A further difference is that private 3/4D scans are entirely within the pregnant woman's control – she decides if, when and where to have a 3/4D scan. Furthermore, 3/4D scans take place later in pregnancy than routine 2D scans and therefore the fetus looks more developed and more recognisably like a 'baby'.

### ***The impact of private 3/4D scans***

Considering these significant differences to routine 2D scans, it is reasonable to ask whether 3/4D scans have a different impact to 2D scans – both at an individual, psychological level and at a wider societal level. Like 2D images, 3/4D images have been used in the abortion debate. They were instrumental in the recent UK parliamentary debate around lowering the limit of abortions (Palmer 2009a). Stuart Campbell, a pioneer of ultrasound and leading proponent of 3/4D scans, for example, wrote that the 'signs of humanity' exhibited by fetuses in 3D and 4D scans convinced him that the age limit for abortions should be lowered to 18

weeks (Campbell 2006b). The images are also used in some US 'pregnancy crisis centres' to dissuade women from having abortions (Taylor 2008).

There has so far been little research into 3/4D scans, particularly private 3/4D scans. Several quantitative studies have investigated the psychological effects, specifically anxiety and bonding, of 3D or 4D scans in a clinical context; the majority show no difference between 2D and 3/4D scans (de Jong-Pleij, Ribbert, Pistorius, Mulder & Bilardo 2013; Lapaire, Alder, Peukert, Holzgreve & Tercanli 2007; Pretorius et al. 2007; Leung et al. 2006; Pretorius et al. 2006; Sedgmen, McMahon, Cairns, Benzie & Woodfield 2006; Ji et al. 2005; Righetti, Dell'Avanzo, Grigio & Nicolini 2005; Rustico et al. 2005; Pretorius et al. 2001). These will be discussed in more detail in Chapter 3.

Qualitative, observational studies of 3/4D scans have been carried out by Roberts (2012a, 2012b) in the UK and Kroløkke (2011, 2009) in the US and Denmark. Kroløkke (2011, 2009) compares 3/4D scans to a performance in which the expectant parents jointly create a narrative with the sonographer. This narrative constructs the fetus as an individual with specific characteristics, likes and dislikes and as a member of that family, with references to family traits, both in terms of behaviour and appearance, and 'interactions' with family members, who, for example, talk to and for the fetus. This performance is transformative, in that it transforms the fetus into a family member, the pregnant woman into a mother, the expectant father into a father and other relatives into their respective familial positions relative to the fetus. Like a theatre or cinema performance, the 3/4D



scan is staged: the image is not real, but created by computer software. It does, however, have a 'staged authenticity' as attempts are made to demediate the technology, thereby erasing it and giving the impression that what can be seen on the screen is real (Kroløkke 2009).

Roberts (2012a) also suggests that a process of 'collaborative coding' takes place during 3/4D scans, involving both the sonographer and expectant parents, as well as other family members who may be present. In this way a narrative of the fetus is constructed during the scan, exploring fetal 'personality' and the fetus's place within the family. Roberts (2012a) found that women may use the 3/4D images to make sense of their physical experience of the fetus.

An analysis of marketing material from 3/4D companies by Kroløkke (2010) suggests that scanning companies present 3/4D scans as superior to the embodied experience of pregnancy: 'Seeing life replaces the miracle of making or feeling life' (Kroløkke 2010:151). However, there has so far been no research into whether pregnant women's experiences match these claims.

Considering the potential role of private 3/4D scans compared to routine 2D scans raises a number of questions. Do these scans further increase the medicalisation of pregnancy or do they shift control towards women – i.e. are they disempowering or empowering? Do they further dis-embodiment the lived experience of pregnancy and devalue the embodied knowledge? If 2D scans have commercialised pregnancy and commodified the fetus, do 3/4D scans take this

process even further? And what psychological impact do they have on pregnant women, compared to routine 2D scans? The potential psychological impact of private 3/4D scans relates specifically to issues of control, the pregnant woman's relationship with, and conceptualisation of, the fetus ('bonding') and anxiety and reassurance. The context of private 3/4D scans is different to that of routine 2D scans and they therefore warrant further exploration.

### ***Control***

Commercial scans could be seen as an opportunity for parents to take control and exercise the choice to have a scan without the mediation of medical gate keepers, provided they can afford to do so. It has been argued that pregnant women can use ultrasound scans to (re-)gain some control over their pregnancy (Petchesky 1987). With the advent of 3/4D ultrasound technologies, women would ideally be able to see the fetus relatively clearly, especially in the later stages of pregnancy, thus increasing access to direct information. In addition, the fact that pregnant women and their partners purchase these scans gives them control as consumers, enabling them to demand a service in a way not possible with scans within the NHS.

On the other hand, it could be argued that these scans decrease, rather than increase, control for pregnant women. Ultrasound, even private 3/4D ultrasound, cannot be seen outside the medical context as it is so firmly embedded within it. As ultrasound scans are considered a normal part of pregnancy, seen as both beneficial and harmless precisely because they are routine (Thorpe et al. 1993), it

might be assumed that more scans can only be a good thing. It could also be argued that 3/4D scans further strengthen the position of technology and hence inevitably position medical expertise as authoritative knowledge, at the expense of pregnant women's enteroceptive/haptic knowledge, with implications for women's experience of pregnancy, perceptions of control and sense of agency.

### ***Bonding***

Currently little is known about the motives of couples who choose private 3/4D scans, though anecdotally the assumption is that they see these scans as a chance to meet, and bond with, their baby (Campbell 2006a). The evidence that scans increase bonding is ambiguous, but it is nevertheless generally assumed that they do so; the literature on bonding will be addressed more comprehensively in Chapter 3, but its significance here is that the commercial clinics offering these scans market them as 'bonding scans'.

### ***Reassurance***

The fact that private 3/4D scans are not primarily carried out for medical reasons suggests that women may approach and experience these scans quite differently from routine scans, which always carry with them the possibility of finding major problems. Furthermore, these scans might be seen as 'a glitzy high-tech medical procedure ... evidence that one is receiving the best of modern medical attention, with the "reassurance" that this seems to promise' (Taylor 2000:406) – in other words, a way of reducing risk and uncertainty which might otherwise cause

anxiety. The limited research into the effect of 3/4D scans on anxiety will be discussed in section 3.4.3.

## **2.5 Conclusions**

The desire of the majority of pregnant women to have ultrasound scans, either as part of antenatal care or privately, could be seen as a result of the medicalisation of pregnancy; technology and interventions are considered essential to 'ensure a safe pregnancy', women's experiences, intuition and knowledge are insufficient. Conversely, it could be argued that the commercial availability of 3/4D scans extends women's choices and increases control, independent of medical professionals.

This is an example of what Gregg (1995) calls the 'paradox of choice'. While women's autonomy and choices appear to be increased through new technologies, including ultrasound, they are at the same time restricted through these same technologies in an 'ongoing context between a discourse promising choice and autonomy and a discourse of control' (Edwards and Murphy-Lawless 2006:39).

Routine scans are an integral part of the medicalisation of pregnancy, as they allow monitoring of the pregnancy and the fetus and are therefore assumed to be medically beneficial. It has been argued that they have become a ritual of

pregnancy, providing reassurance and guarding against risk (Armstrong 2003; Mitchell 2001; Duden 1998). It is conceivable that with private scans a parallel development is taking place; they are assumed to be psychologically and socially beneficial, and might therefore by some be considered essential for bonding, making the baby real and becoming 'good parents'. The need for scans has therefore extended from purely medical to psychological reasons. It is possible that private 3/4D scans could become a new ritual of pregnancy, at least for some parents, and that at some point it might be considered 'risky' or irresponsible not to have a 3/4D scan, thereby jeopardising bonding with the baby during pregnancy.

While several studies have compared the psychological effect of 3/4D scans and 2D scans within a research setting, no research into the effects of *private* 3/4D scans has been carried out so far. The three themes of control, bonding and reassurance/anxiety in relation to private 3/4D scans will be discussed and critiqued in more detail in the next chapter.

## **Chapter 3 Psychological constructs: control, bonding and anxiety**

### **3.1 Introduction**

As has been suggested in Chapter 2, control, bonding and reassurance/anxiety are key issues with regards to ultrasound scans in pregnancy. The context of 3/4D scans differs considerably from routine scans and therefore the concepts of control, bonding and anxiety are likely to be affected in different ways. This chapter will address these concept in more detail, critically analyse the research with regards to ultrasound and discuss implications for private 3/4D scans.

### **3.2 Control**

#### **3.2.1 Control in pregnancy**

Control is a core concept in maternity care in the lay and academic literature. Over the last two decades it has also been central in UK maternity care policy with *Changing Childbirth* (Department of Health 1993) and the *National Service Framework for Children, Young People and Maternity Services* (Department of Health 2004). Control is a complex issue which has been conceptualised in different ways. In policy, it usually refers to a pregnant woman's participation in

the decision-making process and is therefore closely linked to choice. Both control and choice can be difficult to achieve in practice (Mander & Melender 2009; Beake & Bick 2007; Jomeen 2006a; Edwards 2005; Walker 2000) and are often restricted by considerations of risk (Symon 2006).

For pregnant women themselves, in the lay literature, control refers to a woman's ability to make autonomous decisions, but can also encompass aspects of being in control of one's body and emotions, or even of letting go of control and 'trusting nature' (Viisainen 2001). In the psychological literature, the emphasis is on the concept of locus of control, an individual difference construct derived from social learning theory (Bandura 1977; Rotter 1954). Applied to health psychology, locus of control has the ability to predict and explain individuals' health-related behaviours (Wallston and Wallston 1978). Whereas individuals with an internal locus of control consider events to be under their control, those with an external locus of control regard events as uncontrollable by them and believe that control lies either with powerful others or chance/fate (Ogden 2007). This concept has been considered a useful one to explore in pregnancy and childbirth; previous studies have sought to examine and understand the construct of personal control in a maternity context (Jomeen and Martin 2005; Green and Baston 2003).

It is important to understand what pregnant women themselves mean by control. Involvement in decision-making and control over what happens seem to be crucial aspects of control (Schneider 2002; Green, Coupland & Kitzinger 1990), as is feeling in control over one's body, e.g. the physical symptoms of pregnancy

(Schneider 2002), and control over behaviour, such as smoking, drinking and eating. Research into sense of control during childbirth suggests that it is linked to increased satisfaction with the birth experience and enhanced psychological well-being (Czarnocka & Slade 2000; Lavender, Walkinshaw & Walton 1999; Green et al. 1990). As the sense of being in control can have such far-reaching consequences, it is an important concept which needs further research. Control may be of particular importance with respect to technological interventions in pregnancy and childbirth. Ultrasound is one such intervention.

### **3.2.2 Ultrasound scans and control**

As discussed in Chapter 2, it has been argued that ultrasound scans are part of the medical model of pregnancy and therefore potentially take control away from pregnant women. Conversely, it has also been suggested that ultrasound scans can offer pregnant women a means of taking control (Taylor 2000; Petchesky 1987). In a 'paradox of choice' (Gregg 1995), these technologies apparently increase control and choices, while at the same time the choice of using them is not a real choice: not having a scan is not really an option. This is reflected in research by Ekelin et al. (2004), who found that pregnant women consider scans an 'obvious choice'. There has been little research which explicitly explores pregnant women's sense of control with regard to ultrasound. Several studies have explored how women make the choice to have a scan and whether this is an informed choice. Kohut, Dewey and Love (2002) and Nicol (2007) conclude that for most pregnant women this is not an informed decision.



As has been suggested in Chapter 2, ultrasound can be used in an attempt to try and reduce uncertainty, which might give an increased sense of control. It is conceivable that ultrasound increases women's sense of control by making pregnancy, and the baby, more predictable. However, this sense of control may be illusory and/or transitory (Gregg 1995).

There is evidence that control is a significant issue in women's experience of scans, particularly with respect to choice. However, research so far is tenuous and has not explicitly explored women's sense of control in relation to scans. The role of ultrasound in locus of control, regarding women's own health or fetal health, has also not been explored adequately. Issues of control are of particular significance in a context where women actively choose and purchase private scans as part of their pregnancy experience.

### **3.2.3 Private 3/4D scans and control**

While routine scans are optional, they are an expected part of contemporary maternity care. In the case of private 3/4D scans, however, the pregnant woman very clearly makes an active choice to have the scan, though in some cases it may have been bought as a present by others. The decision to have a 3/4D scan, when to have it and where to have it, is in the pregnant woman's control. The control over the scan, together with the fact that it needs to be paid for, may also affect how a pregnant woman feels about the scan and how it affects her. Control is therefore an important issue to explore in the context of 3/4D scans.

So far, no research has been carried out into the effect of private 3/4D scans on women's sense of control or locus of control. The authors of one of the earliest studies into 3/4D scanning suggest that 'for those women who want to be fully in control of their pregnancies, 3/4D imaging might offer a clearer perception of the developing child and produce a better adaptation to the pregnancy' (Maier, Steiner, Wienerroither and Staudach 1997:72). Research is needed to explore this further. Some evidence for this comes from a small qualitative study (Cadogan, Marsh & Winter 2009) of parents' experience of 3/4D scans after diagnosis of a cleft condition, which found that most parents were reassured after the scan, possibly by regaining some control, in the sense of knowing more, after the uncertainty caused by the diagnosis.

### **3.3 Bonding**

#### **3.3.1 Bonding in pregnancy**

There is a lack of conceptual and terminological clarity regarding the maternal-fetal relationship during pregnancy (Redshaw & Martin 2013; Walsh, Hepper, Bagge, Wadehul & Jomeen 2013; Walsh 2010), with implications for measurement. Attachment and bonding are both used to describe the maternal-fetal relationship. Attachment, first conceptualised by Bowlby (1969), originally referred to the emotional ties infants form with their significant caregiver(s), whereas bonding describes the bond between parent and child after birth (Klaus, Kennell & Klaus 1996). It could be argued that neither term is appropriate to

describe maternal-fetal relationships. Indeed, referring to it as a relationship is questionable, as the term implies it is reciprocated, whereas this 'relationship' is essentially unilateral. Walsh (2010) argues that what we are talking about here is part of the caregiving system, which is reciprocal to the attachment system; it involves feelings of love, protection and wanting to care for the fetus. However, for the sake of clarity, the term bonding will be used throughout this thesis.

Bonding, as measured by a number of instruments (Condon 1993; Cranley 1981) increases through the course of pregnancy (Della Vedova, Dabrassi & Imbasciati 2008; Cannella 2005; Heidrich & Cranley 1989) and is positively related to early fetal movements (Hjelmstedt, Widström & Collins 2006; Heidrich & Cranley 1989; Reading et al. 1984). Antenatal bonding has been linked to postnatal parent-infant relationships, infant development and maternal and child psychological health (Figueiredo & Costa 2009; Della Vedova et al. 2008; Cannella 2005; Siddiqui & Hägglöf 2000), as well as improving health behaviour in pregnancy and formation of maternal identity (Della Vedova et al. 2008).

However, it has also been proposed that reduced bonding during pregnancy can act as a protective mechanism against loss (Clement, Wilson & Sikorski 1998; Black 1992; Caccia, Johnson, Robinson & Barna 1991; Heidrich & Cranley 1989; Kohn et al. 1980). The concept of antenatal bonding has been critiqued by Mitchell (2001), who, following Eyer's (1994) critique of postnatal bonding, suggests that bonding with the fetus is a cultural construct and 'reinforces conservative values related to

the impact of a woman's behaviour and body on her offspring's development and welfare' (Mitchell 2001:68).

It has been suggested that physical and kinaesthetic awareness, which until several decades ago has been the primary way of obtaining information about the fetus, is crucial for antenatal bonding (Siddiqui, Hägglöf & Eisemann 1999; Stainton 1990; Cranley 1981). As discussed in the previous chapter, the development of obstetric ultrasound opened up new possibilities in gaining information about the fetus and marked a shift from the haptic to the optic hexis (Duden 1993). It could be argued that more information increases awareness of the fetus and offers new chances of bonding during pregnancy. It is therefore not surprising that soon after the introduction of obstetric ultrasound, suggestions were made that scans might enhance antenatal bonding (Bralow 1983; Fletcher & Evans 1983; Dewsbury 1980).

### **3.3.2 Ultrasound scans and bonding**

Much of the qualitative research into the effect of ultrasound on bonding suggests that scans make the baby and pregnancy more real (Molander, Alehagen & Berterö 2010; Harris et al. 2004; Draper 2002; Dykes & Stjernqvist 2001; Saetnan 2000; Mitchell & Georges 1997; Hyde 1986), increase awareness and perception of the fetus (Draper 2002; Colucciello 1998; Kohn et al. 1980) and makes the fetus into a person and member of the family (Molander et al. 2010; Ekelin, Crang-Svalenius & Dykes 2008, 2004; Harris et al. 2004; Dykes & Stjernqvist 2001). However, these effects do not necessarily constitute enhanced bonding.

Early suggestions that ultrasound could enhance bonding have been embraced by many authors. Campbell (2006a:243), for example, confidently states that: 'It is now widely accepted that the early routine scans at 12 and 20 weeks are the main factors involved in initiating this bonding process'. However, empirical evidence overall is equivocal. Two early studies (Heidrich & Cranley 1989; Kemp & Page 1987) found no positive effect of ultrasound on bonding. A study involving 129 low-risk women established that bonding increased linearly throughout pregnancy, but found no difference between women receiving high or low feedback scans (Reading et al. 1984). No trials have compared ultrasound with no ultrasound (Garcia et al. 2002), and as ultrasound is now routine, and expected by the majority of women, it would be very difficult if not impossible to conduct such research. Prospective studies have shown that bonding increases during pregnancy irrespective of antenatal tests or scans (Garcia et al. 2002).

Increased bonding through seeing the baby at a scan is generally portrayed as positive. However, this may not necessarily be the case. There is some evidence that having seen the fetus on a scan can make loss more difficult for some women (Black 1992; Kohn et al. 1980). Zechmeister (2001:395) highlights another potential problem: where bonding is generally portrayed as positive (including by women), it can also be used 'against the woman in that ultrasound may be used to create a feeling of guilt through monitoring the mother's shortcomings and failures to be "good mothers"'. These claims echo Eyer's (1994) critique of bonding in the postnatal period and how this has been constructed as an ideological and political concept with implications for what is expected of new mothers.

To conclude, there is little empirical evidence that ultrasound enhances bonding, though many women and their partners report that the baby feels more real and like a member of the family after a scan. However, suggestions that seeing the fetus during a scan 'is pushing back parental bonds to before birth' (Powledge 1983:38) seem exaggerated, as empirical and anecdotal evidence shows that pregnant women can and do form bonds with their fetus without (or before) scans, particularly through the experience of fetal movements. The apparent contradiction between largely qualitative studies, which mainly show that scans tend to make the baby more real, more of a person and member of the family, and the lack of empirical support for enhanced bonding due to scans might be due to conceptual differences. While quantitative studies aim to measure the concept of 'bonding', qualitative studies appear to tease apart this concept and might be more concerned with components of bonding, reflecting how pregnant women experience this early relationship with the fetus.

### **3.3.3 Private 3/4D scans and bonding**

As private 3/4D scans are explicitly marketed as bonding scans, the issue of bonding is crucial in this context. Compared to 2D scans, 3/4D scans are assumed to have an even greater effect on bonding and reassurance because of the better image quality due to enhanced surface rendering: the fetus looks more like a 'real baby' and it is possible to see facial expressions. As pregnant women, their partners and other family members have a clearer image and the fetus is made potentially even more real than with 2D scans, it is therefore assumed that this leads to even more bonding and reassurance.

To some extent early speculation regarding the potential psychological effects of 3/4D scans was based on emotional reactions to these scans: reactions of pregnant women and their partners, but also the emotional reactions of sonographers and other practitioners themselves when observing parental reactions. Campbell (2002:2), for example wrote that 'I am sure I reflect the views of all practitioners using 4D equipment that both maternal and paternal reaction to the moving 3/4D image is something we have not previously encountered. I have seen fathers kiss the screen or (more appropriately) their partner's abdomen in an ecstasy of recognition and pleasure.' The enthusiastic and emotional response of expectant parents to the 3/4D images may suggest that 3/4D scans will have a greater positive psychological impact (Campbell 2006a, 2002; Chudleigh 1999).

However, several quantitative studies into the effect of 3/4D ultrasound have provided little or no evidence of a greater effect than 2D ultrasound. In one of the earliest studies into the psychological effect of 3/4D scans, Maier and colleagues (1997) suggested that 3/4D images may change the maternal-fetal relationship from imaginary to concrete, though this was not the case for all women.

A telephone survey of 100 women (Ji et al. 2005) comparing 2D and 3/4D ultrasound concluded that 3/4D scans have the potential to enhance bonding. However, bonding was measured through the extent of image sharing, women's ability to form a mental picture of the fetus and their comments on images; it could be argued that this approach does not provide a robust or validated

measurement of bonding. A study by Pretorius et al. (2006) using the Maternal Fetal Attachment Scale (MFAS) (Cranley 1981) found that bonding was increased after a 3/4D scan; the dimension of the MFAS which showed a significant increase was parents' imagination, wonder and curiosity about the fetus.

A small prospective, randomised study with 60 women (Lapaire et al. 2007), women preferred 3/4D over 2D images and found it easier to recognise fetal structures, but 3/4D scanning had no effect on bonding as measured by a scale specifically constructed for this study. Three studies using the Maternal Antenatal Attachment Scale (MAAS) (Condon 1993) in the second trimester found that although bonding increased after both 2D and 3/4D scans, there was no significant difference between the two types of scan (Sedgmen et al. 2006; Righetti et al. 2005; Rustico et al. 2005).

A recent study by de Jong-Pleij and colleagues (2013) used the MAAS to compare 2D and 3/4D scans in the third trimester. This study also found an increase in bonding after 2D and 3/4D scans, but no difference between scan types; however, visibility and recognition were positively related to an increase in bonding for 3/4D scans.

In these studies, women did not choose to have a 3/4D scan, but were assigned to one as part of the research. So far, there has been no research into the effect of *private* 3/4D scans on bonding. As enhanced bonding is used as a justification and selling point for private scans, research into their impact on bonding is imperative.



## **3.4 Anxiety**

### **3.4.1 Anxiety in pregnancy**

While anxiety is a part of normal life and can have a purpose in alerting us to danger and stimulating appropriate responses, it can nonetheless be pathological, leading to physical and mental ill-health. Anxiety is recognised as an important issue in contemporary maternity care. The importance of identifying and treating anxiety in pregnancy has been highlighted by the National Institute for Health and Clinical Excellence (NICE 2007). Anxiety in pregnancy has been linked with a number of outcomes, including pre-term labour and low birth weight (Hobel, Goldstein & Barrett 2008; Dole et al. 2003; Rondo et al. 2003; Dayan et al. 2002; Paarlberg, Vingerhoets, Passchier, Dekker & van Geijn 1995), complications during labour and birth (Weisberg & Paquette 2002), fetal development (Merlot, Couret & Otten 2008; Weinstock 2008; Field et al. 2003; Mulder et al. 2002), infant development and temperament (Brouwers, van Baar & Pop 2001; Huizink, Robles de Medina, Mulder, Visser & Buitelaar 2002; Huizink, Robles de Medina, Mulder, Visser & Buitelaar 2003), children's emotional and behavioural problems (O'Connor, Heron, Golding, Beveridge & Glover 2002), pregnancy complications (Mulder et al. 2002; Da Costa, Larouche, Dritsa, & Brender 1999) and postnatal depression (Heron et al. 2004; Sutter-Dallay, Giaccone-Marcésche, Glatigny-Dallay & Verdoux 2004).

Anxiety in pregnancy has been associated with uncertainty (Harpel 2008; Armstrong 2003), worry about the fetus (Georgsson Öhman, Saltvedt, Grunewald

& Waldenstrom 2004) and concerns about labour. It has also been argued that some anxiety in pregnancy is normal, adaptive and positive (Deutsch 1946). George and Solomon (2008, in Walsh 2010) suggest that an increase in anxiety in pregnancy may be essential for the transition to caregiver. Obstetric history, for example previous miscarriage or stillbirth, tend to increase pregnancy-specific anxiety (Nordvig, Secher, Madsen & Andersen 2006). Anxiety is of particular relevance with respect to ultrasound, because scans have the ability to reveal serious abnormalities. Since the 1980s there has been considerable research into the effect of ultrasound on anxiety levels of pregnant women.

#### **3.4.2 Ultrasound scans and anxiety**

While some studies suggest that ultrasound has the potential to decrease anxiety, other authors have argued that the situation is more complex and that ultrasound can cause, as well as relieve, anxiety. Saetnan (2000) suggests four possible trajectories regarding the effect of ultrasound scans on expectant parents' anxiety: (1) ultrasound has no effect on anxiety; (2) ultrasound decreases anxiety, which then remains at lower levels for the remainder of pregnancy; (3) anxiety is increased in anticipation of the ultrasound, and then remains high throughout the rest of pregnancy; and (4) the anticipation of ultrasound increases anxiety, which is reduced initially after the scan, but then rises again to a stable level.

Support for the first trajectory comes from an early study by Reading and Cox (1982), which found that ultrasound had no effect on anxiety levels; the authors suggest this might have been due to low initial levels of state anxiety and because

high-risk women were excluded from the study. There is support for the second trajectory from a number of studies which measured anxiety before and after scans (Ekelin et al. 2008; Kowalcek, Mühlhoff, Bachmann & Gembruch 2002; Crowther et al. 1999; Zlotogorski, Tadmor, Duniec, Rabinowitz & Diamant 1996; Kovacevic 1993; Cox et al. 1987; Campbell et al. 1982).

From these studies it would appear that ultrasound has the potential to reduce anxiety in pregnant women. However, all these studies assessed anxiety only immediately before and after the scan, thus not exploring patterns of anxiety either in the period leading up to the scan or for the remainder of the pregnancy. Stewart (1986) was one of the first writers to raise the possibility that scans themselves might cause anxiety, which they subsequently alleviate, thus reflecting the third or, if reassurance is transitory, fourth trajectory suggested by Saetnan (2000). A number of mostly qualitative studies also support this view (Harpel 2008; Harris et al. 2004; Mitchell 2001; Saetnan 2000; Georges 1996; Milne & Rich 1981). Saetnan (2000) suggests that scans can act as a 'lightening rod' for women's anxieties about fetal health, which, even if they are only subconscious, seem to focus on the scan due to its potential to reveal abnormalities.

There could be a number of reasons for increased anxiety in anticipation of ultrasound scans. Before ultrasound became routine and widely used, most women had little information or knowledge about ultrasound scans. Then, pre-scan anxiety was often due to concerns over the procedure itself, including worries that the scan might be painful, invasive or risky for the fetus (Stewart 1986; Milne

& Rich 1981; Janus & Janus 1980). These concerns rarely surface in more recent research; as it is now considered normal to have an ultrasound, anxieties around scans have changed (Harpel 2008). Many women express anxiety about potentially adverse findings and the difficult decisions such findings might necessitate (Harpel 2008; Williams et al. 2005; Harris et al. 2004; Mitchell 2001; Saetnan 2000). Women who have experienced a scan with a suspicious or adverse finding in a previous pregnancy or who have had a previous stillbirth or miscarriage are likely to be more anxious before scanning (Brisch, Munz, Kächele, Terinde & Kreienberg 2005; O'Leary 2005; Eurenus et al. 1997). More generally, as part of the medicalisation of pregnancy, the perceived need for routine scans indicates that pregnancy is always potentially pathological, risky and in need of monitoring (Harpel 2008). This is likely to affect how women feel about, and experience, pregnancy.

There are also a number of reasons why anxiety might increase again after a scan. If soft markers or abnormalities are found, women's anxiety is likely to increase considerably (Lee et al. 2007; Nordvig et al. 2006; Leithner et al. 2004). Anxiety can also be increased if parts of the fetus are not seen fully on the scan (Milne & Rich 1981) or if sonographers' comments were ambiguous. Even if findings are 'normal', anxiety may resurface later as the scan can only really bring reassurance up to the point of the scan.

To conclude, the relationship between ultrasound and anxiety is complex. Much will depend on the pregnant woman's previous experience, attitude to pregnancy

and coping strategies, as well as perceptions of risk and understanding of the purpose of the scan. The timing of when anxiety is measured in relation to the scan is crucial and measuring anxiety only immediately before and after a scan is likely not to give the full picture. Nevertheless, following early quantitative studies it has been widely accepted that ultrasound scans reduce anxiety. More in-depth qualitative studies, and some longitudinal quantitative studies, have shown that anxiety can increase in anticipation of scanning. Some anxiety may then be relieved by the scan, but it can also potentially increase again later.

#### **3.4.3 Private 3/4D scans and anxiety**

Even though private 3/4D scans do not aim to identify abnormalities, they still have the potential to do so. As the focus is on 'meeting the baby', it might be assumed that private scans do not cause anticipatory anxiety to the extent that routine scans do. However, it might still be a concern, even if just subconsciously, for some expectant parents. From a different perspective, one reason parents choose private scans might be to reduce anxiety not over physical fetal abnormalities, but about uncertainties associated with the fetus and becoming parents.

Little research has been done into the effect of 3/4D scans on anxiety. Studying the impact of 2D and 3/4D scans on anxiety, Leung and colleagues (2006), found that, in pregnant women with an increased risk of fetal abnormalities, both types of scan resulted in a short-term reduction in anxiety. However, there was no difference between the effects of 3/4D scans and 2D scans, even though almost

80% of women said that the 3/4D scan gave them a better understanding that their baby had no abnormality and 90% preferred the 3/4D scan and said that it required less explanation than a 2D scan.

### **3.5 Conclusions**

There has been considerable discussion of, and research into, issues of control, bonding and anxiety with regards to routine ultrasound scans. Overall conclusions are often tenuous and contradictory. These concepts have also been of central importance in maternity care policy over the last few decades as it has been increasingly recognised that they have important implications for the physical and psychological health of women and their children, as addressed in documents such as *Maternity Matters* (Department of Health 2007), the National Service Framework for Children, Young People and Maternity Services (Department of Health 2004) and antenatal and postnatal care guidelines by the National Institute for Health and Clinical Excellence (NICE 2007).

In the case of private scans, the starting point is very different for these three concepts. Compared to routine scans within the NHS, pregnant women are in control of the decision to have the scan. It is noteworthy that whereas they can decline a scan within the NHS, they cannot insist on one. Private scans are explicitly marketed as bonding scans. Finally, even though private 3/4D scans have the

potential to identify abnormalities, this is not their primary purpose. They are therefore likely to affect anxiety in different ways than routine scans.

This analysis of the concepts of control, bonding and anxiety in the context of private 3/4D scans leads to the same questions raised by the exploration of the historical and social context in Chapter 2: why do parents choose to have private scans and what effect do these scans have on control, bonding and anxiety. So far, there is no sufficient body of evidence which adequately answers these questions. Chapter 4 will set out how this thesis will contribute to these goals.

## **Chapter 4 The study**

### **4.1 Evolution of this study**

The original focus of this study was on the psychological impact of 3/4D scans on pregnant women and expectant fathers. The original study design envisaged a mixed method approach, using qualitative interviews and statistical analysis of questionnaire data, both with a focus on the psychological impact of the scans. The original design is described in more detail in Section 6.2.1. However, the focus, research approaches and theoretical perspectives used in this study changed considerably for two reasons, one of a theoretical/philosophical nature, the other more practical.

Firstly, from the literature review and early empirical results (interviews and questionnaires were completed over a relatively long period of time), it emerged that there was unlikely to be a straightforward relationship between 3/4D scans and psychological parameters. Instead it is a complex relationship influenced by many other factors. Scans and pregnancy are part of a wider social context. It became clear from the early interview and questionnaire data that the women's experiences of 3/4D scans were individually mediated and potentially affected by wider societal discourses around pregnancy and motherhood. Consequently, the study design was reconsidered to enable an exploration of wider discourses



affecting women's experiences of these scans and a stronger focus on women's individual experiences.

Secondly, it became clear very early on that it was very difficult to recruit the large number of women and men that would have been required for the quantitative element of the study within the timescale of a PhD.

For these reasons, the following changes were made:

- The study was restricted to women. In addition to difficulties with recruitment particularly of men, the issues around 3/4D scans in pregnancy are so complex, that a further layer of complexity would be added by including men. However, further research into men's experiences of 3/4D scans is needed.
- The focus of the study shifted to women's individual experiences and the large quantitative element of the study was discontinued. Such a study would still be valuable, but may require a different approach.
- It was felt that quantitative data from a smaller group of participants would nonetheless be informative; consequently, the questionnaires were continued and used in conjunction with the interviews to construct individual narratives for each woman.
- In order to explore wider discourses around pregnancy and motherhood, a discourse analysis of scanning company websites was included in the study. These websites are likely to reflect wider societal discourses which may impact on pregnant women and their experiences of these scans and

may therefore provide valuable insights into why women choose 3/4D scans, what they expect from them and how they experience them. The analysis of websites help to situate scans within a social world.

The importance of social context and wider discourses for psychological issues in pregnancy, labour and early motherhood is increasingly acknowledged. This has, for example, been the case with the recognition that postnatal depression cannot be considered in a vacuum, but needs to be located within wider contexts and discourses (e.g. Nicolson & Woollett 1998; Nicolson 1989). With respect to postnatal depression, Nicolson and Woollett (1998:88), suggest that it 'is important to challenge comfortable assumptions, ask different kinds of research questions and to employ a variety of methodologies to address them'. In the context of 3/4D scans, this means that the psychological constructs which may be affected by these scans cannot be studied in isolation, but need to take into account the personal and social context of the women, as well as the wider societal discourses which may have an impact on their decisions, expectations and experiences. The rationale and study aims and objectives which will be presented in this chapter reflect these changes.

## **4.2 Research rationale, aims and objectives**

### **4.2.1 Research rationale and aims**

As discussed in Chapter 2, private 3/4D scans differ in several ways from routine 2D scans. It is therefore likely that there are differences in the impact they have

and in how they are experienced by pregnant women. There are also likely to be differences regarding the discourses around these scans and their impact at a wider, societal level.

There is a substantial body of research on the psychological impact and women's experience of routine obstetric ultrasound scans (Chapter 3). However, so far little research has been carried out into the psychological effects of these scans, how women experience them, why they choose 3/4D scans and what they expect of them. This study therefore aims specifically to explore the impact of 3/4D scans on maternal psychological status and on the maternal experience of pregnancy, as well as women's motives, expectations and experience regarding 3/4D scans.

There has also been much written about the wider impact of routine scans at a societal level, particularly about their impact on conceptualisations of the fetus and on how women experience pregnancy (Chapter 2). While some writers have begun to analyse the wider impact of private 3/4D scans, much remains to be explored. A complete analysis of the societal impact of private 3/4D scans is beyond the scope of this study, but it aims to establish the wider discourses and perspectives around 3/4D scans as they affect women's experiences.

#### **4.2.2 Research objectives**

The overarching research question addressed in this study – what are women's psychological experiences of private 3/4D scans and how are these experiences

situated within wider discourses – can be broken down into a number of specific objectives:

1. To establish the wider discourses which may affect women's experiences of private 3/4D scans.
2. To explore women's experiences of choosing and undergoing 3/4D scans.
3. To explore, over time, the impact of these scans on women's sense of control over fetal health, their feelings of anxiety about pregnancy and psychological uncertainties associated with pregnancy and becoming parents.
4. To explore how 3/4D scans affect women's relationship with, and conceptualisations of, the fetus.
5. To integrate the findings from the research approaches and establish how wider discourses are reflected in women's experiences of 3/4D scans.

These varied objectives cannot be addressed by a single research approach, but call for a number of different approaches. These will be discussed in the next section.

### **4.3 Research approaches**

#### ***Critical discourse analysis of scanning company websites***

The first objective, an exploration of wider discourses which may affect experiences of 3/4D scans, was explored using a critical discourse analysis

(Fairclough 2010) of commercial scanning company websites. These websites were chosen for this analysis because they are likely to draw on a number of wider discourses around 3/4D scans which may be relevant to women who choose 3/4D scans; they are accessible and widely available; and they provide a perspective on 3/4D scans which is likely to be very different from that of pregnant women. Critical discourse analysis also allows an examination of the genres used on the websites and of the identities constructed by them. It takes a critical approach and aims to see beyond the surface and analyse deeper-rooted socio-economic and cultural influences.

### ***Interpretative phenomenological analysis***

The second objective, women's experiences of 3/4D scans, was addressed through the use of interpretative phenomenological analysis (IPA) (Smith, Flowers & Larkin 2009) of interviews with pregnant women who had chosen a private 3/4D scan. IPA is a psychological approach to qualitative research which allows a detailed exploration of lived experience, focusing on the meanings a phenomenon has for the participant. In this study, it was used to explore the meanings 3/4D scans hold for pregnant women. In order to gain an understanding of women's experiences over time, they were interviewed before and after 3/4D scans.

### ***Case studies***

The interpretative phenomenological analysis explored women's sense of control, feelings of anxiety and relating to the fetus during pregnancy, as relevant to the third and fourth objectives. However, the specific impact of 3/4D scans on control,

anxiety and the maternal relationship with, and conceptualisation of, the fetus was addressed using case studies. For these, pre- and post-scan quantitative data from questionnaires and qualitative data from interviews were used to construct narratives for each individual woman. While the quantitative data from the questionnaires enabled a detailed look at the psychological effects of 3/4D scans, the interviews provided further depth and context, making it possible to explore individual experiences and reasons for psychological changes. It was therefore possible to create a detailed narrative for each woman, including background information, an investigation of psychological changes over time and an exploration of her reasons for, and expectations and experiences of, the 3/4D scan. Whereas this approach does not allow for generalisations about the psychological effects of 3/4D scans, it provides a very close look at individual experiences of the scan and the effect on each woman, taking into consideration context and individual differences.

### ***Integration of approaches***

The fifth objective, an exploration of how wider discourses are reflected in women's narratives, was addressed by integrating findings from all three research approaches. While these approaches answer different questions and meet different research objectives, there is also some overlap, particularly between IPA and the case studies. The three approaches enable a look at private 3/4D scans from different perspectives – that of pregnant women and that of commercial scanning companies. These diverse research approaches do, to some extent, have

different theoretical and philosophical roots; this will be discussed further in the next section.

### ***Using diverse approaches***

Even though the larger quantitative element originally planned had to be scaled down due to recruitment problems, this study still uses a mixed methods approach as the quantitative data is used in conjunction with qualitative interview data in the case studies, as well as using a number of research approaches across the study. Over the last two decades an increasing number of studies within health, psychology, educational and social research have been taking a mixed methods approach. In health services research, for example, the number of health service research studies commissioned by the Department of Health using a mixed methods approach increased from 17% in the mid-1990s to 30% in the early 2000s (O’Cathain, Murphy & Nicholl 2007). Referred to by some as the ‘third paradigm’ besides the quantitative and qualitative paradigms (Denscombe 2008; Johnson, Onwuegbuzie & Turner 2007), mixed methods research aims to integrate and/or combine quantitative and qualitative approaches. Philosophically, it is largely based on pragmatism (Feilzer 2009; Onwuegbuzie, Johnson & Collins 2009) and reflects and acknowledges the diversity and complexity of issues in these disciplines. ‘Too much time and effort is going into paradigm warfare. Neither ‘qualitative’ nor ‘quantitative’ methods on their own, as currently recommended, will do the job.’ (Oakley 2000:302)

The use of a mixed methods approach in this study allows triangulation of data as well as a thorough and rounded investigation of the complex issues around the psychological effects of 3/4D scans. A review of the literature shows contradictory results with respect to the effect of scans on anxiety and bonding in particular; in many cases, quantitative and qualitative approaches provide different findings, as discussed in Chapter 3. A mixed methods approach allows for triangulation of data and provides a more complete picture. For example, the complexity of bonding in pregnancy lends itself to a mixed methods approach. Quantitative measurement of bonding provides part of the picture, while in-depth interviews allow an exploration of what bonding in this context might mean to pregnant women. The qualitative part of the study emphasizes participants' experience of scans and explores the meaning they attach to them.

The use of different qualitative approaches in this study allows a more complete picture of private 3/4D scans to emerge, including both wider discourses and women's individual experiences and the meanings they attach to their experience of 3/4D scans and pregnancy.

## **4.4 Philosophical standpoint**

### **4.4.1 Social constructionism and critical realism**

Epistemologically, the study as a whole takes a social constructionist standpoint. It does not assume that there is an objective truth or reality which can be



discovered by researchers. Instead, truth and meaning are believed to be constructed as humans engage with the world around them (Crotty 1998). As different people construct different meanings, in different ways, each phenomenon can be experienced, interpreted and have meaning constructed around it in different ways. For example, pregnancy or 3/4D scans will be experienced differently by each woman and have different meaning for each woman. Furthermore, *social* constructionism acknowledges the importance of society and culture: each individual is likely to conceive and construct reality as is typical for a specific society and culture, within a specific historical context (Ashworth 2003).

Social constructionism relies heavily on the importance of language and discourse. However, the foregrounding of discourses can be problematic (Sims-Schouten, Riley & Willig 2007; Cromby & Nightingale 1999). It may, for example, marginalise experiences that are not easily put into language (Sims-Schouten et al. 2007). This may, as suggested in Chapter 2, be particularly relevant for the description of fetal movement in pregnancy. Furthermore, pregnancy is an inherently embodied experience and the physical experience of pregnancy has significant effects on pregnant women's psychological experiences.

Therefore, rather than taking a relativist stance, this study also draws on critical realism, which, while acknowledging that social realities are constructed through language, also argues that these social constructions are constrained by the real world and consequently rejects a wholly relativist approach (Sims-Schouten et al.

2007; Willig 1999). It therefore puts more emphasis on material conditions, which seems particularly suited to research into such an embodied experience as pregnancy. A critical realist approach aims to explain why people draw on certain discourses and not others; for this, the non-discursive elements provide the context. Sims-Schouten et al. (2007) therefore argue that critical realism contextualises discourses, thereby aiming to do justice to participants' lived experience.

This research also comes from a feminist perspective, enabling a look beyond women's socially constructed roles in pregnancy and motherhood. Women's voices and narratives are central to the study and remain prominent throughout the analysis and discussion of the interviews and case studies. These elements of the study are woman-centred, not only in the sense that their voices are central, but also in that they do not assume that women's experiences of pregnancy are essentially pathological (Nicolson 1986). A feminist perspective is also relevant for the critical discourse analysis, which as an approach is particularly concerned with issues of ideology and power relations, which permeate discourses around pregnancy and motherhood. Consequently, this study will look at private 3/4D scans through a feminist lens.

#### **4.4.2 Methodological pluralism**

This study uses a number of research approaches and methodologies, and includes quantitative and qualitative data. Interpretative phenomenological analysis,

critical discourse analysis and case studies are all approaches with a complex philosophical background.

IPA is phenomenological in that it examines participants' lived experience in detail and aims to foreground their voices throughout the research (Smith et al. 2009). It is also hermeneutical as it emphasizes meaning – both the meaning the participant attributes to the phenomenon and the researcher's sense-making of the participant's narrative (Smith et al. 2009). IPA also supports social constructionist claims regarding the importance of socio-cultural and historical contexts for individuals' experience and understanding of their lives (Eatough & Smith 2008). It does, however, not support an entirely relativist social constructionism in that it acknowledges that while language and discourse play an important role, an individual's lifeworld is not 'merely a linguistic and discursive construction' (Eatough & Smith 2008:194). Individuals experience different parts of reality (physical and socio-cultural/economic) and therefore attach different meanings to experiences; in this sense, IPA is rooted in critical realism (Fade 2004).

Critical discourse analysis, as proposed by Fairclough (2010; 2003), clearly emphasizes the importance of language and discourse in how we construct the world around us. However, Fairclough also acknowledges the importance of social context and its dialectical relationship with discourse, and proposes that discourse analysis needs to be supplemented with a 'more concrete-complex analyses of extra-discursive domains' (Fairclough, Jessop & Sayer 2002:3). Critical discourse analysis is therefore also rooted in critical realism, as well as a social

constructionism which acknowledge the importance of discourse (Sims-Schouten et al. 2007).

Case studies are, generally, very diverse in their philosophical grounding and tend to take a more pragmatic stance. In this research, case studies are approached from a social constructionist and critical realist stance, hence promoting theoretical coherence across the study as a whole.

All three approaches share the view that language and discourse are important as they are used to construct realities. However, these realities and the way they are constructed is also influenced by material conditions. Johnson, Long and White (2001:249) suggest that 'there are no 'real' natural laws concerning socially derived knowledge and therefore no possibility for a 'pure' method for the social or interpersonal sciences', and consequently argue for a 'British pluralism' in qualitative health research. This study follows their arguments by using different qualitative approaches, as well as some quantitative data, to explore the research objectives from different perspectives. Nevertheless, it could be argued that there are potential issues of philosophical incompatibility between the different research approaches. However, each study stands by itself and possesses internal integrity. Each is analysed, and results are presented, separately. The findings of the three studies are then integrated to provide a more holistic, rounded picture of 3/4D scans. All three research approaches are essential to the final analysis of 3/4D scans in this research.

## **4.5 Quality**

### **4.5.1 Quality in qualitative research**

While qualitative research cannot be evaluated by the same criteria as quantitative research in terms of validity and reliability, maintaining rigour and ensuring quality in qualitative research is important (Smith et al. 2009; Kitto, Chesters & Grbich 2008; Yardley 2000). This can be achieved in a number of ways, which will be addressed in this section. The validity and reliability of the quantitative measures will be addressed in Chapter 6.

### **4.5.2 Transparency**

Transparency, which Kitto et al. (2008) describe as ‘procedural rigour’, refers to a detailed and transparent description of how the research was conducted and can be achieved by giving details of the data collection and analysis process and presenting excerpts (Yardley 2000). This study attempts to do this by describing the data collection and analytical processes for each research approach in detail. For the critical discourse analysis, a detailed account is provided of how websites were chosen; an example of an analytical template is included (Appendix 1); and textual and pictorial examples from websites are used to illustrate the findings. Website addresses are provided to enable the reader to look at the websites in full.

Details of the recruitment and data collection process for the interpretative phenomenological analysis and case studied are provided in Chapter 6. The

analytical processes for each approach are described in the specific chapters. For the interpretative phenomenological analysis, an excerpt from an annotated and coded interview transcript is included (Appendix 8) in order to make the process of analysis more transparent. Quantitative results from the questionnaires are provided in detail in Chapter 8, and are referred to in the individual case studies.

### **4.5.3 Reflexivity**

The role of the researcher in this study is not considered that of an objective bystander. Instead, research is a joint product of researcher and participant (Ashworth 2003). The researcher, who like the participant is the product of a particular socio-cultural environment, brings to the research his/her own background, biases and assumptions. This is not necessarily a problem in itself, but the researcher needs to be aware of and acknowledge these potential biases. This is achieved through reflexivity, an awareness of one's own assumptions, background and values and how these affect the conduct of research (Lambert, Jomeen and McSherry 2010; Kitto et al 2008; Kingdon 2005; Yardley 2000). Reflexivity is an ongoing process which evolves with the research. A reflexive account is included in Chapter 9.

### **4.5.4 Triangulation**

Triangulation can apply to both the use of different methods or approaches to research (Yardley 2000) and analysis by different researchers (inter-rater reliability) (Kitto et al 2008). This study uses three research approaches to explore different aspects of private 3/4D scanning, thus providing a degree of

methodological triangulation. Within the case studies, triangulation is also provided through the use of different data sources. A degree of researcher triangulation was achieved by the PhD supervisors reading through a selection of interview transcripts and reaching agreement on coding and emergent themes. The construction of individual narratives for the case studies was triangulated in a similar way.

#### **4.5.5 Representativeness**

Issues of the representativeness of the sample are also important for quality (Kitto et al 2008). For the critical discourse analysis, it was necessary to collect information on the type and number of scanning companies operating within the UK in order to choose a number of companies which would be broadly representative of the different types of companies. This process is described in detail in Chapter 5. The sample of participants for the interpretative phenomenological analysis and case studies is a self-selected, small sample and clearly not representative of all women choosing 3/4D scans in the UK. In particular, there is a bias towards a certain socioeconomic and professional background. However, demographic information is disclosed in Chapter 6 and the background and context of each participant is taken into account and if necessary referred back to in the analysis and discussion. The IPA and case studies cannot claim to make generalisations about women's experiences of 3/4D scans, but instead allow a detailed analysis of their individual experiences which may have wider implications.

#### **4.5.6 Sensitivity to context**

Yardley (2000) also refers to sensitivity to context as a means of achieving quality. In this she includes sensitivity to the context of the research, to the existing literature and to the material provided by participants (Smith et al 2009). This thesis aims to do this by not considering private 3/4D scans in a vacuum, but instead discussing the wider socio-cultural and historical context of scans in the literature review and reflecting back to these within the analysis and discussion of research findings. This is also achieved through showing sensitivity to participants by taking into account each individual's own context and background and retaining the authenticity of their voices throughout the analytical process (Smith et al 2009).



## **Chapter 5 Critical discourse analysis of scanning company websites**

### **5.1 Introduction**

#### **5.1.1 The importance of analysing language**

Language is fundamental to our experience and functioning as human beings; it could indeed be argued that language has been instrumental in our development as a species (Halliday & Matthiessen 2004). Fairclough (2003:2) argues that as 'language is an irreducible part of social life, dialectically interconnected with other elements of social life', social research always needs to take account of language. Consequently, the language used around 3/4D scans is important and needs to be analysed in order to explore and understand the wider societal and cultural perspectives and meanings attached to 3/4D scans. For this purpose a number of websites by commercial scanning companies offering 3/4D scans were selected and analysed using critical discourse analysis (CDA), with a focus on interdiscursive analysis, i.e. the analysis of identities, discourses and genres evident on the websites.

#### **5.1.2 Discourse analysis**

There are a number of approaches to the analysis of texts, including conversation analysis, linguistic and sociolinguistic analysis, semiotic analysis, content analysis

and various forms of discourse analysis (Fairclough 1995). For this study, discourse analysis, specifically critical discourse analysis, was chosen. Approaches to discourse analysis can be broadly divided into those that employ a detailed analysis of text, which Fairclough (2003) refers to as 'textually oriented', and those that, influenced by Foucault, focus on social theory and pay less attention to the linguistic features of text. A further distinction is between discourse analysis and critical discourse analysis. Whereas discourse analysis is predominantly descriptive, critical discourse analysis aims to also provide an analytical and explanatory dimension (Fairclough 2010).

Critical discourse analysis focuses on how language is used to mediate relationships in social interactions, institutions and bodies of knowledge (Rogers, Malancharuvil-Berkes, Mosley, Hui & O'Garro Joseph 2005). There are a number of overlapping approaches to CDA, which all share the view that 'language both *shapes* and *is shaped by* society' (Machin & Mair 2012:4). While Van Dijk, for example, emphasizes processes of social cognition, Fairclough's approach focuses on social relations and includes intertextual analysis (Fairclough 2003). As the focus of this part of the study is on relationships and the wider discourses which may affect women's experiences of scans, Fairclough's approach was chosen as the most appropriate one within this context.

### 5.1.3 Critical Discourse Analysis

#### *Theoretical origins*

Fairclough's critical discourse analysis has strong links to critical linguistics, an approach originating in the late 1970s (Fowler, Hodge, Kress & Trew 1979), which aimed to explore how language and grammar are used ideologically by encoding different interpretations of experience (Machin & Mayr 2012). Critical linguistics has been criticised for studying grammar in isolation from meaning (Kress & van Leeuwen 2006) and failing to show the link between language, power and ideology (Fairclough 1992). In response, critical discourse analysis aimed to develop a theory and methods which could demonstrate how language is linked to ideology and power, assuming that power relations are discursive in nature (Machin & Mair 2012).

Critical discourse analysis is *critical* in the sense that it aims to go beyond the mostly descriptive goals of linguistics and discourse analysis, and provide an analytical and explanatory exploration of discourse (Fairclough 2010). CDA explores and analyses why and how texts have particular linguistic features and what the ideological principles and motivations behind texts are (Machin & Mair 2012). It aims to expose 'strategies that appear normal or neutral on the surface but which may in fact be ideological and seek to shape the representation of events and persons for particular ends' (Machin & Mair 2012:5).

Critical discourse analysis is clearly positioned within a critical theory tradition. It focuses on conceived societal problems and ways of mitigating them (Fairclough

2010). CDA focuses on power relations, ideology and hegemony as they are played out in discourse, and the role discourse plays in creating or maintaining them. Consequently, Fairclough (2010:8) argues that critique of discourse can be identified as 'an inherent part of *any* application of critical method in social research'. Fairclough is particularly concerned with what he refers to as 'the new capitalism' and its pervasive effect of social life (Fairclough 2003). It could be argued that this effect is also present within the context of health and, more specifically, the provision of private ultrasound scans, which can be seen as part of the commercialisation of pregnancy.

### ***Basic principles of Fairclough's CDA***

While discourse is central to CDA, it is always treated within a wider context; it is concerned with the dialectical relationships between discourses and social practices (Chiapello and Fairclough 2002). This is reflected in Fairclough's (2010) 'basic principles' of CDA: it is relational, dialectical and transdisciplinary:

1. CDA is *relational* because it focuses primarily on social relations, rather than individuals or entities. Social relations are complex and discourse cannot be defined independently, but needs to be discussed in terms of internal and external relations of the text (see below).
2. These relations are *dialectical* and internalised in each other. Consequently social elements cannot be analysed in isolation, but only in terms of dialectical relations with others.

3. The analysis of relations of discourse with other elements cuts across boundaries between disciplines and therefore needs to be interdisciplinary – or *transdisciplinary*. This entails a dialogue between disciplines, theories and frameworks, which may lead to theoretical and methodological developments (Fairclough 2010).

## **5.2 Methodology and analysis**

### **5.2.1 Interdiscursive analysis**

This analysis will focus on one element of CDA: interdiscursive analysis. This involves the identification of the identities (styles), discourses and genres constructed on the websites, and how these draw upon each other.

*Styles* (or *identities*) are linked to social and personal identity. In this analysis, styles are referred to as identities and are used slightly differently to Fairclough's approach: identities are established for each of the different 'actors' and entities within the context of 3/4D scans. While *discourse* has various meanings, it is used here in its more specific sense of a particular way of representing aspects of the world (Fairclough 2003). *Genres* relate to action within a particular discourse (Fairclough 2003) and are part of social activity (Chiapello & Fairclough 2002). In short, styles/identities are ways of being, discourses are ways of representing the world, and genres involve action and interaction.

Interdiscursive analysis is based on linguistic and semiotic analysis of the text, as well as analysis of intertextuality (see below), and assumptions. This study also analyses visual elements and therefore employs a multimodal analysis.

### **5.2.2 Intertextuality and assumptions**

Intertextuality refers to the relations between a particular text and other texts and voices (Fairclough 2003). Different texts vary with regards to the degree of intertextuality and the way other texts and voices are used. Intertextuality contrasts with assumptions with regards to the reporting (or not) of difference and dialogicality. A text which uses other texts and voices to a high degree opens up difference and therefore emphasizes dialogicality. Assumptions, on the other hand, reduce dialogicality and difference by assuming common ground (Fairclough 2003). Therefore orientation to difference varies between texts and may range from a true dialogue to a suppression of differences. Analysing orientation to difference and assumptions is important because it tell us a lot about the particular perspective that text takes and how it represents aspects of the world.

### **5.2.3 Linguistic and semiotic analysis**

The text's 'internal relations' and linguistic and semiotic elements are also analysed in critical discourse analysis. They are used to further understanding of social context, intertextuality, assumptions and interdiscursive analysis and include the following elements:

- *Lexical (vocabulary) analysis*
  - Choice of vocabulary
  - Semantic relations between words (synonym, hyponym, antonymy)
  - Collocations (words that occur together regularly)
  - Metaphors
  
- *Semantic relations between clauses and sentences and over larger stretches of text*
  - Relations between clauses and sentences (causal, conditional, temporal, additive, elaborative, contrastive/concessive)
  - Higher-level semantic relations (e.g. problem-solution)
  - Grammatical relations between clauses (paratactic, hypotactic, embedded)
  
- *Clauses: types of exchange, speech function, mood*
  - Types of exchange (activity or knowledge exchange)
  - Speech functions (statement, question, demand, offer)
  - Predominant grammatical mood (declarative, interrogative, imperative)
  
- *Modalities*
  - Types of modality
  - Level of commitment in modalised modalities
  - Values authors commit themselves to
  - Realisation of values (evaluative statements, statements with deontic modalities, statements with affective mental processes, assumed values)

#### **5.2.4 Multimodal critical discourse analysis**

The company websites are rich in images, such as logos, photos and scan images, which are integral to the websites' messages. Analysis of these images is therefore essential in understanding the identities, discourses and genres constructed by the websites. While Fairclough does not deal specifically with multimodal analysis, he does emphasize its importance (Fairclough 2010). Others have adapted CDA to include visual elements (e.g. Machin & Mayr 2012; Kress & van Leeuwen 2006).

Like language, images function on two levels (Machin & Mayr 2012). On one level, they can *denote*: they document specific events, individuals, objects etc. On the other hand, they also *connote*: while showing concrete objects or individuals, they are used to signify abstract ideas and concepts. Just like the actual texts, visual elements are comprised of a specific 'lexis' and 'grammar' (Kress & van Leeuwen 2006). For example, images can be analysed in terms of attributes, settings and salience, the gaze and poses of individuals, and how the viewer is positioned in relation to people in images (distance and angle) (Machin & Mayr 2012).

#### **5.2.5 Analytical template**

An analytical template was drawn up to include intertextual, lexical, semiotic and visual analysis. This template evolved as the analysis progressed. For each website a template was completed in turn and the template was then used to write up each of the sections on identities, discourses and genres. A completed analytical template for one of the websites is presented in Appendix 1.



### **5.2.6 Selection of websites**

Websites of commercial scanning companies offering 3/4D scans were chosen for the critical discourse analysis as they are likely to reflect wider societal discourses which may affect women's choices and experiences of 3/4D scans. They provide a perspective of these scans that is different to those of pregnant women themselves. There are a large number of private scanning companies in the UK. In order to select a sample of websites which would reflect the diversity of commercial scanning companies, a list of companies was compiled to gain an overview of the number, type and locations of companies.

Clinic websites were searched for on 'Google' using the search terms '3D ultrasound pregnancy', '3D scan pregnancy', '3D baby scans', '4D ultrasound pregnancy', '4D scan pregnancy', and '4D baby scans'. While the first two search terms brought up the majority of companies in the final list, the others added further results. For each company the following information was noted: name and website address, location, size, type of professional carrying out the scan, the business model and other services offered. This search was undertaken in April and May 2012.

After elimination of duplicates and companies not in the UK, the final list included just over one hundred clinics. This list is unlikely to be complete and is subject to change as new clinics open and others close. Indeed, one of the companies chosen (W1) has since closed. The list was then sorted into different categories according to size of the company, who carried out the scan and the business model.

The vast majority of companies were small, local businesses with between one and five clinics, but there were five larger companies with clinics in several locations, including at least two with clinics in most parts of the UK. Most scans were carried out by sonographers or midwife/sonographers, some by consultants, almost exclusively obstetricians. Most scanning companies were independent businesses; a smaller number were part of private health care companies or run by an individual medical consultant, either in individual premises or a hospital.

Five companies were selected randomly from this list to represent the major categories of size, practitioner who carries out the scan and business model. The five companies which were selected are shown in Table 5.1. Company websites are identified here as W1, W2, W3, W4 and W5; quotes and images from the websites are referenced accordingly. The higher number of small independent clinics reflects the higher proportion of these clinics within the overall list.

**Table 5.1 Scanning company websites selected for the CDA**

| <b>Identifier</b> | <b>Type of scanning company</b>                       | <b>Website</b>                                               |
|-------------------|-------------------------------------------------------|--------------------------------------------------------------|
| W1                | Large national chain                                  | <a href="http://babypremier.co.uk">babypremier.co.uk</a>     |
| W2                | Small independent company                             | <a href="http://beforethestork.info">beforethestork.info</a> |
| W3                | Clinic run by an obgyn consultant                     | <a href="http://myscan.co.uk">myscan.co.uk</a>               |
| W4                | Clinic which is part of a private health care company | <a href="http://clarionhealth.co.uk">clarionhealth.co.uk</a> |
| W5                | Small independent company                             | <a href="http://takeapeek3d.com">takeapeek3d.com</a>         |

## 5.3 Results

The results presented here also include a certain amount of discussion for identities, discourses and genres. Section 5.4 will discuss issues arising across all categories. The section for identities is by far the largest; however, both discourses and genres build on the identities and will refer to them frequently.

### 5.3.1 Identities

The websites construct a number of different identities, including identities for clinics, scans, pregnancy, pregnant women (and their partners) and the fetus, both implicitly and explicitly. A persistent, parallel dichotomy was identified in these identities. *Scanning clinics* represent themselves as both a provider of medical care and a business. A strong contrast between a medical and social perspective is evident with regards to the representation of *scans*; they are simultaneously a diagnostic technique and a social event. *Pregnancy* is portrayed as an anxious time, in need of monitoring, and as a sentimental and idealised 'special time'. *Pregnant women* and their partners are represented as both patients and customers, while the *fetus* is simultaneously a potential patient and an individual and member of the family. The identities are summarised in Table 5.2.

Even though there were broad similarities between the clinic websites, there were also some differences. Notably, there was a stronger emphasis on the medical aspects of scans on the website of the consultant-led clinic (W3) and on the clinic which is part of a large private hospital / health care company (W4).

**Table 5.2 Summary of identities set up on scanning companies websites**

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Scanning clinics</b></p> | <p><b>A medical service provider:</b></p> <ul style="list-style-type: none"> <li>• Accreditation / links with professional bodies</li> <li>• Highly skilled &amp; experienced staff</li> <li>• State of the art equipment</li> <li>• Similarities/links to the NHS</li> <li>• Provision of diagnostic scans and other medical services</li> <li>• Providers of advice and information</li> <li>• Medical language</li> </ul> | <p><b>A business:</b></p> <ul style="list-style-type: none"> <li>• Convenient &amp; comfortable</li> <li>• Wide range &amp; high quality of services</li> <li>• Elements of promotional genre</li> <li>• Language (promotional)</li> <li>• Better than competitors</li> <li>• Provide a performance</li> <li>• Conversational language</li> </ul>                  |
| <p><b>3/4D Scans</b></p>       | <p><b>A medical procedure:</b></p> <ul style="list-style-type: none"> <li>• Full range of diagnostic scans</li> <li>• Are 'not solely souvenir scans' / potential to show problems</li> <li>• Include checks</li> <li>• Safe (if protocols are followed)</li> <li>• Emphasis on need to attend routine antenatal appointments and scans</li> </ul>                                                                           | <p><b>A social event:</b></p> <ul style="list-style-type: none"> <li>• Opportunity to bond</li> <li>• A performance, 'a good show'</li> <li>• Emotional, enjoyable and thrilling experience</li> <li>• Reveals 'miracles of baby's development'</li> <li>• A family experience</li> <li>• Creating memories</li> <li>• Self-referred and non-diagnostic</li> </ul> |

(Table 5.2 continued)

|                       |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pregnancy</b>      | <b>A medical event:</b> <ul style="list-style-type: none"><li>• A time full of ‘anxieties, frustrations and concerns’</li><li>• Use of some medical language</li><li>• Importance of routine appointments, tests and scans</li><li>• Importance of technology and experts</li></ul> | <b>A special time:</b> <ul style="list-style-type: none"><li>• A ‘special and exciting time’</li><li>• A time to relate to the ‘baby’</li><li>• ‘Fairy tale’ view of pregnancy</li></ul>                                                                                                  |
| <b>Pregnant women</b> | <b>Patients:</b> <ul style="list-style-type: none"><li>• Pregnant women: anxious, concerned and emotional</li><li>• Need advice</li><li>• ‘Patients’</li><li>• Need technology/experts to ‘meet’ the fetus &amp; be reassured</li></ul>                                             | <b>Clients:</b> <ul style="list-style-type: none"><li>• In control of the scan</li><li>• Pay for the scan</li><li>• Audience</li><li>• Want to get to know and bond with the fetus</li></ul>                                                                                              |
| <b>Fetus</b>          | <b>Potential patient:</b> <ul style="list-style-type: none"><li>• In need of monitoring</li><li>• Medical language</li></ul>                                                                                                                                                        | <b>A family member &amp; person</b> <ul style="list-style-type: none"><li>• ‘the baby’ / ‘your baby’</li><li>• Cute, innocent, a ‘gift’</li><li>• Performer / ‘film star’</li><li>• Personality / characteristics / attributes &amp; behaviour</li><li>• A member of the family</li></ul> |

### ***Clinics***

Scanning clinics represent themselves as both a provider of medical care and a business. The expertise, skill and experience of their sonographers and the quality of the scanning equipment are highlighted. They also offer a range of other diagnostic scans and, in some cases, other medical services. While differences to

NHS scans are highlighted, similarities and links to the NHS are also emphasized. On the other hand, scanning clinics are also clearly businesses and the websites function to promote them. Private clinics are represented as 'imaging studios', providing a calm, relaxing and pleasant environment and superior, 'high-class' services.

#### *A medical care provider*

All company websites go to some length to establish their credentials as providers of medical care; they do this in terms of accreditation and links with professional bodies, the training and expertise of staff and the quality of the scanning equipment.

Three of the five websites refer explicitly to being registered with the Care Quality Commission, a requirement for private clinics since 2011 (W1, W2, W5). Most also mention links to a number of professional organisations (W1, W3, W4, W5). All emphasize the expertise, skill and experience of the staff carrying out scans, who are '*highly skilled and trained*' (W1) and '*fully qualified and accredited sonographers*' (W4). Two websites name the person(s) carrying out scans (with photos) and give details of their training and expertise; in one case (W3) this is a consultant obstetrician and gynaecologist, in the other an independent clinic with three sonographers (W5).

*'All of our staff are fully qualified sonographers with many, many years experience scanning within the NHS and performing private*

*3D/4D scans. We have performed in excess of 10,000 scans since establishment so you can feel confident and secure you are in safe, experienced hands!’ (W2)*

All websites highlight the quality of their scanning equipment, using terms such as ‘world leader’ (W1, W2), ‘latest ultrasound technology’ (W1, W2, W3), ‘the very latest in 3D/4D ultrasound technology’ (W4) and ‘top of the range ultrasound machine’ (W5). Some claim to be the only company using that particular equipment (W2). Three of the websites (W2, W3, W5) show pictures of the scanning equipment. Several websites emphasize their links with the NHS, either in terms of using the same equipment (W1, W2) or the training and experience of staff (W3, W5).

All companies offer a range of other pregnancy scans, such as dating, anomaly and sexing scans. Some also offer other services, including Group B Strep testing (W1), amniocentesis, CVS, obstetric care, gynaecological scans and surgery (W3), and allergy testing and vaccines (W4). Some companies offer scan packages which include diagnostic scans as well as a 3/4D scan:

#### Baby Premier 'birthing' scan package

Consisting of the four major antenatal ultrasound scans giving you the peace of mind and the opportunity for you to bond with your baby at several key dates during your pregnancy:

- Viability and dating scan
- Nuchal scan (inc. blood test)
- Anomaly scan
- 4D Premier Plus Bonding and reassurance scan

W1

Several websites position themselves as expert, with the role of giving advice. This is apparent, for example, in an *'Ask the Expert'* section (W1) and assertions that staff will give *'expert advice'* (e.g. W5).



W1

The websites predominately use a conversational tone, with terminology accessible to lay people. However, some medical and technical language is also used, particularly in pages describing what 3/4D scans are. Some websites (W1, W3, W4) refer to clients as *'patients'*. All websites refer to the fetus mostly as *'baby'* or *'unborn child'*, however occasionally they also use *'fetus'* (W1, W3, W4). The two websites for independent local clinics do not use *'fetus'* at all (W2, W5), though W2 refers to *'foetal abnormalities'*. Similarly, *'uterus'* is occasionally used instead of the more commonly used *'womb'*.

Van Dijck's (2005) investigation into Dutch commercial scanning companies reflects these findings; these companies do not simply promote themselves as offering ultrasound images for prospective parents, but also emphasize medical aspects of the scan, qualifications of the sonographers and the scan's diagnostic capabilities.



### *A business*

Some of the websites emphasize the '*convenience*' of services provided, including the location of the clinic(s) (W1, W5) and available appointment times (W4). The clinic environment is often described as comfortable and relaxed, sometimes in contrast to routine NHS care ('*relaxing away from the hospital experience*', W5). The services provided by the companies are described as being focused on the clients and taking into account their needs, e.g. family-orientated or patient-centred. The images of the clinics provided on some websites give the impression of comfortable, modern and stylish facilities.



W5

As is typical of a business, the websites all emphasize the wide range and high quality of their services. They offer a range of scan '*packages*' with a number of '*extras*', such as key rings and photo frames. One company (W2) offers to host baby showers. The services provided are described as high quality and professional.

All websites contain elements of a '*promotional genre*' (see Section 5.3.3); it is the dominant genre for W1, W2, W4 and W5. The language used on the websites is

often that of (self) promotion and 'marketing speak', with terms such as 'service', 'premier', 'surpasses your expectations', 'stylish', 'Premier plus' (W1), 'exclusive' (W1, W2), 'fantastic opportunity' (W2) and 'truly perfect' (W2). This language is less evident on the website for the consultant-run clinic (W3). The use of language is also of note with respect to how the companies refer to themselves. Only two websites (W1, W4) refer to themselves as a 'clinic', and even then sparingly. Terms used to describe the companies include 'private ultrasound organisation' (W1), 'private imaging provider' (W1), '4D image studio' (W1), 'private ultrasound company' (W2), '4D scan service' (W4), 'scanning centre' (W5), and 'independent professional ultrasound imaging studio' (W5).

The nature of the scan provider as a business is also reflected in claims that the services provided by a particular company are better than those of competitors. For example, 'How are our 4D scans different?' (W1) implies that the scans offered by this company are better than others. Another company (W2) claims to be the only private ultrasound provider in the region to use a particular type of scanning equipment, while yet another states that it is the only company in that area which will re-book clients if it is not possible to obtain clear images and which lets clients choose their own images (W5).

Rather than performing a diagnostic procedure, the websites give the impression of providing a performance; this is particularly the case for W1, W2, W4 and W5. This is discussed further in the section on the identity of scans.

The use of conversational language contrasts with the more medical/technical language of medical care providers. This includes frequent use of the pronouns 'we', 'our', 'us', 'you' and 'your', as well as lay language such as 'baby', 'womb', 'tummy', 'mum' and 'mums-to-be'.

### **Scans**

A strong contrast between a medical and social view is evident with regards to the representation of scans. While scans are shown as diagnostic procedures and an opportunity to check '*foetal well-being*', they are also represented as social events: an opportunity to bond and provide reassurance, a '*family experience*', a performance and a chance to obtain '*treasured memories*' and '*memorable keepsakes*'.

#### *A diagnostic procedure*

Several websites state explicitly that 3/4D scans are non-diagnostic (W2, W4, W5). However, there are some contradictions, e.g.: while scans are '*purely for your enjoyment*' they are also '*not solely souvenir scans*' (W5). All websites acknowledge that 3/4D scans can potentially show previously undetected problems, e.g. '*Very rarely, there may be a problem that is totally unexpected and we are the bearers of bad news*' (W1). Scans are therefore presented as at least having the potential to diagnose problems. In addition, one website suggests that 3/4D scans improve bonding, which '*has been shown to enhance the mothers [sic] care of herself and therefore her baby*' (W3), thus arguing that 3/4D scans have potential health benefits for the fetus.

All companies offer a range of other pregnancy scans; some also offer other obstetric and gynaecological services (see above). This positions even the supposedly 'non-diagnostic' scans within a context of diagnostic scans. In addition, most websites further emphasize the medical aspects of scans by stating that 3/4D scans include some checks of fetal well-being, such as '*a full growth assessment*' (W1), '*the baby is checked and measurements are taken*' (W3), a '*foetal well-being check*' (W4), and '*diagnostic assessment is made of the fetal heart, stomach, kidneys and bladder*' (W5).

All websites claim that scans do not pose any risk to either the pregnant woman or the fetus; some add the caveat that this is the case as long as guidelines are followed. This also puts scans into a medical context. Furthermore, the following quote implies that scans are safe because they are routine.

**Could 3D/4D scanning be unsafe?**

Extensive studies in ultrasound have shown that ultrasound does not cause any harm to the mother or baby. Indeed, routine scanning of all pregnancies now occurs throughout the whole of Europe. In 3D/4D scanning exactly the same type and intensity of ultrasound is used as with conventional scanning, 3D scanning in fact reduces the exposure since by storing the data on to a computer so that the baby's anatomy can be examined off line.

W3

Most of the websites (except W1 and W5) state that 3/4D scans do not replace routine scans and highlight the need for pregnant women to attend all routine antenatal appointments, scans and tests:

**Does this replace my hospital scan/do I still need to attend hospital?**

Yes definitely. Your before the stork scan is completely optional and is in addition to your routine NHS antenatal care. You must still attend all of your normal hospital appointments.

W2

These quotes not only present routine scans as normal and desirable, but the description of the 3/4D scans on W2 as ‘optional’ implies that routine scans are not optional.

#### 18. Do I still need to attend all my hospital scans?

Yes. 4D scanning is not part of your NHS antenatal care and you should attend all hospital and midwife appointments as normal.

W4

#### *A social event*

The alleged ability of 3/4D scans to enable or enhance bonding is mentioned on all five websites, though some pay more attention to this (notably W1 and W2). Claims are made that seeing the fetus enables pregnant women and their partners to ‘meet their unborn child’ (W2), get to know the baby and therefore ‘relate to baby in such a personal way’ (W1); a 3/4D scan is a ‘unique opportunity to see and bond with’ the fetus (W4). Claims are also made that 3/4D scans enhance bonding more than 2D scans (W3), a statement which is not supported by current evidence (see Chapter 3).

#### **Mother and Baby Bonding**

Your pregnancy is special to us too. You know you have a baby on the way, but it is still hard to believe. Just imagine how wonderfully bonded you would feel if you could actually see your baby. Well now you do not have to imagine with a Baby Premier 4D bonding scan you really can see your unborn baby as it is now possible to visualise the appearance of your baby. The 4D ultrasound scan generates real time like images of your unborn baby in the womb which you will see immediately.

W1

*‘... is a ultrasound scanning company that offers parents a chance to meet their unborn child for the first time without the distractions and time restrictions of a busy antenatal clinic. Ultrasound scans are believed to enable families to form an*

*early affectionate bond to their unborn child and provide a reassuring image of the unborn child in the mother's womb.'* (W2)

Bonding between parents and baby has been shown to be stronger when the 3D image is compared to the 2D image because the picture of the baby is more realistic. Improved bonding has been shown to enhance the mothers care of herself and therefore her baby.

W3

On two of the websites in particular (W1 and W2), scans are frequently referred to as '*Bonding Scans*'; the collocation of 'bonding' and 'scans' and the capitalisation of both words emphasizes the supposed bonding effect of scans; W1 in particular uses the word 'bonding' very frequently. This emphasis on bonding is not just evident in the text but also in images. Two images on one website (W1) refer specifically to '*The Baby Bonding Experience*'; they show a woman holding up a young baby and a newborn with a bow (see page 115)- thus making the link with the baby after birth. Notable is also the collocation and alliteration in '*Baby Bonding*'.

The Baby  
Bonding Experience



W1

The metaphor of the 3/4D scan as a performance or a show is very prominent on some of the websites, particularly W1 and W4. This is apparent not just in the text

but also in the images used. For example, the name of one company (W1) suggests a performance or show ('Baby Premier'); the logo of this company is a clapperboard. Another company's 3/4D scan service is called 'Filmstar Baby' (W4); the logo consists of a 'strip' of film with the silhouette of a mother and baby and the name of the company. One website (W2) suggests that '*baby is in charge of the show!*'.



W1



W4

There are also less explicit signals that suggest that 3/4D scans are performances. The frequent use of the word '*baby*' puts it clearly centre stage; one website (W5) suggests that '*Baby is boss!*' with respect to what happens during the scan. Most of the websites mention large screen televisions which show the images during the scan not just to the pregnant woman and her partner, but also to friends and family – the audience: '*We have 5 chairs in the scan room, positioned so everyone can see the flat screen TV*' (W5). This puts the clinic/sonographer in the role of performing the scan – directing and putting on the performance. Most websites frequently mention the 'product' of the performance, the images and '*movies of their unborn baby*' (W2), emphasizing the '*high quality*' (W5) of these '*precious moving images*' (W1) which offer a '*sneak preview*' (W1) of the baby. The images and '*quality movies*' (W2) are '*thrilling*' (W1), '*exclusive*' (W1) and '*breathtaking*' (W4), descriptions which evoke the image of the première of a long-awaited,

exciting film. Indeed, one of the companies (W1) uses the word *'Premier'* as part of its name.

This reflects findings from an observational study by Kroløkke (2011, 2009), which suggests that the 3/4D scan is a performance in which the expectant parents do not just take part, but also act as co-performers. The fetus, while appearing passive, plays a central role as the *'star of the show'*. Kroløkke (2009) argues that like a theatre or cinema performance, the 3/4D scan is staged: the image is not real, but created by computer software. It does, however, have a *'staged authenticity'* (Kroløkke 2009) as attempts are made demediate the technology, thereby erasing it and giving the impression that what can be seen on the screen is real.

The one website which does not mention images and films repeatedly (W3) does nonetheless contain a large number of 3/4D images. On the whole, the language on the websites is very focused on the visual, e.g. *'seeing is believing'* (W1) and *'Watch me grow'* scan (W2).

Scans are talked about in emotional terms, not just with respect to seeing and bonding with the fetus, but also in terms of promoting reassurance (W1, W2,W3) and *'peace of mind'* (W1). They are presented as *'thrilling'* (W1), a *'special moment'* and a *'beautiful ... experience'* (W2), *'magical time'* (W5) and a *'wonderful experience'* (W5).



The images used also play an important role, particularly on W1. All websites use a large number of 3/4D images, with the fetus looking as 'baby-like', and therefore cute and appealing, as possible. One website (W1) also uses a number of other images which portray the scan as an emotional and enjoyable experience.

Baby Premier  
Seeing is believing



Welcome to  
your baby's world



W1

Less emotionally, scans are also presented as providing information about the fetus, such as the '*miracles of baby's development*' (W1), fetal growth, a '*clear image of your baby's features*' (W3), and fetal sex (all websites). Scans enable prospective parents to see the fetus '*for real*' and in great detail (W4). This is linked to the parents '*getting to know*' the fetus.

Scans are portrayed as a '*family experience*' (W5) and clients are encouraged to bring family and friends and/or share the images and films with their '*loved ones*' (W2) after the scan. One company (W2) even hosts baby showers.

### **Who can I bring with me?**

You can bring whoever you want to share your wonderful experience with you. Our spacious scan room can comfortably accommodate 5 chairs; bring all the family if you want to we don't mind at all, we believe this should be a family experience!

Children are very welcome to come and see their new family member but should be supervised at all times. We do have a play area for children in the waiting area.

W5

### **Option 5 VIB (very important baby) package £400**

#### **A truly perfect baby shower for mum to be**

Why not have your baby shower at Before the Stork, let us take care of you and your guests for the evening by offering exclusive use of our services on your baby shower night and the chance to come and bond with your baby. Includes:

- Bouquet of flowers for mum to be
- Refreshments for you and up to 10 guests
- Light snacks for you and up to 10 guests
- Private use of our facilities between 7pm and 9pm on a convenient evening for friends and family to meet your baby
- 8 6x4" high glossy pictures of your choice
- CD Rom of all images taken throughout your session
- DVD of approximately 20 minutes with music to share with your loved ones
- A keyring for each guest

W2

#### **Can I bring my family and friends along with me to watch my scan?**

Yes of course! This is, after all your experience and we encourage you to invite your loved ones along to enjoy the wonderful experience with you (especially since numbers are usually restricted during routine hospital scans). We can comfortably sit 4 but if family members don't mind standing additional guests are welcome and we do have a large wall mounted screen so everyone should be able to see but please be a little reasonable with numbers.

W2

Three of the websites (W2, W4, W5) explicitly talk about 3/4D scans in terms of creating '*treasured memories*' (W4) and '*keepsakes*' (W2), '*to keep forever as a reminder of this special time*' (W5).

*'These are items to be kept forever – maybe to form the basis of your child's memory box, to be brought out and viewed on their wedding day and to be passed on to their children!'* (W4)

As discussed above, three of the websites explicitly state that 3/4D scans are '*non-diagnostic*' (W4), '*not performed as a check for foetal abnormalities*' (W2) and '*a non-medical form of imaging*' (W5), which position these scans within a social dimension.

### ***Pregnancy***

Pregnancy is portrayed as a time full of anxieties, frustrations and concerns, requiring routine monitoring through tests and scans. On the other hand, there is also strong evidence of a sentimentalised view of pregnancy – a '*special and exciting time*' which provides a unique opportunity to relate to the unborn baby.

#### *A medical event*

Several websites portray pregnancy as a time of '*anxieties and frustrations*' (W1) and '*hard to believe*' (W1) – being '*sure*' is beneficial (W1). Some websites (W1, W2, W3) claim that 3/4D scans provide reassurance, which suggests that it can be an anxious time. As already discussed above, some medical terminology is used on the websites with regard to pregnancy (e.g. fetus, uterus).

As discussed above, most websites emphasize the importance of attending routine antenatal appointments, tests and scans. Pregnancy is therefore portrayed as

being in need of monitoring. Scans are presented as *'routine'* (W2, W3, W5) and *'normal'* (W3, W4)

Linked to the need for routine appointments is the importance of experts and technology. As discussed above, two of the websites explicitly describe the clinic/staff as *'experts'* (W1, W5). As all websites are concerned with scans, technology is necessarily in the foreground, as is evident by the emphasis all websites put on the *'state-of-the-art equipment'*. Furthermore, some websites (notably W1) claim that scans are necessary to enable prospective parents to bond with the fetus and to gain reassurance. W2 for example suggests that the prospective parents do not meet their baby until the scan.

#### *A special time*

Three websites (W1, W4, W5) specifically refer to pregnancy as a *'special'* time. According to W5, during pregnancy *'every second of every day is a precious moment as the miracle of life begins'*. Pregnancy is also presented as a time to *'relate'* to the fetus, with *'key dates'* for bonding (W1); while W5 suggests that *'the relationship with your baby' begins 'as soon as you know that you are pregnant'*.

Most websites present what could be argued to be a *'fairy tale'* view of pregnancy (and motherhood). This is evident in some of the language used, describing pregnancy as a *'special time'*, as well as the largely non-medical language. The assumption that the pregnancy is wanted by both prospective parents is implicit on all websites.

Orientation to difference with regards to the experience of pregnancy is low; there is no evidence for dissenting voices, for example from women who find pregnancy difficult and not enjoyable. The portrayal of pregnancy as a 'special time' reflects Kroløkke's (2010:148) findings in her analysis of the marketing materials of 3/4D scanning companies, which show pregnancy as a universally happy, special time and present 'a very mainstream ideology of motherhood'.

### ***Pregnant women***

Pregnant women and their partners (and families) are represented as both patients and customers. The role of patient is less explicit, and only apparent in the occasional use of language and the underlying medicalised approach, such as the need for technology for pregnant women to get to know their unborn baby and to gain reassurance.

### ***Patients***

As indicated above, pregnancy is an emotional time and consequently pregnant women are often anxious and '*frustrated*' (W1) as well as being '*impatient*' (W4) and sometimes '*feeling a little low*' (W4). They are also represented as needing advice and information (W1, W3, W4), which is provided by the clinics. Most of the websites (W1, W3, W4, W5) at some point explicitly refer to pregnant women as '*patients*'.

As discussed above, all websites also make the assumption that pregnant women need routine antenatal care, including scans, as well as needing technology and experts to monitor the pregnancy, bond with the fetus and gain reassurance.

### *Customers and audiences*

The presentation of scanning clinics as businesses which offer choice puts pregnant women and their partners to some extent in control of the scan. This is reflected in some of the language, such as choosing different packages and images and the use of the phrase '*your scan*' (W1, W2, W4, W5). While W3 does not refer to '*your scan*', the name of the company, '*myScan*', gives ownership to clients. Pregnant women and their partners are also obviously clients as they pay for the scan, which is highlighted by the range of packages which most websites offer.

As suggested above, pregnant women, their partners, friends and family are also, more or less explicitly, portrayed as an audience, both during the scan and after. All websites take for granted that the prospective parents want to get to know and bond with the fetus. This is more apparent on the websites which put more emphasis on bonding (W1, W2, W5). Most websites also assume that clients will '*treasure*' images and films. The focus on the fetus as a future baby is paralleled by the portrayal of clients as if they are already parents. All websites refer to the pregnant woman as '*mother*' or '*mum*', while W1 refers to her partner as '*father*'.

## ***Fetus***

The fetus is represented as both a potential patient, vulnerable and in need of monitoring, and an individual and family member, who already behaves like a newborn and has a distinct 'personality'.

### *Potential patient*

As already suggested above, all websites assume that monitoring the fetus throughout pregnancy is essential to 'make sure everything is ok'. The fetus is vulnerable and potentially at risk. Even though the word '*baby*' is used predominantly, occasionally '*fetus*' and other more medical language is used, particularly when discussing possible problems and describing what scans can show.

### *A family member and person:*

However, the fetus is predominantly represented as a person, as indicated not only by the frequent use of the word '*baby*', but also by the focus on the baby overall. All websites make a clear link between the fetus during pregnancy and the 'future baby' after birth. Some websites reinforce this link by showing scan images alongside photos of the baby after birth, e.g. 'before and after galleries' (W2, W5). Claims are also made that the fetus may exhibit '*many of the characteristics of the newborn – smiling, stretching, kicking and yawning*' (W4). Noticeable is also overlexicalisation, e.g. '*the unborn baby in the womb during pregnancy*'.

The fetus is represented as cute and innocent; this is particularly evident in some of the images used, especially on W1. This website also presents the fetus as ‘a gift’ in one of the images: something to be treasured. As discussed above, the baby is also represented as a *‘film star baby’* (W4), centre stage, the *‘star of the show’* (W2).



W1

The fetus is portrayed as an individual, a person. Some websites, particularly W5, attribute personality characteristics to the fetus, such as *‘naughty, hiding or being shy’* (W5), *‘cheeky’* (W5), *‘not co-operating’* (W5), while twins might get *‘cosy’* and *‘cuddle up to each other’* (W5). Other behaviours are also ascribed to the fetus, who might *‘yawn, cry, swallow, blink and perform intricate finger movements’* (W3), make *‘animated facial images and movements’* (W1) or demonstrate *‘yawning, smiling, kicking or even sucking its thumb’* (W4).

Scans are portrayed as a *‘family experience’* (W5) and the involvement of friends and family in the scan itself and sharing the images after the scan, as well as the construction of scan images as *‘keepsakes’* and *‘mementos’*, as discussed above, helps to turn the fetus into a member of the family even before birth. This is also



evident in the suggestion that a 3/4D scan will '*Welcome baby into your world*' (W2).

### **5.3.2 Discourses**

A number of discourses are evident on the websites: a medicalised discourse of pregnancy, a discourse of 'good mothering' and a discourse of entertainment. These discourses are to some extent interlinked, but are nevertheless recognisable as distinct discourses.

#### ***Medicalised discourse of pregnancy***

As discussed in Chapter 2, a medicalised discourse of pregnancy considers pregnancy as inherently risky and normal only in retrospect, thus redefining pregnancy as a medical event (Hyde & Roche-Reid 2004; Riessman 1992; Oakley 1984). Consequently, pregnant women have become patients, in need of monitoring and requiring the input of technology and experts (Oakley 1984), which is also evident on these websites.

While 3/4D scans are generally portrayed as non-diagnostic, entertainment and 'fun' on scanning clinic websites, a strong medicalised discourse of pregnancy is also evident; its assumptions, presuppositions and values permeate all websites. This is reflected in the identities constructed by the scanning company websites: scanning companies are portrayed as medical care providers, scans as a medical procedure, pregnancy as a medical event, pregnant women as patients and the fetus as a potential patient. Generally, there is a very medical 'tone' to the

websites, though this applies to some more than others. There is a lot of emphasis on the latest technology, highly trained staff and references to professional organisations. As discussed above, the language used is at times very medical, e.g. 'patients' 'fetus', 'uterus', and pregnant women are portrayed as needing advice from experts.

The portrayal of routine scans as normal, beneficial and necessary is also part of this medicalised discourse. In addition, 3/4D scans are portrayed as optional, which suggests that routine scans are not (see above). The language is indicative of a medicalised, paternalistic model of maternity care: *'You must still attend all of your normal hospital appointments'* (W2).

Scans in general are portrayed as a beneficial technology which not only monitors pregnancy, but also encourages bonding and reassurance (W1, W2). One of the 'ideological assumptions' (Fairclough 2003) made is that pregnant women need technology not just to 'ensure' a safe outcome, but also to reduce anxiety and promote bonding:

*'Seeing is believing ... You know you have a baby on the way, but it's still hard to believe. Just imagine how wonderfully bonded you would feel if you could actually see your baby Well now you don't have to imagine with a Baby Premier 4D scan you really can see your baby'.*

(W1)

Technology, i.e. scans, also provides proof that the pregnancy is real – the embodied experience of pregnancy is not enough to make it real. The collocation of ‘baby scans’, ‘bonding scan’ and ‘reassurance scan’ on some websites (W1, W2) normalises scans in pregnancy and suggests that the two terms go together naturally.

The evidence of a medicalised discourse of pregnancy goes beyond the contents. Many of the websites have a paternalistic and sometimes authoritarian tone, which is partly evoked by the mostly declarative grammatical mood. Orientation to difference, i.e. the extent to which different voices are represented, is very low. There is evidence of ‘bracketing of differences’, ‘focus on communality’, ‘consensus, normalization/acceptance of differences of power’ (Fairclough 2003:41/42) and no acknowledgement is made that pregnant women are all individuals with different experiences, wants and needs. Instead, ‘relations of equivalence’ (Fairclough 2003) are set up and pregnancy is presented as a unifying, overriding (medical) condition which subsumes the individuality of pregnant women. There is no acknowledgement of dissenting voices.

Higher-level semantic relations are largely of a problem-solution relation: scanning companies provide something pregnant women need; technology provides a solution to pregnant women’s problems.

The prominence of a medicalised discourse of pregnancy varies from website to website. All emphasize the use of the latest technology and the skills and expertise

of staff, but not all of them portray pregnancy as medicalised to the same extent.

The website of the company with a large number of franchises throughout the UK

(W1) goes furthest in this medicalised portrayal.

### ***'Good mothering' discourse***

One of the discourses of motherhood is a discourse of 'good mothering' or what it means to be a 'good mother'. This discourse not only considers the role of a woman who has had children to be primarily a mother, but also that a mother's focus should be her children and how to enhance their health and well-being, both physically and psychologically. Pregnancy has traditionally been considered an anticipatory stage in which a woman prepares for motherhood; e.g. Maternal Role Attainment theory (Rubin 1967) suggests that the maternal role identity is achieved through a process which begins in pregnancy (Mercer 2004).

However, as discussed in Chapter 2, it can be argued that pregnancy is now not only a time for anticipating motherhood, but already part of early motherhood (Jomeen 2010). Being a mother now starts in pregnancy, if not before, and consequently the discourse of 'good mothering' has been brought forward into pregnancy, often involving the use of technology (Foucault 2005). In pregnancy, 'good mothers' not only do all they can to maximise the health and well-being of the fetus, they also begin a relationship with the fetus (bonding) and ensure that the fetus is accepted into the wider family.

The discourse of 'good mothering' in pregnancy is embedded deeply in the websites, with respect to how women feel about pregnancy and how they relate to the fetus and ensure its health and well-being. A 'good mother' welcomes and enjoys pregnancy, seeing it as a special time. One website (W1) for example states that '*We know pregnancy is a very special time*' and according to another (W5) '*every second of every day is a precious moment as the miracle of life begins*'. There is no acknowledgement that some women may feel ambivalent about being pregnant. Furthermore, women are reduced to their role as mothers. One website (W1), for example, uses 'mother', 'mum' or 'mum-to-be' as synonyms for pregnant woman, which may indicate that being a mother is the most important aspect of a woman's identity. In her analysis of scanning clinic marketing materials, Kroløkke (2010) found the same use of language when referring to pregnant women.

Overall, orientation to difference is minimal: *all* pregnant women and mothers are assumed to feel like this; there is no acknowledgment that pregnant women have different experiences, that not all pregnant women are happy to be pregnant, enjoy pregnancy or want to bond, see and 'get to know' the fetus. It could therefore be argued that the websites 'fail to engage with diversity in women's experiences of reproduction' (Marshall and Woollett 2010:364).

'Good mothers' want to minimise risk and ensure the safety of the fetus. Consequently they seek good quality care during pregnancy, and are willing to pay if necessary. Good quality care includes scans, which are presented as essential during pregnancy to ensure safety (see above) and give '*peace of mind*' (W1).

Therefore 'good mothers' do not only have routine scans, but also opt for private ones.

However, being a 'good mother' during pregnancy does not just extend to wanting to ensure the physical health of the baby. It also includes the emotional aspect of bonding with the baby, of building a relationship even during pregnancy. It is taken for granted that a pregnant woman wants to bond with the baby and that 3/4D scans can assist with this. The scans are, for example, portrayed as a '*unique opportunity to see and bond*' with the baby (W4), with the implication that a 'good mother' takes up this opportunity, while a 'bad mother' might not make the effort. Bonding is described exclusively in positive terms, e.g. as '*wonderfully bonded*' (W1) and phrases such as '*relate to the baby in such a personal way*' (W1) emphasize the importance of bonding.

The focus on bonding is also reflected in some images. On the website which uses the most images (W1), several of the images show a woman holding a baby close, her gaze focused lovingly on the baby (see above). Bonding with the fetus is also portrayed as potentially having physical benefits to the fetus: '*Improved bonding has been shown to enhance the mothers [sic] care of herself and therefore her baby*' (W3). Consequently bonding is important not just in order to establish a good relationship with the baby even before birth, but also for fetal health; taking care of herself does not just benefit the pregnant woman herself, but also the fetus.

All websites refer to the fetus mostly as 'baby', some also as 'unborn child'; pregnant women are almost exclusively referred to as 'mothers' or 'mums'. This choice of vocabulary underlines that 'good mothering' is brought forward into pregnancy – the fetus is already a baby, a child, and the pregnant woman is already a mother. It also encourages pregnant women to think of the fetus as their child, for example with frequent collocation of 'your' and 'baby'.

A 'good mother' also does her best to incorporate her baby into the wider family, sharing the scan and images with others, and starts to build a collection of 'memories' for the child:

*'bring all the family if you want to we don't mind at all, we believe this should be a family experience!'* (W5)

*'treasured momentos [sic] to share with friends and family. These are items to be kept forever – maybe to form the basis of your child's memory box, to be brought out and viewed on their wedding day and to be passed on to their children!'* (W4).

### ***Entertainment discourse***

There is also evidence of an entertainment discourse, which is most evident in the way the 3/4D scan is presented as a performance (see above), with the fetus as the performer the pregnant woman, partner and family as audience and the clinic as both the place of the performance (the 'theatre') and the 'director' of the

performance. This is expressed in both the language used and some of the images, as discussed above.

Part of the entertainment discourse is the presentation of 3/4D scans as something that is done for fun, but is also a nice, interesting experience. As discussed above, scans are described as *'thrilling'* (W1), *'a magical time'* (W5) and a *'wonderful experience'* (W5). They are an experience that can be enjoyed for itself. There is also a sense of 3/4D scans being exciting because they are a fairly new technology and quite unusual, something that not everybody has done or seen.

### **5.3.3 Genres**

#### ***Promotional genre***

The strongest genre evident on the websites is a promotional genre: their aim is to promote 3/4D scans and the companies themselves. Linguistically, there is clear evidence for this: all make frequent use of 'self-mention', i.e. 'we' and 'our' when referring to their qualities, staff and services, thus creating an identity for themselves. The company name is also referred to frequently, which helps to create a unique identity (Samson 2007).

The content of the websites is typical of promotional material: the company's excellent services, *'highly trained staff'* (W3), *'state-of-the-art, technologically advanced ultrasound equipment'* (W4) are promoted as being exceptional. As a promotional text, the websites promote not only private 3/4D scans, but also the



particular company. Therefore the websites do also need to establish why their company is better than potential competitors. Some websites explicitly state that they are better than competitors, e.g. *'the country's premier private ultrasound organisation'* (W1).

Wernick (1991) suggests that promotional messages permeate the symbolic world, turning contemporary culture into a 'promotional culture' (Fairclough 2003). Consequently texts which have other functions also simultaneously have a promotional function (Fairclough 2003). In the case of these websites, however, promotion seems to be the primary function.

Promotional messages simultaneously represent (make factual statements), advocate (evoke implicit values through factual statements) and anticipate (by blurring the distinction between factual statements and predictions) (Fairclough 2003; Wernick 1991). The scanning company websites do indeed do all three. They *represent* 3/4D scans in factual statements, with virtually no orientation to difference (i.e. without dissenting voices), even though some of these factual statements are actually incorrect, such as claims about 3/4D scans and bonding. The websites also *advocate* 3/4D scans by evoking implicit values regarding the benefits of 3/4D scans, for example with regards to bonding: bonding is implicitly good. They also *anticipate* the effect of 3/4D scans by making claims regarding their benefits which are not necessarily based on fact, e.g. that 3/4D scans increase bonding. Thus, 3/4D scans and their benefits are represented in seemingly factual terms, as indicated by the frequent use of realis statements.

### ***Patient information leaflet***

There is also evidence of a further well-documented genre, the patient information leaflet, which includes the information provided with medication and leaflets about medical procedures or specific illnesses.

Evidence for this includes the contents of the websites; besides promoting scans and scanning companies, the websites also serve to provide information about the 3/4D scan. All websites provide information about what 3/4D scans are, what they can and cannot show, how safe they are, how to prepare for the scan, what happens during and after the scan and what happens if a problem is detected. All websites except one (W1) provide this information in a Frequently Asked Questions section.

This genre is also apparent in some of the lexical and syntax choices made on the websites. Gruböck (2008), for example, found that while vocabulary from common language dominated patient information leaflet, the proportion of technical and academic language was still relatively high. This applies to these websites, which are mostly written in lay language but do also contain some technical and medical terms, particularly when explaining scans and scanning procedure in some detail.

## **5.4 Discussion**

### **5.4.1 Differences between websites**

Although there is some evidence of these identities, discourses and genres on all websites, there are noticeable differences between the websites. The first website is by far the largest and most detailed website, providing clear evidence of all the identities, discourses and genres described above. The fourth website, while smaller, also contains all elements. The third website, of the scanning clinic run by an obstetrician and gynaecologist, is smaller and very clearly more medical in focus, with strong evidence of a medicalised discourse of pregnancy and some evidence of good mothering, while the entertainment discourse is almost absent. Unlike the other websites, the promotional genre is less evident than the patient information leaflet genre. The second and fifth websites are similar; both have a stronger focus on good mothering and entertainment, rather than on medicalised pregnancy and the promotional genre dominates. All websites promote scans as beneficial for bonding and reassurance, as well as a good experience.

### **5.4.2 Complementarity and conflict: identities, discourses, genres**

While some of the identities, discourses and genres are overlapping and/or complementary, there are also areas of conflict. This is evident within all the dichotomous identities set up by the websites, but also between discourses and between genres.

### ***Medical discourse of pregnancy and 'good mothering'***

To some extent the medicalised discourse of pregnancy and the good mothering discourse are complementary: to be a 'good mother' a pregnant woman needs to follow medical advice and attend scans in order to ensure the safety of the fetus (Mitchell 2001). Not doing so would potentially endanger the fetus and make her a 'bad mother' (Jomeen 2010). The need for pregnant women and new mothers to follow medical directives, and therefore usually a medicalised discourse of pregnancy and mothering, is also evident in other areas of reproduction, including infant feeding (Marshall et al. 2007; Murphy 2003), health behaviour during pregnancy (Armstrong 2003; Oaks 2001) and antenatal care (Bessett 2010). While this also applies in health care generally, i.e. 'good patients' follow medical advice, 'bad patients' do not (e.g. Kelly and May 1982), the additional dimension of the fetus/baby adds a further moral imperative which is harder to resist: not adhering to medical advice puts the fetus at risk.

### ***'Good mothering' and entertainment***

There is a potential conflict between the 'good mothering' and entertainment discourses. A 'good mother' should focus on her fetus/baby rather than herself; Brown, Small and Lumley (1997:195) for example, who interviewed mothers about what being a 'good mother' meant to them, found that 'the idea that mothers might do things for themselves, even occasionally, was rarely raised'. Consequently, this might be in conflict with the entertainment discourse, the idea that 3/4D scans are just 'fun'.

### ***Patient information leaflets and promotional genres***

The two genres in evidence on the websites are also potentially in conflict. Patient information leaflets should provide evidence-based, unbiased information, enabling patients to make an informed choice and thereby empowering them (Dixon-Woods 2001). However, this creates a conflict with the websites' promotional nature. The information provided, e.g. on safety, is one-sided and lacks other voices, exhibiting a low orientation to difference and not providing balance. This points to an underlying conflict: the scanning companies offer a medical procedure which is promoted as being beneficial for pregnant women, their families and the fetus, while at the same time also needing to make a profit. This dynamic reflects dilemmas encountered generally by private health care companies and raises questions regarding the ethics of the commercialisation of health care. However, while they use equipment normally used for a medical purpose, 3/4D scans are not 'health care' as such, which leads to conflicts for commercial scanning companies offering these scans.

### ***Medical justifications for 3/4D scans***

A major area of conflict underlying these conflicting identities, discourses and genres is the fact that what is essentially a medical procedure is promoted by a private company. Within this wider context, it is important to note that several national and international professional organisations have made statements against the use of ultrasound scans without clear clinical indications, i.e. for 'entertainment' (ISUOG 2009; Chervenak & McCullough 2005; Voelker 2005; Rados 2004).

This creates a dilemma for scanning companies and the need to promote 3/4D scans as not just being 'for fun', but also having tangible benefits to the pregnant woman and/or the fetus. The websites give confusing messages in this regard. The strong underlying medical discourse on some websites, in particular W1, W3 and W4, can be interpreted as attempts to emphasize the medical side of 3/4D scans. Despite the presence of the entertainment discourse, which is stronger on some websites than others, a concerted effort seems to be made to ensure that 3/4D scans are presented as not just 'a bit of fun'.

All the websites make claims that 3/4D scans enhance bonding and/or provide reassurance, which, directly or indirectly, improve maternal and ultimately fetal well-being. One website (W3) attempts to give a medical justification for 3/4D scans by arguing that because research has shown that 3/4D scans increase bonding more than 2D scans and increased bonding leads to enhanced self-care by the mother, the fetus ultimately benefits from the scan. These claims are given further legitimacy by referring to research – even though in fact the research does not support these claims.

These various conflicts suggest not only that issues around private 3/4D scans are complex, but also that scanning clinics themselves are not clear about the exact nature and purpose of 3/4D scans. The conflicts are due to two factors: scanning companies are businesses that need to promote their services, but these services are strongly rooted within health care and there is therefore a need for them to be presented as beneficial to both the pregnant woman and the fetus.

Furthermore, like routine 2D scans, private scans are a hybrid practice (Taylor 1998) – they contain both medical and social elements. Scanning companies appear keen to promote them as medically beneficial *and* as a nice experience which brings the baby closer to the pregnant woman, her partner and the wider family.

#### **5.4.3 Discourses and 3/4D scans**

It could be argued that 3/4D scans have a dialectical relationship with the three discourses in evidence on the websites. While they are located within these discourses and are described and constructed by them, they also contribute towards them and develop them further. These scans may further the medicalised discourse of pregnancy by adding another medical procedure and promoting the medicalisation of psychological and social aspects of pregnancy, such as bonding. They may also contribute to bringing ‘good mothering’ forward into pregnancy – they potentially extend the scope of mothering by being something else that ‘good mothers’ should do during pregnancy. And finally, they may fulfil a similar function with regards to an entertainment discourse by affecting prospective parents’ expectations of entertainment during pregnancy.

The three discourses which are evident on these websites are important within a wider contemporary socio-cultural context. They are likely to have a major influence on the experience of pregnancy and motherhood, and as such are likely to influence pregnant women’s experiences of private 3/4D scans. The following chapters will explore how these discourses are reflected in women’s experiences.

## **Chapter 6 Methodology: IPA and case studies**

### **6.1 Introduction**

This chapter describes the study design, sampling, recruitment and data collection process for the interviews and case studies. These are similar, and in some cases identical, for the interviews and case studies and are therefore all described in this chapter. The study design was changed during the course of the study; the original design will be outlined briefly in this section, but then the study will be described as it took place.

This study used a longitudinal, mixed methods design. The longitudinal design made it possible to explore changes occurring during the course of pregnancy and as a result of the 3/4D scan. Quantitative and qualitative data were collected through questionnaires and interviews before the 3/4D scan, soon after the scan and several weeks later. Gathering data over a number of timepoints provided a more complete picture of how the experience of pregnancy and psychological parameters were affected by scans and how they changed over the course of pregnancy.



## **6.2 Study design**

### **6.2.1 Original study design**

Originally, the study aimed to collect data from both pregnant women and their partners at four timepoints: just before and just after the 3/4D scan, several weeks later and about six weeks after birth. For the qualitative element of the study, the aim was to recruit five men and five women for interviews at the first three timepoints and between eight and twelve individuals each for the two postnatal focus groups at timepoint four. Separate focus groups were envisaged for women and men in order to further explore the differences between women and men.

For the quantitative element of the study, questionnaire data was to be collected at the first three timepoints. This element was planned as a 2x3 between/within-group design, with men and women representing the between groups and three timepoints the within-groups. Gender and timepoints were planned as independent variables and psychological variables as the dependent variables. Power calculations suggested that for an effect size of 0.1 and a correlation among repeated measures of 0.5 a total sample size of 109 couples or 163 women would be needed. Taking into account that a number of participants were likely to drop out, the aim was originally to recruit 300 participants: 150 pregnant women and expectant fathers each, either as couples or individually. This number would have allowed a comprehensive statistical analysis, including factor analysis.

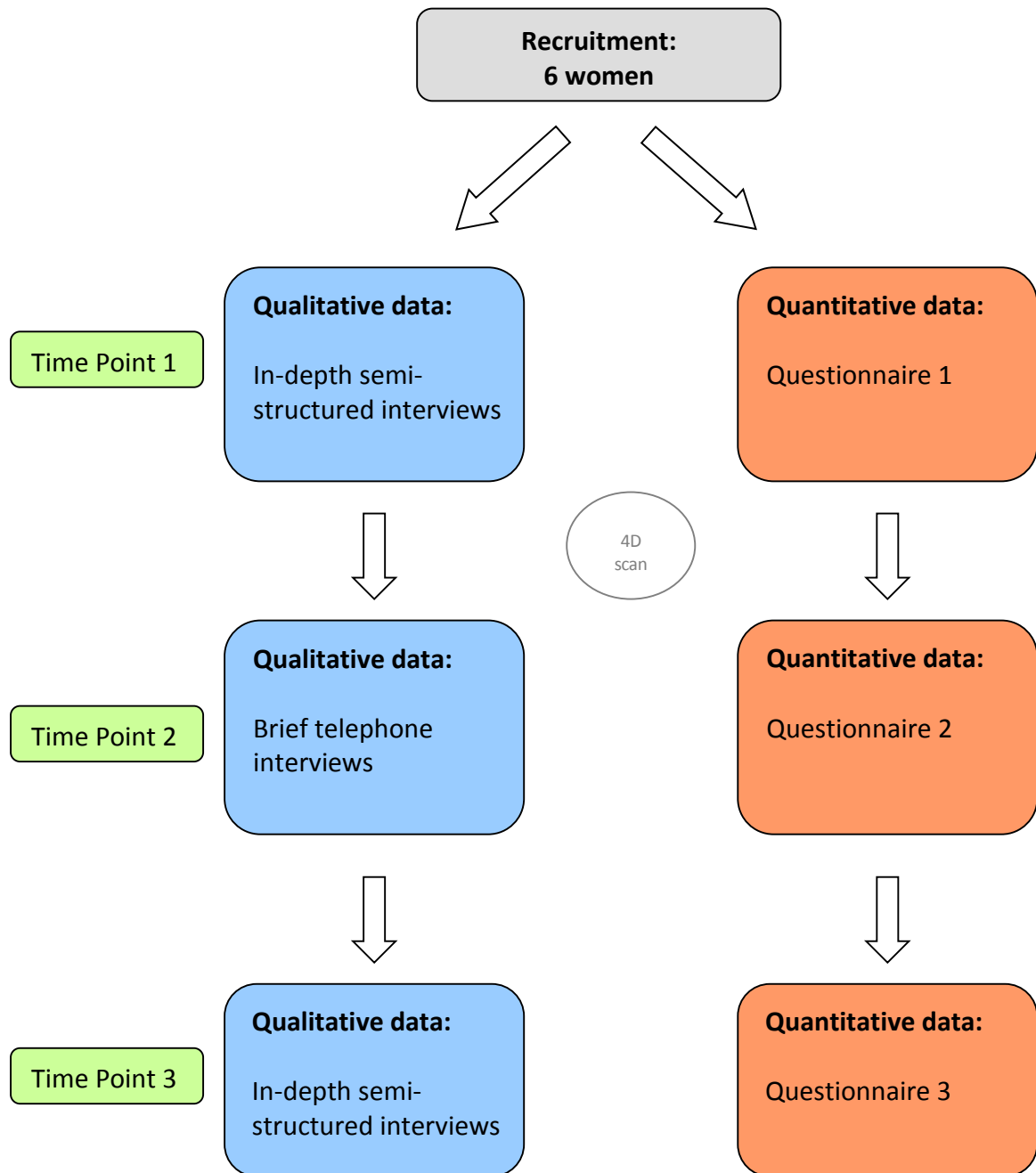
### **6.2.2 Changes made to the original design**

Several changes were made to the study for theoretical/philosophical reasons and due to difficulties with recruitment. The former have been discussed in Chapter 4. Recruitment proved to be very difficult (see Section 6.7). Consequently several changes were made to the study design. Only women were included in the research, no data was collected at the fourth timepoint (focus groups), and the large quantitative study was discontinued. The final study design is shown in Figure 6.1.

Despite the very low response rate the questionnaires were not excluded entirely for two reasons. Some women had already completed the questionnaires and it might have been considered unethical to discard this data (and their effort) completely. Furthermore, even though the questionnaire data could not be used for a detailed statistical analysis, they still provided useful information, particularly in conjunction with the interviews. Therefore the questionnaires were used together with the interviews to construct individual case studies for each woman.

Interviews were conducted with six women, rather than five women and five men. The approach chosen for the qualitative analysis, interpretative phenomenological analysis, requires small sample sizes and was therefore particularly suited to the number of women recruited for this study.

Figure 6.1 Final study design



### **6.3 Timepoints**

Both quantitative and qualitative data were collected at three timepoints throughout the late second and third trimester of pregnancy.

#### ***Timepoint 1***

The first set of qualitative and quantitative data was collected after the routine anomaly scan, which takes place around 20 weeks of pregnancy, and before the private scan. Most private clinics recommend that 3/4D scans are carried out between 25 – 30 weeks for singleton pregnancies, earlier for multiples. This timepoint needed to be several weeks after the anomaly scan in order to avoid potential effects of the anomaly scan on the psychological parameters investigated. Ideally the first set of data was collected during the week before the 3/4D scan in order to avoid any significant changes before the scan.

#### ***Timepoint 2***

The second set of data was collected as soon as possible after the scan in order to assess the immediate effect of the scan, as research has shown that this effect might be temporary. The interview at this timepoint was a brief telephone interview, focusing predominantly on participants' experiences of the scan and aiming to capture their feelings as soon after the scan as possible.

#### ***Timepoint 3***

Timepoint 3 took place several weeks after the 3/4D scan, around 36 weeks. The collection of quantitative and qualitative data at a second timepoint after the scan

was important, as previous research has shown that some effects of ultrasound scans in pregnancy may be temporary. For example, anxiety might be reduced initially after the scan, but may rise again later on (Harpel 2008; Saetnan 2000). If data are only collected soon after the scan, the slightly longer term effects might be missed. If, on the other hand, data are collected only several weeks after the scan, there will be no information about the immediate effects of the scan.

## **6.4 Questionnaires**

The questionnaires (Appendix 2) contained questions concerning basic demographic data, information about the current pregnancy, and previous pregnancies if applicable, questions regarding women's reasons for, and expectations and experiences of, 3/4D scans, as well as a number of psychological instruments.

### **6.4.1 Demographic and pregnancy information**

In order to gain a better idea of the women's background and to explore differences and similarities between them, some demographic information was collected in the first questionnaire, including age, marital status, ethnic group, highest educational achievement and annual household income. Information was also collected about the current pregnancy and, if applicable, previous pregnancies. This included the number of older children and an open question about previous pregnancy/ies; number of weeks of pregnancy; problems encountered in this

pregnancy; and number of scans and other tests so far in this pregnancy. The second and third questionnaire asked if there had been any changes relating to the pregnancy since the previous questionnaire.

#### **6.4.2 3/4D scans: reasons, expectations and experiences**

At Timepoint 1, women's motives for choosing a scan were explored through a list of possible reasons and an open question ('What made you decide to have a 4D scan?'). Participants were also asked about their expectations for the scan. At Timepoints 2 and 3, the questionnaire included a question about the extent to which their expectations of the scan had been met.

#### **6.4.3 Attitude to pregnancy**

A number of instruments to explore attitudes to pregnancy have been developed, including the Maternal Attitude towards Pregnancy Instrument (Blau, Welkowitz & Cohen 1964), a self-report questionnaire measuring adjustment and attitudes (Kumar, Robson & Smith 1984) and Raphael-Leff's (2005) Placental Paradigm Questionnaire. However, none of these have been used extensively or were felt to be suitable for this study. In order to keep the questionnaire brief and simple, a list of 21 adjectives describing attitude to pregnancy (10 positive, 10 negative, 1 neutral) were used and participants were asked to circle adjectives they felt were an appropriate description of their feelings about pregnancy. The list of adjectives is based on work by Green, Coupland & Kitzinger (1998) and has previously been used by Jomeen (2006b). For the analysis, the proportion of positive to negative adjectives was considered.

#### **6.4.4 Fetal health locus of control**

To assess sense of control, the fetal health locus of control was chosen, as it relates to how pregnant women conceptualise issues of control with respect to fetal health. This was assessed with the Fetal Health Locus of Control Scale (FHLC) (Labs & Wurtele, 1986). Factor analysis has confirmed three subscales, internal (FHLC-I), external-chance (FHLC-C) and external-powerful others (FHLC-P), which reflect pregnant women's beliefs that their behaviour affects fetal health (I), that fetal health is determined largely by chance (C), and that fetal health is predominantly controlled by health professionals (P) (Franche & Mikail 1999). It consists of 18 items rated on a 9-point Likert scale from 'strongly disagree' to 'strongly agree'. Scores for each subscale range from 0 to 54, with higher scores indicating stronger beliefs.

The FHLC shows good validity and reliability and distinct and psychologically meaningful factors. In the original research, which investigated maternal health behaviour in pregnancy, Labs and Wurtele (1986) found Cronbach alpha coefficients of 0.88, 0.83 and 0.76, and test-retest reliabilities over a 2-week period of 0.80, 0.86 and 0.67 for the I, C and P subscales respectively. The FHLC has been used in research investigating a wide range of pregnancy-related issues (Shieh, Broome & Stump 2010; Webb, Siega-Riz & Dole 2008; Clarke & Gross 2004; Gross & Bee 2004; Haslam & Lawrence 2004; Turiff-Jonasson 2004; Chou, Lin, Cooney, Walker & Riggs 2003; Haslam, Lawrence & Haefeli 2003; Wheatley, Brugha & Shapiro 2003; Franche & Mikail 1999; Walker, Cooney & Riggs 1999;

Serafine & Broom 1998; Bielawska-Batorowicz 1993; Stewart & Cecutti 1993; Spirito, Ruggiero, McGarvey, Coustan & Low 1990).

#### **6.4.5 Bonding**

Bonding with the fetus during pregnancy was assessed using the Prenatal Attachment Inventory (PAI), which measures the 'unique, affectionate relationship that develops between a woman and her fetus' (Müller & Mercer 1993:201). It consists of 21 items, rated on a 4-point Likert scale with responses ranging from 'almost always' (1) to 'almost never' (4). To arrive at the final score, responses are inverted and added up, with a possible maximum score of 84.

Gau and Lee (2003), who tested the construct validity of PAI using Confirmatory Factor Analysis in a study involving 349 pregnant women, confirmed the unidimensional structure of the PAI. All items were found to have a significant factor loading; they explained 79% variance in bonding. Gau & Lee (2003:183) concluded that the 'PAI is a valid instrument for research with pregnant women'. The PAI has been shown to be psychometrically sound with good construct and concurrent validity as well as reliability, with Chronbach's alpha values ranging from 0.81 to 0.93 (Van den Bergh & Simons 2009; Turiff-Jonasson 2004).

The Prenatal Attachment Inventory has been widely used to investigate a wide range of issues relating to bonding during pregnancy, such as pregnancy, intrapartum and neonatal complications (Zachariah 2009), demographic characteristics (Bielawska-Batorowicz & Siddiqui 2008; Siddiqui, Hägglöf &



Eisemann 1999), family relationships and maternal health practices (Facello 2008), support (Feldman 2007), experiences of IVF (Hjelmstedt, Widström & Collins 2007, 2006), screening in pregnancy (Kleinveld, Timmermans, van den Berg, van Eijk & Ten Kate 2007, Lawson & Turiff-Jonasson 2006; Turiff-Jonasson 2004), previous pregnancy loss (Armstrong 2004, 2002; Armstrong & Hutti 1998), twin pregnancies (Damato 2004, 2000), post-natal mother-infant interaction (Siddiqui & Hägglöf 2000; Siddiqui, Eisemann & Hägglöf 2000) maternal childhood experiences (Siddiqui, Hägglöf & Eisemann 2000), and anxiety (Armstrong & Hutti 1998).

Due to the complexity of the concept of bonding in pregnancy, the challenges of measuring it and the tendency of instruments assessing bonding to elicit a high degree of social desirability (Hjelmstedt et al. 2007), the questionnaires also included a simple, non-verbal measure based on the Prenatal Representation of Attachment Measure (van Bakel, Vreeswijk, Maas & Vingerhoets 2013; van Bakel, Vreeswijk & Maas 2009). In this measure, a circle in the centre of the page represents the fetus and participants were asked to place a round sticker representing themselves on the page indicating how close they feel to the fetus. The distance between the centres of the two circles was then measured to assess closeness to the fetus; the shorter the distance, the closer the relationship is assumed to be. Van Bakel et al. (2013) found significant associations between the PRAM and global attachment (assessed by the MAAS), with shorter distances between the circles representing fetus and self indicating higher global attachment. They conclude, however, that while the PRAM is a valid, quick and

easy-to-administer assessment of bonding, it requires further research to assess its capacity as a screening instrument and sensitivity to change.

#### **6.4.6 Anxiety and depression**

Anxiety and depression were measured using the Hospital Anxiety and Depression Scale (HADS), which was developed to assess anxiety and depression in a clinical setting (Zigmond & Snaith 1983). It has been used in a wide range of research studies and is generally considered to have good psychometric properties. The HADS is a 14-item self-report instrument with two subscales: anxiety and depression. It is a simple, yet reliable and valid instrument, suitable for longitudinal assessments, in a general clinical setting (Snaith 2003; Bjelland, Dahl, Haug & Neckelmann 2002; Herrmann 1997).

Each of the seven items on each subscale scores between 0 and 3, with higher scores indicating higher levels of anxiety/depression. The original study used two cut off points: 7/8 for possible anxiety/depression and 10/11 for probable anxiety/depression; a cut off point of 14/15 for severe anxiety/depression has also been suggested (Herrmann 1997).

Even though the use of the HADS in clinical settings in pregnancy, particularly early pregnancy, has been shown to be problematic (Jomeen & Martin 2004; Karimova & Martin 2003), it has two distinct advantages: it has been widely used and it focuses on affective symptoms, rather than somatic symptoms common in pregnancy such as dizziness, fatigue and insomnia. Lee and colleagues (2007:1103)

conclude that 'as such, it is suitable for use among pregnant women and is superior to other instruments that may inflate the rates of anxiety and depression because many somatic symptoms are common experiences during pregnancy rather than a reflection of psychological disturbances.'

A recent study which used the anxiety subscale found Cronbach alpha values ranging from 0.71 to 0.81 (van Bussel, Spitz & Demyttenaere 2009). Abiodun (1994), who used the HADS in a Nigerian antenatal clinic, found sensitivities of 92.9% and 90.9%, specificities of 90.2% and 91.1% and misclassification rates of 9.6% and 9.3% for the anxiety and depression subscales respectively. It has been used in a range of pregnancy-related research, including most recently Karatas et al. (2011), Couto et al. (2009), Marchesi, Bertoni & Maggini (2009), Rowe, Fisher & Quinlivan (2009) and Van Bussel, Spitz & Demyttenaere (2009).

## **6.5 Interviews**

### **6.5.1 Interview schedules**

Qualitative interviews were used in this study to gain a better insight into how participants experience pregnancy and scans and what these experiences mean to them. The main analysis of the interviews was done using interpretative phenomenological analysis (IPA), which has a strong psychological focus. This qualitative approach requires rich data and typically uses in-depth interviews which allow participants to talk about their experience in detail (Smith et al. 2009).

Consequently the interviews were not highly structured, but used an open, flexible approach, providing participants with a safe space and sufficient time to tell their stories.

Interview schedules were devised for each timepoint (Appendix 3). All questions were open-ended and the schedules were flexible so that appropriate changes could be made during the interview. The interviews therefore allowed room for each participant to talk about what was important in her experience of pregnancy and of the 3/4D scan; consequently the interviews varied between participants, not just in length but also in content. Interview schedules were used to ensure that important issues were covered, but were treated as a guide rather than a strictly prescriptive schedule. As the interviews aimed to explore women's experiences and the meaning they attach to them, these were probed further by using prompts such as 'Could you tell me a little more about that?' and 'And how did that make you feel?' in order to explore issues in more depth.

For each participant, the beginning of the *first interview* was used to establish a good rapport, as well gaining background information about participants' experience of pregnancy. Questions were also asked about ultrasound scans women had so far in the pregnancy, reasons for choosing a 3/4D scan and feelings about that scan. Other questions related to how women felt about and related to the fetus, anxiety and control.

Questions in the *second interview*, the brief telephone interview immediately after the 3/4D scan, related mostly to the experience of the scan, how women felt about the scan and how they felt it affected how they related to the fetus. The *third interview* also included questions about the experience of the scan, but was also concerned in more detail with women's experience of the last stage of pregnancy, their feelings and thoughts about the fetus, emotional aspects of pregnancy and feelings about control.

The questions in the interviews were chosen to address the research objectives, specifically women's experiences of pregnancy, to provide a background to their experience of the scan; their reasons, feelings about, expectations of, and experiences of the 3/4D scan; their feelings throughout pregnancy and how they relate to the baby.

### **6.5.2 Conducting interviews**

Interviews were carried out at three timepoints. At timepoints 1 and 3, these were in-depth interviews which varied in length from 45 to 90 minutes. At timepoint 2, a brief telephone interview took place to obtain an immediate impression of participants' experiences and views of the scan. The second in-depth interview at timepoint 3 was used to further explore these experiences.

Ideally all in-depth interviews would have been carried out face-to-face. However, most interviews were carried out over the telephone due to distance (women took part from different parts of the UK) and time constraints (some women only made

contact just before the 3/4D scan). All interviews were audio recorded and transcribed verbatim.

## **6.6 Ethical considerations**

### **6.6.1 Ethics approval**

Ethics approval was granted by the ethics committee of the Faculty of Health and Social Care, University of Hull. The approval letter is available in Appendix 4. As women were not recruited through the NHS, ethics approval from the NHS was not required.

### **6.6.2 Potential problems**

Participants were provided with a leaflet giving information about the study (Appendix 5) and asked to sign a consent form (Appendix 6) once they agreed to take part in the study. Throughout the recruitment process and the course of the study it was made clear to participants that their participation was voluntary and that they could withdraw from the study at any point. Participants were also reassured that information would remain confidential and anonymous.

Some of the issues raised may potentially have led to some distress. Although this was expected to be minimal, participants were given a leaflet with contact details of organisations and websites offering support (Appendix 7). The interviews were conducted sensitively and appropriately for each individual. Consent was obtained

to audio record interviews and participants were assured that they could request recording of the interview to be stopped at any point. All participants consented to recording and none requested recording to be stopped during the interviews.

### **6.6.3 Data protection and confidentiality**

Recordings of interviews were destroyed after transcription. The transcripts and questionnaires will be destroyed five years after completion of the PhD thesis or five years after publication of any other papers, whichever is longest. Participants' names were removed from the questionnaires and a coding system was used to match names to questionnaires. All documents stored on computers are password protected and encrypted. Paper copies of documents are kept in a locked filing cabinet. All data were anonymised. Pseudonyms were used for the women throughout this thesis and other names and identifying details in interviews were anonymised or removed. The participant list is kept on a separate database from the questionnaire data – both are password protected and encrypted.

## **6.7 Recruitment**

### **6.7.1 Inclusion criteria**

To take part in the study, participants needed to be over 18 years old, pregnant and planning to have a 3/4D scan. Due to a lack of financial resources to pay for interpreting and translating services, and as the psychological measures chosen

have been validated in English, participants needed to be able to complete the questionnaires and interviews in English.

### **6.7.2 Recruitment procedure**

This study used a self-selected sample, with recruitment through a number of sources:

- the National Childbirth Trust (NCT; the UK's largest parenting charity);
- online parenting discussion forums, including Mumsnet, Netmums, Bounty and Babyworld;
- word of mouth;
- newspaper and newsletter adverts;
- notices on the websites of two private scanning companies.

The recruitment process was as follows:

1. A website about the study was set up, containing a copy of the information leaflet (Appendix 5) and contact details. Adverts and notices were placed in local newspapers and permission was sought from online parenting forums to put information about the study on discussion forums. Private scanning companies were approached to include information about the study on their websites, providing contact details and a link to the information leaflet and website.



2. Potential participants were able to make contact by telephoning, emailing or by returning the reply slip on the information leaflet by post (freepost address). All participants decided to make contact via email.
3. Those who made contact had an opportunity to ask further questions and were given further information if needed.
4. Participants were then invited to choose which part of the study they wanted to take part in and consent forms, the information leaflet and a leaflet signposting sources of support (Appendix 7) were posted to them.
5. The questionnaires were posted to participants (with pre-paid envelopes for return) and arrangements were made for interviews.

Neither of the two scanning companies which included information about the study on their websites were included in the critical discourse analysis (Chapter 5) to avoid a potential conflict of interest. The companies had no influence whatsoever on the conduct of the study.

### **6.7.3 Challenges with recruitment**

Recruitment proved challenging; only six women were recruited, three through online forums and a newsletter and three through notices on scanning company websites. In total, forty women and/or couples made contact. However, of these, eight had already had a 3/4D scan, ten did not reply after being sent further information, two just wanted further information about 3/4D scans, two thought they were contacting a scanning company and twelve, who all replied in response to a local newspaper advertisement, thought that taking part in the research

would include a free 3/4D scan. Recruitment may have been particularly difficult because it was time-sensitive, as women needed to join the study before the 3/4D scan, and because taking part involved some commitment with three interviews and questionnaires (though women could choose to only do one element). Additionally, it is possible that the overall number of women having 3/4D scans is relatively low.

Recruiting through the NHS (e.g. antenatal clinics) may have increased numbers and should possibly be considered for future research. However, it is important to bear in mind that there is a potential conflict of interest with private companies. Working more closely with more private scanning companies would probably have aided recruitment; several women were recruited through notices on two company websites. Even though the majority of companies offering 3/4D scans were contacted by emails, these were likely not followed up sufficiently. This is an approach that could be pursued for future research.

Offering women a free 3/4D scan as part of the research would no doubt have resulted in a much larger sample, as in other studies into 3/4D scans (e.g. Lapaire et al 2007; Righetti et al. 2005; Rustico et al. 2005). This approach was not taken for this study due to the financial cost and because it would have fundamentally changed the focus of the research, which was intended to be on women who *choose* to have 3/4D scans and on their reasons for doing so.

## 6.8 Participants

All six women consented to complete questionnaires and interviews; two women completed two interviews and four women completed all three interviews; in total, 16 interviews were conducted and analysed. One woman's partner also took part, but decided only to complete the questionnaires; his results were not included in this study. Participants came from different parts of the UK and had a varied demographic background (Table 6.1).

**Table 6.1 Demographic background of participants**

|                                        | <b>Isabel</b>           | <b>Nikki</b>        | <b>Sarah</b>  | <b>Jane</b>                | <b>Naomi</b>        | <b>Claire</b>              |
|----------------------------------------|-------------------------|---------------------|---------------|----------------------------|---------------------|----------------------------|
| <b>Age</b>                             | 25                      | 31                  |               | 41                         | 34                  | 40                         |
| <b>Marital status</b>                  | Partner, not cohabiting | Living with partner | Single        | Living with partner        | Married             | Married                    |
| <b>Ethnic background</b>               | White / Black Caribbean | White               | White         | White                      | White               | White                      |
| <b>Highest educational achievement</b> | Degree                  | GCSE                | A -level      | Professional qualification | Postgraduate degree | Professional qualification |
| <b>Annual household income (£)</b>     | 30000-39000             | 30000-39000         | 15000 - 19000 | > 40000                    | > 40000             | > 40000                    |

The six women who were recruited took part in both the interviews and the questionnaires; consequently their data was used in the interview study and the case study. While there is necessarily some overlap in data between the two

studies, the approach and focus of the studies was sufficiently different to enable separate analysis.

Unfortunately not all women completed all three questionnaires or interviews. Nikki only completed the questionnaire at timepoint 3; Sarah completed the questionnaire at timepoint 2 but no interview, and the interview at timepoint 3 but no questionnaire. Claire completed neither the interview nor the questionnaire at timepoint 3. Table 6.2 shows the weeks of pregnancy at which each woman completed the questionnaires and interviews for each timepoint, as well as the gestation for the 3/4D scan. Some women completed the interview and questionnaire at different times for some timepoints; in these cases the week gestation is indicated by Q and I in the table. Interviews with Naomi at timepoints 1 and 3 and Claire at timepoint 1 were carried out face-to-face. All other interviews were carried out by telephone. All names are pseudonyms.

**Table 6.2 Gestational week at which data was collected and 3/4D scan took place**

|               | TP1 | 3/4D scan | TP2          | TP3  |
|---------------|-----|-----------|--------------|------|
| <b>Isabel</b> | 26  | 27        | 28 Q<br>31 I | 37   |
| <b>Nikki</b>  | 29  | 30        | 30           | 39 Q |
| <b>Sarah</b>  | 25  | 25        | 30 Q         | 36 I |
| <b>Jane</b>   | 26  | 26        | 27           | 39   |
| <b>Naomi</b>  | 29  | 31        | 32           | 37   |
| <b>Claire</b> | 30  | 31        | 31           | -    |

## Chapter 7 Interpretative phenomenological analysis

### 7.1 Introduction

Interpretative phenomenological analysis (IPA) is a relatively new approach to qualitative research which originated within health psychology but is now used in a range of disciplines, including education and health research. IPA makes use mostly of semi-structured interviews, as in this study, but other approaches, such as diaries and focus groups, can also be used. It is an approach to research, rather than a method in itself, which is concerned with meanings and making sense (Smith & Osborn 2003). IPA's theoretical roots are both in phenomenology and hermeneutics (Smith et al. 2009) and consequently it aims to 'understand and 'give voice' to the concerns of participants [... and] to contextualize and 'make sense' of these concerns from a psychological perspective' (Larkin, Watts & Clifton 2006:102).

IPA is concerned with the participant's experience and perception of a phenomenon and thus aims to provide an 'insider's perspective' (Smith 1996). However, this cannot be done directly or completely due to the researcher's own conceptions (Larkin et al. 2006). IPA is not just descriptive, but the participant's experience is interpreted by the researcher. It therefore employs a double hermeneutic: 'The participants are trying to make sense of their world; the

researcher is trying to make sense of the participants trying to make sense of their world' (Smith & Osborn 2003:51).

IPA is also clearly ideographic, both in the sense of focusing on the individual and on a specific situation (Larkin et al. 2006). The women's voices and experiences are privileged in the analysis and their individual voices are still evident in the findings and discussion. Sample sizes are relatively small, usually below ten. While the sample should ideally be fairly homogenous, this is not always possible (Smith et al 2009; Smith & Osborn 2003).

IPA is particularly suitable for exploring how participants experience, perceive and make sense of a particular phenomenon or situation, especially when 'one is concerned with complexity, process or novelty' (Smith & Osborn 2003:53). It is therefore an approach well suited to exploring women's experiences of 3/4D scans. So far, there has been no research specifically into why women choose 3/4D scans, how they experience them and what meanings they attach to the scan. IPA has the potential to go beyond the descriptive and explore not just the meaning participants attach to a particular phenomenon, but also what may lie behind the participants' attribution of meaning. It is therefore a research approach that enables researchers to explore complex psychological issues relating to a particular phenomenon.

## **7.2 Analysis**

### **7.2.1 Analytical steps**

Analysis is flexible and does not follow a prescribed single method (Smith et al. 2009; Smith & Osborn 2003). The analytical process is typically iterative and inductive and occurs at different levels of analysis; while first-order analysis entails a summary and is more descriptive, higher levels of analysis take place at an interpretative and/or conceptual level (Larkin et al. 2006). Building largely on the process suggested by Smith et al. (2009), the interviews in this study were analysed using the following steps:

1. Transcription of interviews
2. Formatting and reading of transcripts
3. Compilation of initial notes:
  - a. descriptive comments
  - b. linguistic comments
  - c. conceptual comments
4. Developing emergent themes
5. Ordering emergent themes
6. Identifying patterns across participants

While these steps are presented here as linear, they are in practice iterative. This section will describe the process of analysis; an example of the analysis of a transcript excerpt can be found in Appendix 8.

### **7.2.2 Transcription**

All interviews were transcribed verbatim by the author. Non-verbal contributions, including pausing, laughing and sighing, were also marked on the transcript. The transcript was checked again against the recording to ensure accurate transcription. Where necessary, the transcript was checked again at a later stage of the analysis for clarification.

### **7.2.3 Formatting and reading of transcripts**

After transcription, each interview was copied into the fourth column of a five column table (Appendix 8). The third column contained the initial of who was speaking. In order to facilitate location of quotes in the analysis, the interviewee's responses ('turns') were numbered consecutively (in the second column); longer 'turns' were broken down into two or even three numbers. In the results section each quote is identified by name (a pseudonym), the number of the interview and the number of the 'turn' the quote is taken from. For example, 'Nikki 1-24' means that the quote was taken from the 24<sup>th</sup> 'turn' of the first interview with Nikki. It is therefore possible to trace each quote to its exact place in the interview. The transcripts were read at least twice prior to analysis in order to maximise understanding of, and immersion in, the women's narratives.

### **7.2.4 Initial notes**

This stage of the analysis followed the process suggested by Smith et al. 2009. The fifth column of the table was used for three types of initial comments, coded in different colours (see Appendix 8). *Descriptive comments* describe the content of



what the interviewee said, providing essentially a very brief summary. *Linguistic comments* explore the way the interviewee used language and non-verbal utterances. This assists with reading 'between the lines' and can give clues to the deeper meaning of what is said and to the interviewee's emotional state. *Conceptual comments* are more interpretative; they move away from the purely descriptive and explore the deeper meaning behind what is said. They may also contain some personal reflection. While these comments move away from the concrete text towards more abstract interpretation, they need to be based on what the participant said, rather than imposed as an interpretation from outside.

#### **7.2.5 Emergent themes**

In the next step, emergent themes were noted in the first column. While these themes attempt to capture the essence of what is being said in a particular extract, this is done while keeping in mind the wider context of the interview. They 'reflect not only the participant's original words and thoughts but also the analyst's interpretation' (Smith et al. 2009:92).

#### **7.2.6 Ordering emergent themes**

Once emergent themes had been identified for one whole interview, these were then copied into a new document along with the relevant 'turn' numbers. Related emergent themes were then grouped together. This was an iterative process; themes were moved between groups throughout the process of analysis as new themes emerged.

### **7.2.7 Identifying patterns across participants**

Once all interviews were analysed, patterns, convergences and divergences were identified across all participants and superordinate themes, themes and sub-themes were identified. The results of this process are presented in Table 7.1.

## **7.3 Results: superordinate themes, themes, sub-themes**

Two superordinate themes emerged from the interviews, 'getting to know the baby' and 'experiences of pregnancy'. Both split into themes and sub-themes (Table 7.1). These emergent themes are not 'natural' or definite; they are not just 'out there', ready to be discovered. They simply present one possible way of interpreting what the women said in these interviews. The following two sections (7.4 and 7.5) present the results for the two superordinate themes. They also include discussion of specific issues, while Section 7.6 provides an overall discussion of the IPA findings.

While the correct terminology at this stage of pregnancy is 'fetus' rather than 'baby', in the interviews all women talked about the 'baby', rather than 'fetus'. Consequently in this Chapter and Chapter 8 both terms are used.

**Table 7.1 IPA: superordinate themes, themes and sub-themes**

| <b>'Getting to know the baby'</b> |                                |                                                                                                                                                                                                                                      |
|-----------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | The visual baby                | <ul style="list-style-type: none"> <li>○ 'To see if everything is ok'</li> <li>○ Wanting to see</li> <li>○ Integrating the baby into the family</li> <li>○ The baby as 'a little person'</li> <li>○ Professionals looking</li> </ul> |
|                                   | Getting in touch with the baby | <ul style="list-style-type: none"> <li>○ The moving baby</li> <li>○ Interacting with the baby</li> </ul>                                                                                                                             |
|                                   | Imagining the baby             | <ul style="list-style-type: none"> <li>○ Creating an image of the baby</li> <li>○ The baby as a person</li> <li>○ Talking about the baby</li> <li>○ Feelings about the baby</li> </ul>                                               |
| <b>'Experiences of pregnancy'</b> |                                |                                                                                                                                                                                                                                      |
|                                   | Emotional impact of pregnancy  | <ul style="list-style-type: none"> <li>○ Finding out</li> <li>○ Mixed feelings</li> <li>○ Enjoying or hating pregnancy</li> <li>○ Role of physical problems</li> <li>○ Scan: anxiety and reassurance</li> </ul>                      |
|                                   | Control                        | <ul style="list-style-type: none"> <li>○ Control over health</li> <li>○ Effect of pregnancy on sense of control</li> <li>○ Control over care</li> </ul>                                                                              |
|                                   | Identity                       | <ul style="list-style-type: none"> <li>○ Challenges to the sense of identity</li> <li>○ Confirming identity</li> </ul>                                                                                                               |

## **7.4 'Getting to know the baby': results and discussion**

Pregnant women get to know their baby through a number of means, particularly vision (scan images) and touch (feeling the baby move, an awareness of movement patterns and reaction to external stimuli). This superordinate theme also includes how women make sense of this knowledge through imagining and thinking about the baby. It could be argued that imagining and thinking about the baby is also a way of getting to know the baby, of trying to make sense of the baby, partly through creating the baby as an individual: we generally need to see somebody as an individual in order to really have a sense of knowing them.

### **7.4.1 The visual baby**

All women talked a lot about seeing the baby, which is not surprising considering this study focused on 3/4D scans and the interviews also contained questions about routine scans. It is evident from these interviews that the women gained a lot of knowledge about the baby from both routine and 3/4D scans.

#### ***Sub-theme 1: 'to see if everything is ok'***

The phrase 'to see (if/that) everything is ok' was used by three women (Isabel, Sarah, Jane), with respect to routine and 3/4D scans:

*'the scans I think that you have at the hospital are to see everything is ok'* (Sarah 1-32)

*'I would like to see and know that everything is ok' (Jane 1-23)*

Jane also uses the phrase slightly differently:

*'... this is why I need more scans. Cause sometimes that makes it ok,  
so that you can see it'. (Jane 1-52)*

This might be more about seeing the baby making her less anxious. She links seeing the baby and seeing that everything is ok quite overtly with reassurance.

For Jane at least, and possibly for others too, having been able to see more detail made the scan even more reassuring; she decided to have a private 12 scan in addition to the routine scan:

*'but the private one gave much more detail and explained it much  
more thoroughly' (Jane 1-15)*

In contrast, Sarah's talked about her *'feeling of dread'* before scans:

*'And then you think, but what are they going to find on the next one?  
I think, you know, especially on the twenty week scan when you see  
a head and arms, and, it's very formed and, it's like, oh my god.  
[laughs] So, yeah, I say it was dread really, you think, oh no.'* (Sarah  
1-18)

Even though she used the phrase *'to see everything is ok'* twice later on (Sarah 1-31 and Sarah 1-32), she vocalised the flipside of this in the above comment: the potential for seeing that *'everything is not ok'*, the potential for scans to show problems. This is implied in the phrase *'to see everything is ok'*; indeed, Isabel (1-3) said *'to see **ipf** everything is ok'*. If it is possible to see that *'everything is ok'*, it is also possible that *'everything is not ok'*.

Jane used a variation of this phrase which does not directly refer to seeing but is nonetheless related:

*'And I, I liked having lots of scans, if I could have one every week I would, just to check that everything is still OK.'* (Jane 1-13)

For Jane, scans were a way of checking *'that everything is still ok'*, which implies that it is possible for problems to occur *after* a scan, thus requiring a further scan to make sure *'everything is still ok'*. This acknowledges that scans are likely to provide only temporary reassurance and might reveal an underlying anxiety for Jane.

Seeing the baby move on the scan also provided reassurance:

*'Yeah, it's fun watching the baby move because it took a long time for me to feel any movement so I was starting to get anxious about*

*that ... so it was good to see that because every time I had a scan or an antenatal appointment the midwife has said it's moving a lot, it's just that I haven't been able to feel it.'* (Jane 1-21; 20 week scan)

Interestingly, after the 3/4D scan none of the women used the phrase 'to see if everything is ok' about the scan. Sarah, however, explicitly said that seeing the baby had been reassuring:

*'And I just could not believe like, literally, the detail, it was like looking at a photo and, and I think, and I, and it sort of, I think gives you reassurance as well, like I think you never know, I know they do these Downs Syndrome tests and cleft palate, but you could see, see that. So I was totally amazed...'* (Sarah 2-4)

The frequency with which the phrase 'to see that everything is ok' and its variations were used is striking and emphasizes the importance of the visual. It is, however, not exclusively visual: it would usually take an expert to be able to see if there are problems, and even then it is often not possible to see if *everything* is fine. 'To see' is used here not in a literal sense but more in the sense of 'to check' that everything is ok – but with the sonographer doing the checking. The use of 'know' by Jane (1-23) indicates that it is about more than just seeing; the sonographer giving the 'all clear' seems to be what really matters. However, this might not be just about being told that the baby is healthy, but even just seeing the baby in itself might be reassuring to some women. In this sense, 'seeing' really

means 'knowing' – seeing on the scan that everything is ok is equivalent to knowing that everything is ok.

This sub-theme reflects the complexity underlying the issue of scans and reassurance/anxiety: while scans, and specifically seeing the baby, provide reassurance (e.g. Ekelin et al. 2008; Kowalcek et al. 2002; Crowther et al. 1999; Zlotogorski et al. 1996), they can also induce anxiety and worry (Harpel 2008; Harris et al. 2004; Mitchell 2001; Saetnan 2000; Georges 1996). Furthermore, the reassurance provided by a scan may be only transitory (Saetnan 2000), as indicated by Jane (1-13): *'to check that everything is still OK'*. The relationship between scans and anxiety has been discussed in more detail in Chapter 3 and will also be discussed further in the superordinate theme 'Experiences of pregnancy'.

The women who talked about wanting to 'see that everything is ok' referred to routine (2D) scans and the private 3/4D scan. However, there seem to be some differences between the two. While 3/4D scans are not done overtly for medical reasons, to look for problems, they promise to be more detailed, which in itself seems to be reassuring.

### ***Sub-theme 2: Wanting to see***

*'it'll be nice to see her again'*

In the first interview, all women except Sarah talked about seeing the baby as having been a positive and emotional experience, something they had enjoyed in previous scans and were looking forward to with the 3/4D scan.



*'... even though it is just a blob, it is, it's very emotional ... to see the blob on the screen was, you know, fantastic ...'* (Jane 1-11)

*'...it's lovely seeing her on scan'* (Claire 1-17)

While seeing the baby was a positive experience, wanting to see the baby was also obvious:

*'obviously wanting to see the baby'* (Jane 1-19)

Nikki in particular expressed her amazement at what she had been able to see at routine scans:

*'So it was really kind of surprising and the fact that she kind of, she kind of, we do actually have an ultrasound photo of her facing the screen with her hand up as if she is waving. To have that at 13 weeks, you think, oh my God, you know, you don't actually think that will be as developed.'* (Nikki 1-24)

After the 3/4D scan, all women except Claire commented on how seeing the baby had been a positive experience; comments included:

*'Umm, I think I was quite emotional, because obviously it was nice to see. And afterwards you're kind of, you're on a high.'* (Isabel 2-23)

*'The detail, it was fantastic! [laughs] [...] No, I thought it was fantastic, I have to say.'* (Sarah 2-6)

Even though Naomi said it was nice to see the baby, she also emphasized how it had not been 'that big an experience':

*'... it was just a sort of, it was pleasant, it was nice, it was sort of umm sort of warm and nice and umm I didn't feel any rush of euphoria or anything, it wasn't, it's not, I don't find it that, that big an experience I suppose.'* (Naomi 2-18)

Seeing the baby was clearly, on the whole, a positive, nice experience in itself – all women talked about enjoying it at some point in the interviews. Sarah did not talk about it in the first interview, which may have reflected how she associated 'a dreaded feeling' with (routine) scans: she did not seem to 'allow herself' to enjoy the experience. However, after the 3/4D scan she talked at length about how she had enjoyed seeing the baby at the scan. This may have been because the purpose of the 3/4D scan had not been to look for problems but solely about seeing the baby.

Research into routine 2D scans has also shown that pregnant women and their partners consider seeing the baby an enjoyable, interesting and emotional experience (e.g. Ekelin et al. 2004; Harris et al. 2004). Roberts (2012a) has also found this while observing private 3/4D scans. It is likely that it is even more the

case for these scans, as their main focus is on the social rather than the medical. While seeing the baby is an enjoyable experience in itself, there are also deeper reasons why this is so; these are reflected in the remainder of this section.

*'I just want to see what she looks like'*

Most women (except Sarah, and Claire in her current pregnancy) expressed curiosity about what the baby looked like. Isabel said twice that she thought about *'what she looks like'* (Isabel 1-30 and 1-31) and also that with the 3/4D scan *'you can see what she looks like really'* (Isabel 1-2).

Others also expressed this curiosity:

*'But also we're very interested to see what she looks ... So we are intrigued by those things.'* (Naomi 1-103).

This seemed to be particularly linked to the 3/4D scan and the detailed image it promised to provide:

*'I'm just really curious what she looks like, to be honest. Sort of, I think that'll be, I don't know, but I think that'll really take your breath away because you've had the other scan and, I mean, you can make everything like that, but to actually see such a detailed image of what she will look like, I think it's, umm, that'll be quite, umm, quite, I don't*

*know, I don't know what I feel really, probably until I see it.'* (Nikki 1-69)

After the scan, most of the women talked about what the baby looked like at the scan, particularly the face. The detail they were able to see was also emphasized.

*'I know kind of what she looks like now, I can imagine umm what she is doing.'* (Isabel 2-19)

*'the detail was fantastic.'* (Sarah 2-14)

*'Yeah. Looks a bit strange. But obviously when it's 3D it's much more baby-looking than any of the scans you have before that that are just 2D and just kind of look like sort of like white black and it's the shape of the baby. This is actually like you know a little face, and you're a bit like ooh, and then you kind of think oh is that what you know, ooh, quite a cute little nose.'* (Naomi 3-8)

For some women, the 3/4D scan image was the image of the baby they had in mind afterwards:

*'... I have that kind of image in my head of her.'* (Isabel 3-14)

Some of the women were also thinking ahead, wondering if the baby will look like the 3/4D scan image after birth. Roberts (2012a) refers to this as 'previewing' the baby's appearance.

*'Because people have said, who have had them done before, it's amazing how much they look like the photos. So that will be interesting to see.'* (Isabel 3-16)

*'And just digging it out again really, just looking at it to see, I wonder if I can pick out anything, with just a few days to go until we see the real thing. And I think we were somewhere where they were advertising 3D images and they'd put the 3D image of the baby and they showed the picture of the baby after it's been born to see how alike it was and I thought, oh that's interesting, I've no doubt we'll be doing that.'* (Jane 3-15)

Even though Nikki said that after the 3/4D scan she had a better idea what the baby looked like because she resembled her older half sister (Nikki's step daughter) (Nikki 2-1), she was disappointed because she was unable to get good images and therefore to really see what the baby looked like.

Wanting to know what the baby looks like can be considered at two levels. It can be taken at face value, as curiosity about the baby's physical appearance. Yet at a deeper level it concerns getting to know and developing a relationship with this

new person. Knowing what the face looks like seems to be prominent in this emerging sense of knowing the baby.

Congruent with research into 2D scans which suggests that women find it easier to imagine what their baby looks like after the scan (Dykes & Sternqvist 2001), the 3/4D scan does seem to provide most women with an increased sense of knowing what the baby, particularly the face, looks like. In addition, for many this seems to be the image they retain of the baby throughout the rest of the pregnancy. Knowing what the baby looks like at this deeper level may help with constructing the baby as a person, as discussed below.

It is important to note that while the 3/4D scan can make the baby look more baby-like, it does not provide a direct, true image of the baby, like a photo would. It is essentially an artificial image constructed by computer software. Nevertheless, this seemingly more 'accurate' image appears to be very attractive to those women who choose 3/4D scans. The women interviewed here had very high expectations of the image created at the 3/4D scan. Nikki's obvious disappointment with not obtaining good images of the baby emphasizes the importance attached to being able to see what the baby looks like.

*Seeing movement: 'what is she doing?'*

There was not just curiosity about what the baby looked like, but also what he/she was doing and seeing movement. Before the 3/4D scan, several of the women talked about hoping to see the baby move:

*'But we're quite interested to sort of see what she's getting up to, you know, what is she doing?'* (Naomi 1-42)

*'And if she gives us a wave and a little yawn again, I think that will be moving.'* (Nikki 1-65)

*'... and I suppose the dimension of time, so if she's moving around and actually doing something, the actual movements. At the moment I don't know what part of her is moving'* (Isabel 1-53)

Most women had been able to see the baby move during the 3/4D scan and talked about it afterwards.

*'That was quite amazing. I saw that she was like yawning, and put her hand in front of her mouth and she tried to put her hand in her mouth. Because you feel movement but you don't really know what they are doing, but then to see that was brilliant.'* (Isabel 2-17)

*'It was weird because sometimes I could like, I could feel her moving in me, but there wasn't that much difference on the screen, and then the opposite way. I could like, she was jiffing about, but then I can feel her jiffle about, so it was sort of weird really. But that was interesting, definitely.'* (Nikki 2-15)

*'Yeah, no, he moved and he, he literally he had, the eyes are not open, so, and he moved, he moved his hand, he yawned [...] at one point she said, oh, to walk around. Because his head was buried [laughs], obviously you couldn't see. And when you walk around, you, and then when I went back, he was like moving and, and I think ... What was quite good as well, cause where he was moving, you could then tell on your stomach where he was.'* [laughs]' (Sarah 2-14)

Sarah had been able to feel the baby move at the same time as seeing the movement on the screen:

*'... it was really, really weird. But you then could make out where things was, so that was really nice. Where, I think when you go to the hospital, the head's there, or he's moving, or I don't know, you know what I mean? But this one, I knew. I knew where his head was ...'*  
(Sarah 2-16)

Wanting to see what the baby is doing and how the baby is moving also takes place at two levels: curiosity about seeing the baby move as well as providing information about 'what the baby is like' (see below). Several of the women talked about movement in terms of intentional behaviour, which seems to provide them with clues about the baby's 'personality' or temperament. There seems real curiosity about seeing movement at the scan, which seems to confirm the importance of fetal movement to women, as well as a fascination with being able



to see something that is normally unseen – which of course also applies to seeing the baby per se. Being able to see movement is also reassuring – just like feeling movement is reassuring. This corresponds with Mitchell's (2001:127) observations of scans, at which she found that 'movement is presented as a sign of the physical aliveness and viability of the fetus and as evidence of its individuality'.

The interplay between seeing the movement at the scan and feeling the baby move is interesting. Most of the women said that they were not able to feel the movements they could observe at the scan, which seems to support Zeanah, Carr and Wolk's (1990:33) suggestion that fetal movements seen at scans are often not felt by women and 'may be tapping different dimensions of foetal activity level' to those physically experienced by women. However, even being able to see movement while not feeling it at the same time enabled some of the women to 'locate' the baby in themselves and make it easier to imagine which part of the baby was moving and where. Sarah was the only one who talked about being able to see and feel the baby move at the same time, an experience she described as 'nice' as well as 'weird' and which seemed to have helped her 'make sense' of the baby.

### ***Sub-theme 3: integrating the baby into the family - sharing the images/scan?***

*'obviously you want to involve them in the process'*

Sharing the scan images and DVDs with others, particularly family members, was mentioned by a number of women. Nikki (1-66) said she would 'show all the

*family*' the DVD. Jane, Claire and Naomi talked more specifically about sharing the images and DVD with the baby's grandparents:

*'And it's actually his mum's birthday on the Wednesday. So I've said we'll email her afterward the pictures, with happy birthday granny, here I am.'* (Jane 1-36)

Claire said that the grandparents, particularly her parents-in-law, watched the DVD from her older daughter's 3/4D scan numerous times:

*'They've watched the 4D scan so many times and they still watch it now. They were so obsessive about it.'* (Claire 1-25)

Also referring to the 3/4D scan they had for their older child, Naomi said:

*'one of the main reasons we had one last time was because my husband's mum was, had cancer and we weren't sure if she was going to make it, so we wanted her to see as many pictures as possible.'* (Naomi 1-51)

Sharing could also be argued to occur at two levels. The prospective parents are excited and want to share the images, while other family members are curious what the baby looks like. At a deeper level, it could also be argued that sharing scan images with family members helps to make the fetus into a member of the

family even before birth (Roberts 2012a, 2012b; Kroløkke 2009, 2011; Mitchell 2001; Maier et al. 1997). For example, when Jane (1-36) talks about sending a picture to her mother in law 'from' her unborn baby, she not only 'introduces' the new grandchild, but also 'pre-empts' the birth by making the prospective grandmother into 'granny' and lets the (as yet unborn) grandchild 'talk' to the grandmother. Watching the scan DVD makes Claire's baby 'familiar' to her grandparents – they can 'get to know' her before she is even born. By '*subjected goodness knows how many of their relatives*' (Claire 1-65) to the DVD, they also 'introduced' the new baby to the wider family. For Naomi's (1-51) mother in law, the scan images of her older son may have been the only way of 'meeting' her grandson.

Sharing the images does not only introduce the new baby to the wider family, but may also be an attempt to ensure that the baby is accepted and that grandparents and others invest emotional energy, and possibly support, even before the birth. Rubin (1984) has argued that this is an important 'maternal task' during pregnancy. Ekelin et al. (2004) also suggest that sharing scan images with others may function as 'proof' that the expectant parents and the new baby are indeed becoming a new family.

Those women who already had older children (Sarah, Naomi and Claire) also talked about the older children coming to the scan or sharing the images and DVDs with them. Both Sarah and Naomi talked directly about older siblings seeing the images:

*'... I think for them, I think, you can see a picture and I think obviously you want to involve them into the process.'* (Sarah 1-32)

*'... I think it's a good opportunity for everyone, to, you know, get that sort of glimpse, and so when that, when the baby is here you all settle as a family. So I think that is important, so.'* (Sarah 1-36)

*'... we said well you know if we have the private one we could take him and, you know, he could see and maybe that might make it more real for him, as well.'* (Naomi 1-54)

Sarah was the only one who took her older children to the 3/4D scan with her:

*'And as a family, I think it's a good thing. They get to see, you know, the baby as well. [...] So this way they actually got to experience it and what was really nice'* (Sarah 2-18)

Naomi's older son did not come to the 3/4D scan, but she felt that seeing the 3/4D scan images had helped to prepare him for his new sibling:

*'You know, we've shown him the pictures and he was kind of like, baby! [...] I don't, I still don't know if he gets the, it's going to be a baby [laughs], but he's got this image of this is what baby, this is what baby is at the moment, so, I think that's kind of ... we will see. [laughs]*

*He might then go, that's not what baby is supposed to be like!*

[laughs]' (Naomi 3-9)

The motive for taking older children to the scan or showing them the images afterwards seemed to be not only to involve older children, but also to introduce them to the new baby and prepare them for the changes that were coming. Sarah's (1-36) comment was the most explicit statement about how scans are seen as helping to integrate the new baby into the family. This also assumes that seeing the baby, *'that sort of glimpse'*, makes the baby familiar and offers an opportunity to meet the baby before the actual birth.

After the 3/4D scan, most of the women talked about how they were planning to share, or had already shared, the images and/or DVDs with others, mostly family.

*'... and you've got something to show people, something to share, which is nice as well.'* (Isabel 2-24)

*'Boring everybody who comes our way. [laughs] Do you want to see our baby? [laughs]'* (Jane 2-12)

*'... obviously we showed family and stuff, took them down, showed my mum, sort of Easter, so that was a few weeks later. Umm, so, and you know, people go, oh, quite cute! And a few people kind of go, tst, creepy!'* (Naomi 3-14)

Sharing the images is clearly something women were keen to do after the scan. Jane's (2-12) comment, *'do you want to see our baby'*, is interesting: the fetus had already become *'our baby'*. However, this might not have been necessarily due to the 3/4D scan.

Reactions from others to the scan varied; while some liked the images and commented in positive terms, others thought them *'freaky'*. Isabel and Jane explicitly said that they had enjoyed the positive comments:

*'... some people can't believe how kind of, well, realistic it is and things like that. So, but it gives you a nice warm feeling when people umm look at them and see the positives.'* (Isabel 3-13)

*'and just seeing other people's reactions to it again was nice'* (Jane 3-13)

While this may have been mostly due to simply enjoying the positive responses, it may also, at a deeper level, reflect that they were pleased that the baby seemed to be *'accepted'* by friends and family. For Isabel in particular it may have been important that others had a positive view of the pregnancy and the baby as she is quite young and not living with her partner. Ji et al. (2005) suggest that sharing 3/4D scan images with others may increase the prospective parents' social support network. However, this is speculation not based on evidence.

*'she definitely has my nose'*

Before the 2D scan two of the women, Jane and Naomi, talked about looking for resemblances between the baby and other family members at the 3/4D scan:

*'Just, as I said, hopefully if we do get a clear picture of the face, it will be interesting to see if we can, sort of, see if it looks like anyone at the moment.'* (Jane 1-38)

*'But also we're very interested to see what she looks like cause he [older son], from the moment he was born has been the spitting image of his dad, he is his dad's mini-me, umm, so it will be interesting to see whether she looks more like my side of the family, looks like me as a child, umm, or whether she is another, she is just a you know a girl version of [son]. So we are intrigued by those things.'*  
(Naomi 1-103)

After the 3/4D scan, several women talked about how the baby resembled family members:

*'Oh definitely. She definitely has my nose.'* (Isabel 2-14)

*'Just like her big sister.'* (Claire 2-9)

Others were also keen to look for resemblances. Isabel, for example, commented how others asked to see the images for this reason:

*'Yeah. Partly because people wanted to see it and making comparisons between me and her dad to see.'* (Isabel 2-13)

In this sense, it could be argued that sharing the images and looking for family resemblances helps to establish the baby's 'place' in the family.

Looking for family resemblances on scan images seems to be common; Ekelin et al. (2004), Harris et al. (2004) and Mitchell (2001) have all reported this for routine scans, while Roberts (2012a) and Kroløkke (2011, 2009) have observed it during 3/4D scans. It could be argued that looking for resemblances to parents and other family members is part of integrating the baby into the family. Research shows that a similar process happens after the birth, when looking for resemblances between the newborn baby and other family members. McLain, Setters, Moulton and Pratt (2000), for example, suggest that new mothers may point out resemblances to the father or his family as an assurance of paternity.

*'for future reference'*

The images and DVDs from 3/4D scans were also valued for themselves. Several women explicitly talked about them before the 3/4D scan:

*'and then obviously you get pictures of the child.'* (Sarah 1-33)

*'We are going to get a copy of the moving thing as well'* (Jane 1-30)



The extent to which the women looked at the 3/4D images after the scan varied; while some looked at them regularly, others said at the final interview that they had not really looked at them for several weeks.

*'still looking at the photo obviously and still showing people, still look at them. Umm, you know, every few days.'* (Isabel 3-8)

*'Umm, well, do you know, I've forgotten about it for a while [laughs] it was just in the last week or so I've been looking at the pictures again and shown a couple of people who hadn't seen it ....'* (Jane 3-13)

*'I haven't looked at them recently. I don't know where they are actually. [...] So, umm, but I haven't looked at them, I don't sit there, staring at the picture, going, ooh, what's she going to look like then? And now it's just getting close to the point where I kind of just think, oh, I'm actually going to see what you actually look like soon.'* (Naomi 3-14)

Whereas seeing the baby at the scan is limited only to that time, having copies of the images means that they can be looked at repeatedly and shared with others. This seemed very important to some women, while others hardly looked at the images afterwards.

While part of the purpose and value of these images and DVDs is that they can be shared with others, there also seems to be an emphasis on keeping them for the future. Several of the women talked about the 3D images and DVDs as keepsakes specifically for their children, *'for future reference for the baby'* (Nikki 1-60). For Claire and Naomi one of the main reasons for having a 3/4D scan in their current pregnancy was the fact that they had had one with their older child and they wanted both children to have the images and DVDs:

*'they've both got a nice video of themselves when older'* (Claire 1-23)

*'we'd like both to have those pictures.'* (Naomi 1-42)

*'And when you come home and you can put that DVD on. And I think what's so lovely as well, I think, I think, for this child, when he's older, you can show him, and I think it'll probably be, I think it's a lovely experience for, cause that's what he was like before, obviously he was born. And that to me I think is just fantastic.'* (Sarah 2-21)

Images from routine 2D scans are also valued, for themselves and as keepsakes, (e.g. Ekelin et al. 2004), providing 'baby's first picture' for the family album Mitchell (2001). This seems to be the case even more with 3/4D images, presumably because of the image quality and because the 3/4D scan has a social rather than medical focus.

Obtaining good images at the 3/4D scan was obviously important to the women. While some were not entirely happy with the quality or that they had had better images at a previous 3/4D scan, Nikki had only been able to obtain very few good images; she was clearly very disappointed with this.

*'I, I'd need to look back at my ones from our son and see, but they didn't seem as good qual..., as good images, but you know we saw some nice, got some nice pictures of sort of her face and stuff ...'*

(Naomi 2-2)

*'They made a nice video last time. This time we just got, they recorded the scan, they recorded the whole thing, whereas the last time they pieced together the 3D bits into, I don't know, ten or fifteen minutes worth of scan, with music playing in the background. And this time it was just the scan recording with the 2D interspersed with the 3D, just basically the whole 20 minutes scan.'* (Claire 2-6)

*'I know some people have some amazing pictures, really amazing pictures, and ours just weren't really, that was such a shame. [...] we couldn't even get her face in it.'* (Nikki 2-18)

#### ***Sub-theme 4: the baby as 'a little person'***

Seeing the baby at a scan also seems to help to turn the baby into a person and make the baby more real, though this is not always straightforward. This is at a

different level to integrating the baby into the wider family, as it concerns the baby him/herself as an individual rather than a family member.

*'like a little 3D person'*

Jane said that, with regards to the 3/4D scan, she hoped that:

*'if I have seen the face clearly, I might, umm, start putting more of a, you know, an idea of what he or she is like'* (Jane 1-43).

After the scan, the baby seemed to have become more of a 'person' for most of the women. They frequently attributed character traits and intentional behaviours to the baby. This is exemplified by these quotes:

*'Yes, she had a couple of little jiffles about, mainly to try and hide herself again. [...] She put her hand up and she also, they said she was having a drink, you could see her open her mouth.'* (Nikki 2-14)

*'She was asleep for a lot of it. And then she did wake up, but she wasn't too impressed, I don't think. She was a bit like, I was asleep! And so then she was like, I'm not playing.'* (Naomi 3-17)

*'Cause it looks, it looks like a, a baby, you see the hand, she's putting her hands up, she's sort of sticking her tongue out and yawning, kind of like, I'm having a sleep, leave me alone! [laughs] Yeah, so that's a*

*lot more baby-like than you ever see previously, yeah I think it does help.'* (Naomi 2-11)

Referring to the 3/4D scan she had had with her older child, Naomi also talked about the 3/4D scan making the fetus look more like a person and like a baby, because it looked more like a baby than 2D scans:

*'to see his, see his little face ... it made him look like a little 3D person rather than ... the black and white kind of image that you kind of go, oh yes it's the shape of a baby ... and he had his thumb in his mouth and you know all the kind of things that you kind of think, oh it is a little person.'* (Naomi 1-6)

*'I think it was, that I, that then it seemed a bit more, like a baby ... because it looked more like a baby.'* (Naomi 1-28)

*'... it looked like a proper little person'* (Naomi 1-53)

It could be argued that knowing what the baby 'is like', not just in terms of what he or she looks like, but also in 'temperament' and behaviour, is related to transforming the baby into a person. Assigning character traits and behaviours to construct the baby as a 'person' also occurs during routine 2D scans (e.g. Ekelin et al. 2004, Harris et al. 2004; Mitchell 2001). However, it may be more common during 3/4D scans as the improved rendering of surface structures makes it

possible to better observe facial expressions (Roberts 2012a). Constructing personhood for the baby occurs not just by parents and family members, but is also done in collaboration with the sonographer during the scan (Roberts 2012a). The sonographer's narrative constructs the fetus generically as 'a baby', rather than a fetus, while the pregnant women, her partner and other family members produce 'personalised narratives that draw on family knowledge and familiarity to make kinship connections of resemblances and character between the soon-to-be-baby and expectant parents' (Roberts 2012a:310).

This seems to be particularly the case with respect to the baby's 'cooperation' during the scan, i.e. getting into a favourable position for obtaining good images; for example, the baby tries to '*hide herself*' (Nikki 2-14) or '*says*' '*I'm not playing*' (Naomi 3-13). This confirms observations made by Mitchell (2001) and Roberts (2012a) during 2D and 3/4D scans respectively.

What seems to turn the baby into more of a person at the 3/4D scan is that it looks more like a (newborn) baby and that it moves and behaves in a way that allows the women to attribute intentions, feelings and character traits. This seems to make it easier to imagine the baby as a 'little person'. In the first interview, only Naomi talked about the 3/4D scan making the baby into 'a little person', with reference to the 3/4D scan they had with their older child; some of the other women also talk about this after the 3/4D scan. It is conceivable that women do not really think in these terms before they have actually had a 3/4D scan.

The fact that the baby seems to look and behave more like a newborn, a real baby, seems to be instrumental here; in this sense, the 3/4D scan 'pre-empts' the birth to some extent. During pregnancy, the baby is essentially a stranger and unknowable. It could be argued that in order to get to know the baby during pregnancy, it first has to be turned into something more familiar, into a being that looks, behaves and feels like a human. Scan images are clearly one way of approaching this; as vision is such an important sense in our culture, this is maybe not surprising.

However, talking about whether seeing the baby at the 3/4D scan has given her any insight into her baby's 'personality', Naomi said:

*'Umm, I don't know, I don't know really it's given me any insight into that, umm, I don't think you see enough to gain that kind of, I probably got more information on sort of personality just by, sort of movement and time, kind of times of day she wakes up and think the fact that she, if I drink, if I drink a fizzy drink and she wakes you know, like, ooh, she likes sugar! [laughs] You know, those kind of things more than what I saw on the screen. But I suppose if you start to put the two together you build more of a picture.'* (Naomi 2-14)

It therefore seems that just seeing the baby is not enough to turn it into a person and make it fully human. How and when the baby moves also gives essential clues (see below).

A number of women talked about the baby looking like either a boy or a girl at the 3/4D scan, something which could also be argued to imbue the (unknown) baby with 'personhood'. However, Jane raised doubt that it is possible to tell whether the baby looks like a boy or girl.

*'And to be honest, he looks like, he looks like a boy. So it was really weird, like, there was, you know, some babies you, he, just from seeing his face, he was a boy!'* (Sarah 2-11)

*'I think, I mean I think, my husband was saying I think it looks, he was saying it looks like a girl, a girly face. But maybe that's just some, an element of we know it's a girl, we're saying it looks like a girl. We seem to think it looks, it looks girly.'* (Naomi 2-10)

*'Yes, it's interesting, peoples comments, oh, that looks like a boy. Really? I can't say. It looks like a baby, but I can't say is it male or female.'* (Jane 3-17)

This reflects Kroløkke's (2011) observations of a 'gendered performance' in 3/4D scans, in which prospective parents, family members and sonographers jointly engage in constructing the fetus according to gendered stereotypes.



*'it kind of makes it more real'*

Several women commented on how seeing the baby on the scan made the baby and the pregnancy more real, both with respect to routine scans and 3/4D scans.

*'Seeing her on the screen kind of makes that more sort of, you know, urgh I can't think of the word, it kind of makes it more real. Even though you have that bump and feel her move, when you see her on the screen, you're like, you know, yeah, you're in there.'* (Nikki 1-38; 20 week scan)

For Jane, who has had IVF treatment, scans seemed to have made it easier for her to believe that she really is pregnant:

*'It's hard to believe it, oh my goodness, it's really worked.'* (Jane 1-11)

She said that this was particularly the case for her husband because *'obviously I was more maybe aware of, of the changes'* (Naomi 1-5), thus acknowledging that the physical changes and, later on, fetal movements pregnant women experience do also help to 'make the baby 'real'. However, it seems that seeing the baby can add a further dimension, not just for men but also for pregnant women:

*'... even though you've got a big tummy and that, when you see her, wow! You know, she's in there!'* (Nikki 1-42)

Naomi suggested that because the 3/4D scan is at a stage in pregnancy when some babies are born and survive, *'it seemed maybe a bit more real then'* (Naomi 1-28). This may indicate that it is not just that 3/4D scans make the baby look more 'like a baby', but also that because the baby is bigger and more developed then and women are aware that some babies are born at that stage, birth itself might seem more 'real'.

For Isabel, seeing the heart beating seemed to have been significant. With regards to scans making the baby more real, she says:

*'I think the first scan ... to see the heart beating ... and I think the 3D scan will increase that even further and I think that's what I'm hoping to see from that really.'* (Isabel 1-35)

Even though a scan had confirmed the pregnancy, seeing it on the screen, in black and white, made it more real and easier to believe. While this applies to 2D routine scans, it seems to be particularly pertinent to 3/4D scans because the baby looks more like a 'real' baby.

Nikki expressed her surprise at how much the fetus looked like a baby, even at a scan at 13 weeks:

*'I was quite shocked that you could see as much as you could. I thought it would look like a butterbean or a little peanut or something, but you could, it was just a baby.'* (Nikki 1-24)

Nikki, Jane and Naomi all used exclamations of surprise and amazement when they talk about seeing the baby: 'wow', 'oh my goodness', 'whoa'. This seems to be related to the realisation that there really is a baby 'in there' – and might be an expression of how 'strange' the situation is: being able to see the baby before birth, something that 'should' not really be the case. Naomi talked a little more about how difficult she found it to reconcile the baby on the screen with the baby growing inside her (see below).

After the 3/4D scan, Isabel, Sarah and Jane said that the image of the baby at the 3/4D scan was the image they now had in mind when thinking about the baby:

*'Umm, yeah, I think, I think, the 4D scan, you do have the image.'*  
(Sarah 2-31)

*'I've now got that picture in my head. [...] but yeah I suppose, that image is quite powerful now, it's very much stuck in my mind. Obviously I'm looking at the pictures a lot, but I can see him very clearly in my head and imagine what he's doing.'* (Jane 2-22)

This image seemed to help to make the baby more real. After the 3/4D scan, a number of women said that the 3/4D scan had made the baby more real, for example:

*'Umm, it's still kind of strange. I still feel, still feel strange to think that that is the baby. Umm [laughs] but it does seem more, it seems more real, umm, than probably the 2D ones do because you actually start to see sort of a face rather than just a profile kind of picture.'* (Naomi 2-10)

Isabel and Sarah also said that the scan made the baby more real for their partner and older children respectively:

*'Oh yeah, he loved it. I think he did feel quite attached because ... men, they can feel outside but being able to see her, I think it made it all a bit more real for him.'* (Isabel 2-21)

*'... like I say, to them it didn't feel real, and when you come away, oooh it's so real!'* (Sarah 2-21)

Sarah, who had found it very difficult to imagine the baby in the first interview and for whom the whole pregnancy had seemed quite unreal, talked about this at length. For her, and others, having been able to see the baby in great detail and it looking more like a 'real baby' seemed to be helpful.

*'Umm, I think, I think it makes it much more real, to see, oh, what he looks like. Now, I'm obviously just waiting, but I think with the 4D scan I think it was very real. So, yeah, no, I was, well I think with the 2D scan at the hospital you just don't get that. You don't get like, like, it's really weird, because I've put them in a frame, the ones from the hospital and the ones from the 4D. And it's, it's just like two different children, cause the 2D you can't, it's just the head and the limbs. But the 4D you could see nose, mouth, arms, hands, you know, it's an actual baby.'* (Sarah 2-13)

*'And it just, it just totally changed when I saw him, cause it was so real to me and up to then it wasn't. It was like, I think to see nose, mouth, hands, arms, legs [laughs].'* (Sarah 2-17)

*'Umm, I just can't wait to meet him, to meet him in my world now. I think cause you know, like the 4D scan made it so real.'* (Sarah 2-30)

The idea that scans can make the pregnancy and baby more real has been raised by research into 2D scans (Ekelin et al. 2004; Harris et al. 2004; Dykes & Sternqvist 2001; Lundgren & Wahlberg 1999; Bergum 1997). However, it may arguably be more the case with 3/4D scans as they show the baby in more detail and looking more like a 'real' baby. Harris et al. (2004) argue that considering the dominance of visual media, it is not surprising that ultrasound images are likely to play a crucial role in making pregnancy and the baby real.

The fact that for some women scans seem to confirm pregnancy and make the baby real exemplifies what Harris et al. (2004:38) refer to as 'the dislocation of experiential knowledge' – the replacement of embodied knowledge of pregnancy by technology and experts. As Nikki (1-38) says: *'Even though you have that bump and feel her move, when you see her on the screen, you're like, you know, yeah, you're in there'*. However, there is evidence, both in this study and other research, that experiential, embodied knowledge still plays a significant role (see below).

*'it didn't quite match up': making sense of the image*

Both Nikki and Naomi talked about how it had sometimes been difficult to make sense of the scan image.

*'...if you see her on the screen and you know she's in there, you still try and wrap your head round the fact that you're carrying a human being in there.'* (Nikki 1-38).

*'I find it a bit, quite strange. It's quite difficult to really get your head round that that image there is, particularly the 2D type scans, I think, that that image there is, you know, obviously you can feel that they're pressing, you know, whatever it's called, on you, probe, but, umm, [hesitates] still there is a, I find an element, a bit of an element of detachment of that's not really me, that's not my baby, you know, even at 20 weeks when I could feel, I knew that, I could feel the baby moving by that point, this time round, so I knew, you know, that I can*

*feel, the baby I can feel, but it was still a bit like, but it still didn't quite match up, if that makes sense.'* (Naomi 1-26)

Looking at the scan images afterwards seemed to make this easier for Naomi:

*'And, you know, I think probably looking, actually, I like looking at the pictures after the scan, maybe a bit more than I actually enjoy the scan itself, because I can take my time to kind of look at them and, and sort of think, you know, that is, you know that is baby [...]. Umm, umm, so, maybe that, sort of, allows me to take time to digest it a bit more, than actually in, in the scan itself, where it seems a bit sort of unreal maybe.'* (Naomi 1-38)

Naomi also talked about how she found it difficult to visualise a baby who was not her son and how another boy would have 'made sense' in her head. Expecting a girl was therefore strange. It seems that she was hoping that seeing on the 3/4D scan that the baby was clearly a girl might have made it easier for her to then visualise a girl.

*'Strange, because I can't, I find it difficult to visualise a baby that is not [son]. So, I think maybe that's another, like I, I still think another little boy would make sense in my head because it would just be, it would, he would be like [son] was and you know. So, obviously, the only baby that I have cared for was him, and so a little boy, and so*

*this girl concept is the biggest one that is, is a bit strange.'* (Naomi 1-101)

While Naomi said that the 3/4D scan had helped to make the baby feel more real, it still felt strange to her:

*'Umm, it's still kind of strange. I still feel, still feel strange to think that that is the baby.'* (Naomi 2-10)

*'Umm, but it was, yeah, it was, [hesitates] it, it's nice, but also strange to see them on, on the screen. It's kind of strange sort of slightly ghostly image, but ...'* (Naomi 3-7)

This 'mismatch', this sense of strangeness and unreality does not seem unusual. Ekelin et al. (2004) also report a sense of unreality among pregnant women having a scan, in this case a routine 2D scan – especially if the women had not felt any movement yet, which is unlikely by the time 3/4D scans are usually carried out. This may be understandable, as seeing inside the body as well as seeing the as yet unborn child is, fundamentally, strange. There is an interesting paradox here: while the scan can make the baby more real, it can also feel very unreal.

In one of the earliest studies of the impact of 3/4D scans, Maier et al. (1997:72) suggest that it is possible that for some women the 'very realistic images deprive them of their own perception of the fetus' and that 3/4D images may potentially



lead to alienation in these women. While this may not have been the case for Naomi, her experiences nevertheless indicate that this may be a possibility for some women and that portraying 3/4D scans universally as beneficial could be harmful.

*'more kind of attached'*

Some of the women talked about how seeing the baby has made them feel closer to the baby at previous scans or may make them feel closer to the baby at the 3/4D scan. Isabel said that to see what the baby looks like at the 3/4D scan

*'would umm make me feel even closer to her'* (Isabel 1-52).

For Nikki, seeing the baby at previous (2D) scans has made her

*'feel more connected with her if anything'* (Nikki 1-40).

In the first interview, Jane said that about the 3/4D scan:

*'if I do get a really clear picture and see the face it, well it's bound to have more of an impact'* (Jane 1-33)

While Naomi felt that the 2D scans have not increased bonding, she said with regards to the 3/4D scan they had with their older child:

*'it did sort of make us bond with him a little bit more' (Naomi 1-53)*

Nikki also talked about seeing the baby at the 3/4D scan as being an opportunity to meet the baby.

*'And I just think, you know, wow, you can see literally what she is going to come out looking like and that is going to be, in a way like you get to actually meet her before she comes out, so that will be interesting.'* (Nikki 1-64)

In this sense, meeting the baby may be part of getting to know the baby, getting closer to the baby.

After the 3/4D scan, little was said about feeling closer to the baby. While Isabel tentatively said she felt more attached to the baby after the scan, Naomi was ambivalent and Claire said emphatically that it had had not affected how she felt about the baby.

*'... you do feel, yeah, more kind of attached to them ...'* (Isabel 2-26)

*'Umm, so, yeah, it was nice to see, umm, sort of I suppose, I suppose, bonding. I wouldn't, wouldn't say that seeing it I was suddenly, you know, sort of felt a rush of, oh that's her, I don't think that really*

*happens until you know she is here, but it was, you know, it was nice to kind of see...'* (Naomi 2-10)

*'So, yeah, it was enjoyable but I didn't kind of feel massively bonded or anything afterwards. I maybe felt a little bit like, oh, how great.'*  
(Naomi 3-10)

*'No. [laughs]'* (Claire 2-13)

The issue of scans and supposedly increased 'bonding' is complex and research has been contradictory (Chapter 3). In this study, there were only limited direct references to feeling more 'attached', 'bonded' or 'closer' to the baby after scans – which is in sharp contrast to these scans being primarily marketed as 'bonding scans'. However, it could be argued that this is at least partly related to the difficulties in conceptualising 'bonding'. It is not a concept that can be neatly encapsulated in a single term – or even a single concept. Positive emotions towards the unborn baby seem to underlie many of the other subjects brought up in the interviews; they are arguably part of themes such as wanting to see or 'meet' the baby, introducing the baby to the wider family and wanting to know that the baby is growing and developing well.

Nevertheless, the fact that the women talked relatively little about how they thought the 3/4D scan would increase, or had increased, bonding is interesting in the light of the strong message sent by scanning company websites that these

scans will dramatically enhance, or even for the first time enable, bonding during pregnancy.

It could be argued that a large proportion of this superordinate theme is concerned with 'bonding' in the wider sense. Components measured by a number of instruments to measure 'bonding' or 'attachment' during pregnancy include thinking about and interacting with the fetus, feelings towards the fetus and behavioural and dietary changes to increase fetal well-being (DiPietro 2010). All of these components are evident in both superordinate themes, which would suggest that these women are very much preoccupied with 'bonding' even if they rarely refer to it directly. Getting to know, becoming familiar with the fetus is essential for 'bonding', which would suggest that this superordinate theme is overwhelmingly concerned with 'bonding'.

#### ***Sub-theme 5: professionals looking***

There are two strands to this sub-theme, both concerned with health professionals gaining knowledge about physical aspects of the fetus. The first, 'they look for various things', is concerned with what women in the interviews referred to as professionals 'looking' for specific things at a scan, usually fetal sex and the presence of absence of any physical abnormalities. The second strand, 'they just checked', relates to the same issues, but when women did not specifically refer to professionals looking, but rather to the knowledge about fetal sex and health acquired through scans.

*'they look for various things'*

A number of women talked about the professional performing the scan looking for potential problems during the scan. This was often quite general, as in this example from Jane with regards to the 20 week scan:

*'they look for various things'* (Jane 1-34)

In the case of Claire and Naomi, they were looking for specific issues. During her first pregnancy, Naomi's son had been diagnosed with a kidney problem at the 20 week scan and at the 3/4D scan she therefore was planning to

*'ask if they can have a quick look at her kidneys again'* (Naomi 1-83)

Claire, whose baby has been diagnosed with potential congenital heart disease at the 20 week scan, talked about the professional *'specifically looking for features'* (Claire 1-53) of syndromes commonly associated with congenital heart disease. Claire (1-14) also talked about how the consultant *'couldn't see the heart'* properly at the first 20 week scan – in this case 'see' implies actively looking, rather than the less literal 'see' of 'seeing if everything is ok'. This also illustrates how sometimes it is not possible to see everything you are looking for.

Claire (1-28) talked about the sonographer at the 3/4D scan purposefully *not* looking with respect to the suspected congenital heart disease: *'... they won't look at it'*. This highlights the difference between routine and private 3/4D scans:

normally the purpose of scans is to look for problems, but this is not the case with private, 'for fun' 3/4D scans.

Talking about a scan at 12 weeks for what was then a suspected ectopic pregnancy, Sarah said:

*'from thinking when I went in, it's not a child, it's nothing, they're just looking, to come out and think I'm actually having a baby'* (Sarah 1-15)

In this case, the simple act of 'just looking' had turned the 'not a child', the 'nothing', into an actual baby.

Naomi, who was the only woman who had had a separate (2D) gender scan, also talked about the sonographer looking specifically for the fetal sex:

*'she's only got to look and tell us if it's a boy or girl'* (Naomi 1-62)

After the 3/4D scan, she confirmed that she did ask the sonographer to *'look at the gender again'* (Naomi 3-19) again, which seemed to help her believe that it really was a girl:

*'We're starting to believe it.'* (Naomi 2-8)

*'they just checked': fetal sex and health*

The visual baby, i.e. images of the baby, also provides information that is mediated by experts: knowledge of physical aspects of the baby, including its sex and health.

For Nikki and Naomi confirmation of the baby's sex at the 3/4D scan was important; even though they already knew the baby's sex from the 20 week scan and in Naomi's case a separate private gender scan, both needed to know 'for sure'. Nikki in particular was concerned about the possibility of misdiagnosis:

*'But I am obviously having the next scan done Sunday just to confirm that. Because I'm a bit worried that they've got it wrong.'* (Nikki 1-22)

*'I was, umm, concerned because I was told it was a girl and I kind of spoke to a couple of people and they came out with oh god, you know, my friend she was misdiagnosed and she went out and got all girl stuff and it came out a boy. And I was like, right. Well, I then spoke to seven other people who all told me the same.'* (Nikki 1-58)

For Naomi, on the other hand, it was more about helping her believe that she really was having a girl. She already had an older son and really wanted a daughter. Despite it being confirmed by two scans that she was expecting a girl, she found this hard to believe because she had convinced herself that she was having a boy [Naomi 1-25] and there had been only boys in the family for more than two decades.

*'I mean, I think, this time I'm still slightly not quite believing that it's a girl, I still have this little doubt in my mind [...] So kind of to maybe in 3D see that it is a girl will really convince me and I will then be certain that it is.'* (Naomi 1-53)

While some women expressed simply a need to know, other also gave more practical reasons for wanting to know the baby's sex:

*'I think it you sort of get to prepare a bit more. Clothes and things like that, it just prepares you.'* (Sarah 1-51)

*'... in a way it's easier to prepare when you know the sex.'* (Isabel 1-7)

Both Nikki and Naomi, specifically asked the sonographer at the 3/4D scan to check fetal sex again:

*'Yes, definitely, they checked again yesterday.'* (Nikki 2-7)

*'Yeah, I mean we, just to check again before we buy the pink curtains for the nursery.'* (Naomi 3-20)



For some women, knowing the baby's sex seemed to make it easier to imagine the baby as a person and an individual. Even Jane, who does not know the baby's sex, imagined the baby as a boy, which appeared to help her with this.

Some of the women express a desire to know about problems in advance in order to be able to prepare.

*'You know, I'd like, if there is, it's not going to alter our decision or anything, about, if there is something wrong with her, but you can prepare for that.'* (Nikki 1-61)

All women agreed that scans can also provide further knowledge about the baby: reassurance that the baby is growing and developing well, for example:

*'they just checked that basically, they obviously said no, the baby is in the right place, and obviously then they found a heart beat and they were, they were really, really happy'* (Sarah 1-14; 12 week scan)

*'she was doing her checks and everything was ok, so that was all I needed to know'* (Jane 1-20; 20 week scan)

Isabel emphasized the difference between a 3/4D scan and a scan she had later on because the baby was in the breech position. While the 3/4D scan is for her to look at the baby, the breech scan is 'for them':

*'It's more for them rather than ... to have a look at the baby.'* (Isabel 3-21)

The extent to which a health check was carried out during the 3/4D scan varied.

*'No, they didn't do any of that. Umm, which, like I knew, what was said to me, the 4D is more, like this, you know, oh, that's the hand and ..., and they told you, like, cause there was this when it was dark, like, around his chest and it was, she was saying, oh that's the cord, and things like that. So she did those, all of that, but no, there was no health, no...'* (Sarah 2-23)

*'She did all the measurements as well and, umm, checked everything was fine. I mean we had all that at the 20 week scan, but she just did it all again which was good, and gave us a, umm, she gave us a very detailed report and explained it all thoroughly at the end.'* (Jane 2-14)

In a study of Australian women's experiences of routine scans, Harris et al. (2004:38) found that "'normality" was confirmed and reassurance afforded by the ultrasound operator's interpretations of fetal images'. Scans require 'translation' (Mitchell 2001) and the act of looking by the professional, which of course involves much more than just looking, reassures women that the baby is well, in most cases. This is clearly the case for routine scans, but also seems to apply to 3/4D

scans, especially in those clinics which carry out health checks as part of the 3/4D scan.

It has been suggested that 3/4D images are easier to interpret and may not need an expert to do so; this may be the case, but it seems that the presence of an expert who can do additional measurements and interpret the scan offers more reassurance, at least to some women.

The fact that at least two of the clinics the women attended offered a full health check and growth report as part of the 3/4D scan suggests that even 3/4D scans, which are supposedly done for non-medical reasons, are a 'hybrid practice' (Taylor 1998) with both a medical and a social purpose. However, what the women wanted from the 3/4D scan with respect to a health check was not always clear. Jane wanted it and was expecting it as she had a previous scan at the same clinic. For the other women, it did not seem as important and there were no clear expectations about what would be done.

#### **7.4.2 Getting in touch with the baby**

Even though the focus of the interviews was on 3/4D scans, almost all of the women also talked about fetal movements.

### ***Sub-theme 1: The moving baby***

#### *Patterns of movement*

All women except Sarah talked about fetal movements, mostly in positive terms.

The women who were expecting their first baby all said how difficult it had been at first to tell whether it was really fetal movement they felt:

*'... at first I wasn't sure ... I didn't know whether it was umm the real thing' (Isabel 1-12)*

*'Oh it is, it is very, very faint and obviously it's my first baby so I have nothing to compare it with.'* (Jane 1-27)

Naomi, who was expecting her second baby seemed to find it easier this time:

*'... this time, I was, I was aware that that was probably what it was, whereas last time I probably just didn't really kind of know what it was.'* (Naomi 1-45)

There was also awareness of patterns of movement and movements in response to stimuli:

*'... I notice now what times she is awake. She's usually awake in the evening and moves a lot ...'* (Isabel 1-10)

*'Umm, evenings, she's normally, sort of, quite having a, you know, when we go to bed particularly. If I wake up in the middle of the night often as well.'* (Naomi 1-48)

*'So I think, because with this hypnobirthing we've been doing relaxation and I started to notice how the baby responds to that ...'*  
(Jane 2-21)

Awareness of movement patterns increased as the pregnancy progressed, but the nature of movements changed in late pregnancy.

*'... I'm starting to recognise a bit of a pattern to movement, I couldn't do that last week ...'* (Jane 2-21)

*'... at the moment, it's not how I used to feel her move, I can still feel elbows and legs and things, umm, you know, but I do feel her move quite regularly.'* (Isabel 3-27)

*'I know that she's alright'*

Movement also gave information about the baby's health and well being. Isabel in particular described feeling movement as reassuring:

*'... it's nice to kind of feel her movement, I know that she's alright...'*  
(Isabel 1-37)

Conversely, some women talked about worrying about the baby if they have not felt movements or there were changes in movement patterns.

*'I was a bit concerned because I hadn't felt her move. When, umm, I think it was 23 weeks she started moving about. [...] I thought even though she was not supposed to move at that point I was kind of like worried because she hadn't...'* (Nikki 1-31)

*'And I think there is a little bit of a pattern, so if it changes slightly I do worry a little bit about that and I try and make it move, but I can't always do that. But I have a bit of a prod.'* (Jane 1-26)

*'We got sent to the hospital last week because I had, I'd had slightly reduced movements ...'* (Naomi 3-33)

Feeling the baby move essentially gives the pregnant woman direct, immediate knowledge that the baby is alive. Gaining reassurance from fetal movements seems therefore entirely normal and logical, while changes in movement patterns or reduced or no movements give rise to concern. However, there is comparatively little research into exactly how and why women experience fetal movements as reassuring. For example, Côté-Arsenault and Donato (2007:555) found that pregnant women who had suffered previous pregnancy loss found fetal movements very reassuring, describing them as 'the gold standard of baby's current safe status'.

### *Feelings about movements*

Movements were generally described in positive terms, for example:

*'So that was exciting, yeah.'* (Nikki 1-35)

However, some also described movements as not always enjoyable:

*'Umm, so, they don't always make you feel, it's not always enjoyable.*

*You know, sometimes they're a little bit kind of like, ooh, [laughs] and an odd sensation ...'* (Naomi 1-45)

*'... it can be quite painful and, and uncomfortable, and you just kind of think, stop moving, go to sleep, you know, just leave me alone for a bit.'* (Naomi 1-47)

*'like an alien in your belly'*

However, fetal movements, particularly early on, also felt quite strange:

*'It's a bit strange. Feels a bit like wind. [laughs] It just was a bit, sort of, odd. It's more, I mean, later when it starts, when you feel proper kicks and things like that, but it's kind of just sort of little fluttery, at times almost like that when you're at the top of a rollercoaster and your stomach just turns a bit and sort of sensations like that, when you kind of think, oh, that was weird.'* (Naomi 1-45)

*'But then when I actually started feeling her move, it was like, ooh my lord, you know! It was like one of the most bizarre feelings in the world.'* (Nikki 1-33)

Naomi described how her husband finds movements strange:

*'I think my husband finds it very strange cause he's just like, that's really weird. [...] ... and he is, that's so strange, it's like you've got an alien in your belly.'* (Naomi 1-46)

This sense of fetal movement feeling 'weird' and 'odd' may reflect the inherent 'strangeness' of carrying another human being inside oneself and feeling movement (Bergum 1997): 'Its inner movements belong to another being, yet they are not other' (Young 1984:46). This may also reflect that, as discussed briefly in Chapter 2, we seem to lack the language to properly describe these sensations and feelings.

*'a little person' / 'she is quite playful'*

Feeling the baby move was not just an enjoyable, nice experience, providing knowledge and reassurance about the baby, but also seemed to help some women to make the baby more real, get 'a sense' for the baby and turn the baby into 'a person'. Part of this is assigning character traits and preferences to the baby based on movement and responses to stimuli.



*'I think she likes voices most, she, I think maybe she is a little social interaction fiend and she's like, ooh, voices. Because obviously, for a lot of the day I probably sit here, you know, by myself, so, but maybe it's just hearing, you know, hearing voices and she sort of reacts and wakes up, maybe, I don't know.'* (Naomi 1-49)

*'Oh, she is just as bouncy and active as her big sister. She is incredibly active, she just bounces everywhere, she is doing it just now. She's got a good kick like her sister. She is just the same from that point of view, she is very very active.'* (Claire 1-34)

*'her back is kind of where my belly button is, so every time he strokes that, she moves around. You know, so, it's nice. It makes me think she is quite playful.'* (Isabel 3-31)

Movement also seemed to help turn the baby into a person and making it more real:

*'Well, it is a little person and is doing its own thing, but I haven't, because it has taken me a long time to feel movement, I haven't got a real sense yet, I still, I'm still uncertain with the movements. Even though I'm starting to recognise a bit of a pattern, and people again now have started saying, oh, is it getting more powerful now, can you tell if it's an arm or a leg, and I certainly can't tell that and I thought,*

*well that's going to be later on, and I think, I think that will happen later on that I get that sense.'* (Jane 1-42)

*'I think it was when I first felt her moving about that the realisation [that the baby is real] kind of dawned on me.'* (Isabel 1-33)

After the 3/4D scan, Naomi said that while the scan image had been helpful, she found that fetal movements told her more about what the baby was like:

*'Umm, I don't know, I don't know really it's given me any insight into that [baby's 'personality'], umm, I don't think you see enough to gain that kind of, I probably got more information on sort of personality just by, sort of movement and time, kind of times of day she wakes up and thinks the fact that she, if I drink, if I drink a fizzy drink and she wakes you know, like, ooh, she likes sugar! [laughs] You know, those kind of things more than what I saw on the screen. But I suppose if you start to put the two together you build more of a picture.'* (Naomi 2-14)

Drawing conclusions about what the baby is like based on fetal movement and reactions to outside stimuli seems to be fairly common; however there is little research into this – certainly compared to the research into the effect of scans on 'personifying' the fetus. In a qualitative study of Swedish women's experiences of pregnancy, Lundgren and Wahlberg (1999) found that fetal movements helped to

make the baby more real. Research by Zeanah et al. (1990) found evidence that prospective parents' perceptions were related to their perceptions of fetal movements. In a phenomenological description of her own experience, Van der Zalm (2002) describes how she 'gets to know' her baby at a deeper level through fetal movements: 'From my baby's touch from within, I begin to find its being.'

At one level, the way the baby moves and when it moves seems to provide pregnant women with information on their baby, which they can use to construct the baby as a person and individual. On a deeper level, it may also provide a way of getting closer to the baby and developing a deeper 'bond' with it; this, however, is much more difficult to put into words.

In a phenomenological study of women's experiences of becoming a mother, Bergum (1997:146) suggests that 'Women make guesses about what the movements mean. ... They find satisfaction in making sense of the behaviour, the movements, and responses of the fetus. They think about the characteristics of their child. ... The coming to know the individual child continues to develop through play, through the movement, toward a more distinct recognition that this fetus/baby is a separate/separating being.'

In a hermeneutical/phenomenological analysis of pregnant women's diaries, Lundgren and Wahlberg (1999) found that movement made the baby more real; they suggest that quickening is the foundation on which the relationship between mother and child is built. Rubin (1984:62) also emphasized the importance of fetal

movements: 'It is the fetal movements that begin to transform the theoretical child to a real, living child. The awareness of a child, not just a pregnancy, adds a new direction and a new dimension to affinal bonds and reciprocal relatedness to the woman's experience.' However, this was written at a time when ultrasound scans were only just becoming routine during pregnancy. It has been argued (e.g. Campbell 2006a) that now scans help to make the baby real as much as, if not more than, quickening. Nevertheless, fetal movements are a very direct way of 'experiencing' the fetus: 'Fetal movement, the feeling of life, of another living being, is a "quickening" in the woman's experience and commitment. The perception alerts a woman and redirects her attention and awareness to the child, this child within her' (Rubin 1984:64).

### ***Sub-theme 2: Interacting with the fetus***

Some of the women talked about interacting with the baby, either by 'prodding' the baby through the abdomen or by talking to the baby.

*'If [the hiccups are] in the same place, sometimes I poke her back, and she responds and I poke her again.'* (Isabel 1-14)

*'I try and make it move, but I can't always do that. But I have a bit of a prod.'* (Jane 1-26)

*'And she has a habit of sitting on my left hip, so I tend to kind of speak to her now, oh can you just move over a bit, it's really uncomfortable.'*

*[...] Yeah. So I have little conversations with her now and then. If I'm trying to sleep and she starts kicking then I'm like, can you settle down please.'* (Nikki 1-36, 1-37)

However, Naomi also said, maybe a little dismissively, that:

*'I don't generally hold conversations with her. [laughs] Umm, no.'*  
(Naomi 1-111)

Naomi and Claire both said that other family members (husband / older child) generally interact more with the baby, partly as a way of including the older child:

*'... otherwise it's just generally if she's going a bit mental, umm, you know [husband] will sort of, sort of feel, feel, try and feel what she is doing. Umm, but not much beyond that.'* (Naomi 1-111)

*'Yeah, I think probably the most interaction we have with her is in trying to engage [son] in interaction with her, actually more than we probably do.'* (Naomi 1-111)

*'[Daughter] talks to bump. She knows she's got a little sister, she knows it's bump and that's what we call it.'* (Claire 1-35)

Both Isabel and Jane talked about how their partners interact with the baby, by touching and talking respectively:

*'her back is kind of where my belly button is, so every time he strokes that, she moves around. You know, so, it's nice. It makes me think she is quite playful and, you know.'* (Isabel 3-31)

*'Because the baby moves such a lot now, he talks to it a lot, or we talk about him a lot.'* (Jane 3-19)

Physically interacting is the only way of engaging in a real 'two-way' relationship with the baby. It is not only an opportunity to learn about how the baby reacts to these interactions, but also gives a sense of connecting and directly 'communicating' with the baby. However, there seems to be even less research into this than there is into women's experiences of fetal movements. Bergum's (1997) phenomenological research suggests that interacting with the baby through talking, touching, feeling movement and an awareness of patterns, constitutes 'an intimate relationship that no one else shares' (Bergum 1997:38) and may help women to focus on the baby and 'sense the reality of the baby' (Bergum 1997:56).

#### **7.4.3 Imagining the baby**

The women clearly also spent time thinking about and imagining the baby; some of this was based on the knowledge about the baby they had gained from seeing

or feeling the baby. While this theme is not concerned directly with gaining (new) knowledge about the baby, it is about (1) synthesising the knowledge acquired through vision and touch and (2) attempting to get to know the baby better, to make the baby more familiar by thinking about and imagining what he/she is or will be like. It addresses the paradox of not really knowing the baby at all despite being in the closest physical relationship possible with it.

***Sub-theme 1: Creating an image of the baby***

Most of the women talked about thinking about and imagining what the baby was like:

*'... and then you're obviously trying to think, ooh what is she doing in there ...'* (Nikki 1-34)

*'... I think at this stage obviously I imagine what she's like and what she does.'* (Isabel 1-52)

*'Yes, I suppose it's just trying to create an image, isn't it, of what someone might be like.'* (Jane 1-45)

Where women referred to imagining more specific characteristics of the baby, both physical and behavioural, these were usually based on particular experiences:

*'... we are expecting to have a big baby because both me and my partner are quite tall' (Jane 1-40)*

*'She tends to be quite stubborn. In the two scans I've had, the first one I actually had to come out and come back in again because she wouldn't move to get the measurement at the back of the neck.'*

*(Nikki 1-29)*

For those women who already had an older child or older children, imagining the baby also seemed to be affected by previous experiences. Where there was a clear difference between the older child(ren) and the new baby, this sometimes made it more difficult to visualise the baby.

*'I find it difficult to visualise a baby that is not [son]. So, I think maybe that's another, like I, I still think another little boy would make sense in my head because it would just be, it would, he would be like [son] was and you know. So, obviously, the only baby that I have cared for was him, and so a little boy, and so this girl concept is the biggest one that is, is a bit strange.'* (Naomi 1-101)

*'I did find out, cause to me, that's just a new thing as well. I've never dealt with boys. But there's only one way to find out. So, yeah, that will be different as well.'* (Sarah 1-50)



Sarah and Claire both said they found it difficult to create an image of the baby:

*'I find it very hard, I find it very hard. Like I said, I think if it wasn't as it was at the beginning, I think you just sort of, to me, it's, umm, what next? I'm one of those, I have to wait till the actual day to, I do believe that obviously I'm having a baby and everything, but I think, for me, I think, once the baby is here, the child is here, then I think I will be more, because I think then it's finished. I mean the pregnancy and it's, you know, it's gone well and everything is fine. But I think until then, I can't do that.'* (Sarah 1-34)

*'But [hesitates] how do I imagine her? I don't know, I, I [hesitates], no, I don't have an image of her. I guess I'm just [laughs] feeling a bit sort of, I don't know, don't get attached to this thing until it's out and it's fine.'* (Claire 1-33)

For Claire, this seemed to be linked to both her professional experience (as a medical professional who sees a lot of babies with problems) and the diagnosis of her baby with possible congenital heart disease.

Jane acknowledged several times that the image created in this way was imposed and might be inaccurate.

*'And as I've said we can impose that on them and what they, as I say, my mum's theory is, it's a big, fat, lazy boy and it might come out a really scrawny, little girl.'* (Jane 1-45)

After the scan, the 3/4D image seemed to assist in creating a mental image of the baby, at least for some of the women.

*'... but yeah I suppose, that image is quite powerful now, it's very much stuck in my mind. Obviously I'm looking at the pictures a lot, but I can see him very clearly in my head and imagine what he's doing. Yeah.'* (Jane 2-22)

Even though Naomi said she found it easier to have an image of the baby after the 3/4D scan (Naomi 2-11), she still found it difficult to conceptualise that image as a baby:

*'Umm, [hesitates] I don't [hesitates] obviously I know, I know that it's a baby, I know, I'm very aware of where she is, but it's still, I find it difficult to really conceptualise her as a baby, I don't think of, until she is actually here, I can't quite, so an images I have of her, as an actual, an actual baby, is looking ahead. Current, is just kind of more my pregnant state rather than the baby. I don't know, I find, I, [hesitates] seeing her as a baby, now, obviously I know that she is, but I don't, you know, it's kind of, it's pregnant, then there will be a*

*baby. But the two, you know, one I know where she is. [laughs] But yeah, it's still, I think there's still a gap between the two at the moment.'* (Naomi 3-23)

Trying to create an image, a mental representation of the baby, is something all of the women did to some degree. Underlying this seems to be a desire to make the baby more familiar, to get to know the baby and to be able to feel closer to the baby.

### ***Sub-theme 2: The baby as a person***

Creating an image of the baby also extended to thinking about the baby as a person:

*'I do think about her as a little person. I think of her as you know of growing a little person inside me, which is a nice feeling.'* (Isabel 1-32)

*'Well, it is a little person and is doing its own thing ...'* (Jane 1-42)

As discussed above, being able to see the baby seemed to make it easier for many women to imagine the baby. Naomi said that seeing the baby, especially in detail, made it easier for her to imagine him/her as a person (Naomi 1-6, Naomi 1-28, Naomi 1-53). Sarah, who found it difficult to create an image of the baby, hoped that the 3/4D scan would make it easier to imagine the baby:

*But I think probably maybe after the 4D scan, cause I've spoken to various people that have had them and said it is the most fantastic thing they've ever done ... (Sarah 1-35)*

After the 3/4D scan, Sarah said that the baby seems more real and wondered what the baby would be like after the birth:

*'Umm, I just can't wait to meet him, to meet him in my world now. I think cause you know, like the 4D scan made it so real. So, yeah, you just feel, well, you know. I think, I think it's like everything, oh, what's he going to be like.'* (Sarah 2-30)

Most of the women at some point assigned intentional behaviour or 'personality' characteristics to the baby, mostly based on what they saw at the scan and fetal movements (see above), but occasionally also based on other factors. Sarah, for example, who described herself as always on the move, said the following:

*'Like I said, the baby probably wants to come out to have a rest. [laughs] I'm sure he's thinking, will you just sit down, no we're up again. I think, I think he can't wait to come out just cause of that. [laughs]'* (Sarah 2-25)

All the women talked to some extent about the fetus as a person, an individual. This has been recognised as one of the psychological preoccupations of pregnancy

(e.g. Zeanah et al. 1990), which becomes increasingly pronounced as pregnancy progresses. All interviews were carried out during the late second or third trimester, presumably therefore at a time when pregnant women are thinking about the fetus as a person. Lumley (1982), who interviewed women during each trimester about attitudes to the fetus, found that by 36 weeks almost all women considered the fetus a person. Furthermore, pregnant women have been found to have stable perceptions of fetal temperaments during the third trimester (Zeanah, Keener, Stewart & Anders 1985; Zeanah, Keener & Anders 1986). Zeanah et al. (1990:24) conclude that 'parents do construct reasonably coherent internal representations of the imagined babies of pregnancy'.

### ***Sub-theme 3: Talking about the baby***

Those women who knew the sex of the baby almost always referred to the baby as either he or she. Jane, who did not know the sex, referred to the baby most often as 'it', even though she said that:

*'I keep saying he, I've just got a very strong feeling that it's a boy ...'*

(Jane 1-44)

Naomi's uncertainty about the baby's sex, even though it had been confirmed at a private gender scan and the 20 week scan, was reflected in how she referred to the baby:

*'Her, I say, in inverted commas, still!'* (Naomi 1-69)

Claire referred to the baby in terms that might sound negative, but come across as affectionate within the interviews, while also acknowledging her anxieties and the difficult pregnancy she was experiencing:

*'this thing'* (Claire 1-33)

*'this little mischief'* (Claire 1-45)

Jane referred to the baby as a 'blob' on several occasions, for example:

*'... seeing the blob on the screen I had already got very attached'*

(Jane 1-32)

Most of the women seemed reluctant to refer to the baby as 'it', even Jane prefers 'he', though she still said mostly 'it'. This is arguably an attempt to 'individualise' the baby. Dykes and Sternqvist (2001) found that expectant parents are more likely to refer to the fetus as 'baby' rather than 'it' after a scan (around 17 weeks). A change in how women talk about the fetus was not really evident in this study, probably because the first interviews were carried out when the women were at least 25 weeks pregnant and had already had at least two scans.

#### ***Sub-theme 4: Feelings about the baby***

Jane and Claire talked explicitly about their feelings for the baby in terms of attachment and detachment, coming at this from opposites ends of the spectrum.

Jane described how she had become very attached before she was even pregnant, whereas Claire openly talked about deliberately maintaining a degree of detachment due to her professional experience and the strong possibility that her baby suffered from congenital heart disease.

*'I thought the minute they mention your embryos and how well they are doing you start getting attached you are kind of willing it to grow and develop until they you know put them back in. So I was already getting very attached ...'* (Jane 1-11)

*'... because of what I do, I find it slightly difficult to get very very attached to the baby. Because I know that not all pregnancies are viable, not all pregnancies go to term and not all pregnancies produce life babies. So I guess to an extent I maintain a degree of emotional detachment from the baby. [laughs] It's a self protection mechanism. So, it's lovely seeing her on scan, but I was just the same with [daughter]. Until she was born, breathing and pink and normal [laughs]'* (Claire 1-17)

In the later interviews, several of the women talked about how they could not wait to meet the baby, which could be interpreted as an expression of positive emotions towards the baby.

*'Yeah, just want to meet him! And very excited to meet him. I feel absolutely very attached and just thinking as everything has gone so well, I hope it continues to.'* (Jane 3-19)

*'... we are excited to [hesitates] meet her and you know actually for her to be here.'* (Naomi 3-21)

*'Well, very excited to meet her now. Because I had a baby shower and that kind of reinforced the idea that she is on the way and you know that kind of helps you prepare and ... getting last minute things.'*  
(Isabel 3-25)

Maybe one of the most surprising results from the interviews was how little most of the women talked about 'bonding', 'attachment' or 'feeling close to the baby'. Even when asked directly how they felt about the baby, none of the women, except Jane, talked immediately about their feelings.

## **7.5 'Experiences of pregnancy': results and discussion**

### **7.5.1 Feelings about being pregnant and the emotional impact of pregnancy**

Feelings about pregnancy and the emotional impact of pregnancy, particularly in terms of anxiety or apprehension, was a theme evident to varying degrees in all interviews.



### ***Sub-theme1: Finding out***

While all women seemed to be happy about having a baby at the time of the first interview, their initial reactions to the pregnancy varied. All pregnancies, except Sarah's, were planned. Initial reactions ranged from happiness and relief, to surprise to shock.

*'Happy. Very happy. [...] Relieved. Really relieved, it's been a long wait.'* (Nikki 1-2, 1-3)

*'Oh, I was delighted! It's an IVF pregnancy, so very much planned and wanted'* (Jane 1-3)

*'...I was quite surprised. Not upset at all, but just not expecting it when it happened'* (Claire 1-6)

*'I was shocked! Umm, yes, I didn't find out till I was 12 weeks. So I would say shocked'* (Sarah 1-2)

### ***Sub-theme 2: Mixed feelings***

'Mixed feelings' seemed to be very common, both on finding out about the pregnancy and later on.

*'I'm still a bit anxious ... But it's been kind of getting replaced by excitement of, you know, wanting to have the baby out already. It kind of goes between the two.'* (Nikki 1-13)

*'... although I'm so happy that, I'm happy that I'm going to have a child, I, umm, I, and it's awful because you feel that you should be oh yes, I'm so happy and, I'm happy, but I hate being pregnant.'* (Nikki 1-49)

Sarah found out unexpectedly that she was pregnant when she was 12 weeks, when she was told that she was probably having an ectopic pregnancy. She described these 'mixed feelings' in detail, referring to early pregnancy as a 'roller coaster of emotions':

*'Umm, going to the doctor thinking that you just have a wee infection and being told that you are having a child. Yeah, it's been a bit of a roller coaster of emotions.'* (Sarah 1-2)

*'Umm, I think, I think, I think from the very beginning to be told that you're having an ectopic pregnancy ... It was a feeling of dread because you, you, like I said it was that emotional roller coaster, when you have the first scan and you are told, no actually, everything is fine.'* (Sarah 1-18)

These early experiences affected how Sarah experienced the rest of her pregnancy, leaving her with 'a dreaded feeling':

*'Umm, I don't, for me, like, it is a dread, a dreaded feeling ...'* (Sarah 1-26)

*'... because you generally don't know where this is going to go. And if I never had this from the twelve weeks, from the beginning, maybe I would not have felt like this.'* (Sarah 1-21)

Naomi expressed her mixed feelings less directly, though it is clear that while she wanted to have another child, she also disliked being pregnant. For Claire the negative feelings about pregnancy stood out even more; she was not only having a physically difficult pregnancy, but her baby had been diagnosed with a potentially serious abnormality. Jane was the only woman who talked about her experience of pregnancy almost exclusively in positive terms, except for some apprehension.

### ***Sub-theme 3: Enjoying or hating pregnancy***

Some of the women stated their feelings about pregnancy very clearly. Isabel and Jane both said they enjoyed pregnancy, but qualified this by saying they 'kind of' enjoyed it:

*'... recently, I'm kind of enjoying being pregnant'* (Isabel 1-25)

*'... I've kind of enjoyed it.'* (Jane 3-20)

Negative feelings about pregnancy, on the other hand, were expressed in much stronger terms:

*'I hate being pregnant'* (Nikki 1-49)

*'But some people do love being, love every moment of being pregnant, they don't want it to end kind of thing. No, I'd quite happily, I would quite happily half the length of it, probably. Or have it delivered by a stork.'* (Naomi 1-106)

*'I hate being pregnant, I loathe it with a passion. If you could get children any other way, apart from being pregnant, it would be fantastic.'* (Claire 1-47)

Feelings about pregnancy seemed to change for some women as the pregnancy progressed. While Isabel said in the first interview that she was beginning to enjoy pregnancy (Isabel 1-25), which suggest that she was not enjoying it earlier on, she said in the last interview:

*'... I'm kind of fed up now, you know.'* (Isabel 3-3)

Isabel and Nikki also talked about how pregnancy had not been as they had expected it to be:

*'Umm, well, I think, I've had a very different experience to what I had imagined. I think I had always imagined that being pregnant is something that is all natural ... so I haven't found that. I mean I wouldn't change it, but, I realise that it's not, you know, you, there are plenty of books about being glowing and these things that come with it as well, you know, the aches and pains, particularly at the end.'*

(Isabel 3-33)

*'Yeah, I haven't bloomed at all. Only outwards, but not like skin-wise or anything.'* (Nikki 1-52)

#### ***Sub-theme 4: Role of physical problems***

Physical problems caused by pregnancy seemed to trigger considerable emotional upheaval for several women, particularly Nikki and Claire, who both suffered from hyperemesis gravidarum (HG, severe morning sickness).

*'In the beginning I was very emotional, I just felt completely useless cause I literally couldn't eat anything. So it was, umm, I've had a couple of breakdowns, but, umm, when I started feeling better I started feeling better in myself.'* (Nikki 1-9)

*'Just worried, concerned, umm, even questioning at one point is this actually worth it because I was literally bedridden and it was just awful really. Questioned having another, I don't like that.'* (Nikki 1-11)

*'Bit of a disaster! I have vomited nonstop. I've been on various medicines, I've been in and out of hospital, I've been on IV fluids. Umm. [laughs] It's not been the best pregnancy in the world. [...] So, and now I've stopped work because the obstetricians have sent me home, so I've been a bit useless, basically. So it's not, I'm just not built for pregnancy.'* (Claire 1-1)

Isabel was diagnosed with suspected placenta praevia at an earlier scan and was diagnosed with diabetes and high blood pressure in late pregnancy, which affected her emotionally:

*'I've been told that I'm not allowed to fly and not allowed to have umm intercourse either and that's been quite difficult I think.'* (Isabel 1-15)

*'... But also I think anxious because of the diabetes and the blood pressure, hoping everything is ok. I don't, you know, it's not really affecting me per se, umm, but obviously I don't know what it's doing to her, so I obviously want her to be ok.'* (Isabel 3-25)

Some of the women talked about feeling restricted or frustrated due to the physical changes in pregnancy:

*'I've been really frustrated ... I hate being restricted from, like, if I am a very active person. Anyway and when I'm not allowed to do certain things or people should, I find a lot of people say, oh you shouldn't be doing that.'* (Nikki 1-49)

*'So it's been relatively straightforward, but [hesitates] it isn't, it isn't a stage that I would say that I enjoy. I don't think it's fabulous and, and, a, I don't appreciate not being able to walk properly or, you know, I've had pelvic pain since about twelve, fifteen weeks, so, on and off, I have, and not being able to do the things that I would want to do, that I find very frustrating.'* (Naomi 3-25)

However, pregnancy can be emotionally challenging even in the absence of physical problems. Sarah, who despite a difficult start had an uncomplicated pregnancy, talked about the emotional impact of pregnancy more generally:

*'Hmm, I think these will be the hard weeks for me cause I feel very, like very tearful, I've got to say. But I think that's what you are, with your hormones whacky. I mean I've got to say, I feel I've cried so much, but I can't say to you why or what, when, you know, I cried for this reason, just little things are really. [laughs] No I will definitely say*

*that. So fingers crossed that will pass. But I think it's part and parcel of being a woman.'* (Sarah 2-26)

***Sub-theme 5: Scans: anxiety and reassurance***

Almost all women talked about being nervous or anxious before scans, especially early in pregnancy.

*'Before the 12 week scan I didn't sleep because I was so nervous. I was really anxious, you know, that there was anything wrong or there was no heart beat, but I wouldn't say I was petrified or anything else you know. ... And I think the second scan I wasn't as nervous.'* (Isabel 1-44)

*'It was, it was a feeling of dread... And then you think, but what are they going to find at the next one?'* (Sarah 1-18)

*'Nervous. Very, very anxious. I remember standing [...] I couldn't sit down. [...] I just got myself into such a state, thinking what do we do if there is an increased nuchal translucency. [...] I had got myself in a right state, but then the scan was normal, so.'* (Claire 1-12; before 20 week scan)



Claire also talked about the emotional effect of a scan at which an abnormality was detected – and about how difficult coping with an uncertain diagnosis had been.

*'So it's, that kind of has upset the [hesitates] pregnancy a bit. It just makes it very difficult to cope with, because every time I have a scan I get told something different, if there is a problem and the likelihood of there being a problem and it's, yes, I want another baby and I don't have a problem with that at all, but the emotion of being pregnant is very much coloured by the scans at the minute and ... So, it's, hmm ...'* (Claire 1-9)

All women talked about how (normal) scans had provided a degree of reassurance, for example:

*'A relief again, to know that everything was ok.'* [20 week scan] (Nikki 1-30)

*'For the earlier, for the very early ones, it's you know reassurance, that you know, everything is actually progressing, that there is a heartbeat and so on, going according to plan, I suppose.'* (Naomi 1-35)

Jane and Sarah said explicitly that they found the 3/4D scan, particularly the detailed image it provided, reassuring:

*'Yes, cause she, it was so detailed, she's got graphs and charts, showing the kind of the normal range and so on and it's, it's incredibly detailed and cause I, I understand a little bit of medical stuff cause of my job, so I like reading all those things anyway ...'* (Jane 2-28)

*'Oh, absolutely, I just think, I think, like I said, I think you get reassurance. Like, I could not believe the detail of how much I saw.'*  
(Sarah 2-5)

### ***Discussion: emotions about/during pregnancy***

There were clear individual differences between the women regarding feelings about pregnancy and the emotional impact of pregnancy. While not all pregnancies were planned, all were wanted, even though initial feelings ranged from delight and relief to surprise and shock. Later on, feelings about being pregnant also varied; while some women enjoyed pregnancy others intensely disliked it. The majority of women had mixed feelings to some degree. Mixed feelings seem to be very common (e.g. Lundgren and Wahlberg 1999; Smith 1999); considering that pregnancy is a transition often accompanied by immense changes, as well as the common physical discomforts and general uncertainty, this is not surprising. It is interesting that even in this comparatively small sample of pregnant women there was such a range of feelings about pregnancy.

A qualitative study by Warren and Brewis (2004:221/222) found that women experienced pregnancy in two distinct ways: 'some described feeling 'occupied' and alienated from their pregnant bodies; others thoroughly enjoyed the physical changes pregnancy occasioned; still others had both experiences'. These attitudes to pregnancy are reflected in the interviews; Naomi, for example, said she felt invaded and a loss of control over her body, while Jane enjoyed the changes pregnancy brought.

There were also clear differences regarding the emotional impact of pregnancy. All experience a degree of worry and anxiety about their baby's health; this seems to be not only normal , but may also fulfil a role (Deutsch 1946).

The very different physical experiences of pregnancy clearly had different effects on the women's emotional state. Those with more physical problems tended to find pregnancy restrictive and frustrating and generally more difficult to cope with. Specific problems or potential problems also tended to lead to increased anxiety and worry about the baby. These experiences are not unusual; Lundgren and Wahlberg (1999:14), for example, comment that physical problems often 'overshadowed the experience of being pregnant'.

There were more similarities between the women with respect to the relationship between scans and anxiety/reassurance. Their experiences of scans reflects the research literature (see Chapter 3): anxiety and worry tends to increase before a scan, while scans with normal results brought reassurance. Reassurance from

scans may also be transitory, as alluded to by Jane when she said that she wants to check that *'everything is still OK'* (Jane 1-13). With the 3/4D scan, there was less of a focus on reassurance, though some women explicitly stated that they found it reassuring.

### **7.5.2 Control**

All of the women talked to some degree about their sense of control during pregnancy; this relates to control over their own health and body, fetal health, the pregnancy and maternity care.

#### ***Sub-theme 1: Control over health***

The degree to which women felt they had control over the pregnancy, their health and fetal health varied. Isabel, for example, felt she has limited control:

*'I don't think you can control it, I think that, I mean obviously, you try and exercise and think about diet, but there are some things that you just can't control. So, you have to kind of leave it to I think kind of chance.'* (Isabel 3-33)

Nikki acknowledged her own influence on her baby's health, and with it feelings of worry and guilt:

*'I think, umm, I don't know, I think I have a huge influence, sort of constantly following me around, she doesn't have a choice. But she's*

*just, umm, a concern I have with my caffeine addiction, that she is obviously going to have that, so that influences my worry.'* (Nikki 1-54)

*'Umm, worried. Because I had been so ill and I was actually still ill at that point.'* [early pregnancy] (Nikki 1-26)

Jane had a very strong sense of responsibility for her own health:

*'And also, I take a holistic approach to health care, I very much believe that you take responsibility for yourself and you do what you can as well, so I do, so I try and do all that.'* (Jane 1-47)

*'And I've always kind of tried to take care of myself and be quite fit so I'm, that's all kind of stood me in good stead at a time when my body needs to be kind of at its peak to do what it's got to do.'* (Jane 1-64)

Claire, on the other hand, felt that she has virtually no control over the pregnancy or the health of her baby:

*'No control whatsoever over this pregnancy!'* (Claire 1-43)

***Sub-theme 2: Effect of pregnancy on sense of being in control***

The inevitable uncertainties of pregnancy can be difficult to deal with for somebody who likes to be in control, like Sarah.

*'And for me, you know, I think for me I like to be in control of my life and I think I had, because you generally don't know where this is going to go.'* (Sarah 1-21)

*'Yes, I don't like not knowing. Like I say, I go to work and I know what I'm doing, I am in control, you know.'* (Sarah 1-43)

Physical well-being, or otherwise, in pregnancy also affected sense of control. For example, those women who felt generally fine, said it had not really affected their sense of being in control. Jane, for example, said:

*'No, I haven't [lost control over body], and it's possibly because I haven't been very unwell, I've been lucky, so I haven't been terribly sick, I know some women suffer terribly, but I didn't get the slightest bit of nausea, my eating didn't change at all ....'* (Jane 1-69)

Naomi, on the other hand felt she has lost some controls due to the discomforts of pregnancy:

*'And then, I think, in the later stages again, when the baby is big and you know you've got that uncomfortable stage, again it's a control, that you just think, you know, I just want, I want my body back is probably the key, the key thing. Umm, so, yeah that does, I think that does become an issue, umm...'*(Naomi 1-88)

Feeling 'in control' seems to be strongly linked to feeling in control over one's body, especially in late pregnancy. Naomi in particular talked about this in some detail.

*'Control over body, it is a strange one and you do feel an element of losing control, I think that's certainly something I found last time in the later stages and I'm prepared for, you know, by the end I was desperate for it to be over because that idea of having your body back I think is a key thing.'* (Naomi 1-85)

*'And then you're too tired to do some of the things you want to do, or physically, physically you cannot do some of the things that you want to do, which I find very frustrating. Umm, so I think, I think it, I think I'm even more aware now of my lack of control.'* (Naomi 3-28)

However, for Naomi knowing that this loss of control was temporary made it easier to deal with:

*'I can deal with it because it is a time limited thing. [...] If it was, had an unforeseeable end date I think I would have more of an issue with it.'* (Naomi 1-89)

### ***Sub-theme 3: Control over care***

There were differences between the women with regards to how much control they felt they had over maternity care. A sense of having little control over care was common.

*'So I wouldn't really say I've had much control ... the appointments and scans have all been booked for me... The only real control I've had is when deciding when to have the 3D scan.'* (Isabel 1-40)

Most women did not seem to consider scans and antenatal tests as truly optional; they were simply part of being pregnant.

*'Not really. It was just kind of, I think it was just kind of assumed that you would ... [have scans]'* (Naomi 1-63)

For Jane, having private care after IVF was associated with having more control over care, which, for her, seemed to manifest itself in being able to have more scans.



*'Yes, I am, as I said, I think for me, it's been, I've been lucky in that, because it was IVF I had more scans. [...] I don't know if I would have felt different about that.'* (Jane 1-48)

Claire, who felt very out of control of other aspects of pregnancy, felt a high degree of control over her maternity care – largely because she had good access to care through her colleagues.

*'Control over care I receive, I get fantastic, absolutely superb care from my friends and colleagues. I have no problem at all. The only ... the only criticism that I could ever level at them is that they overprotect me it seems.'* (Claire 1-44)

Control is evidently a complex issue. For example, while Naomi said that she was happy to defer control during pregnancy and birth to health professionals, she also said that she did not feel out of control because she had a good understanding of what might happen and might need to be done:

*'Yeah, [sighs] I don't know that it, that bothers me that much, but then I don't feel out of control. So I don't know if, if I felt out of control with it, it might be different [...] I don't know if I'm that bothered about the level of control that I have over it. If I felt I had no control, and they said, you know, we are doing this, we are doing that and that's it, then maybe I might be a bit like, whoa, wait, why are you*

*doing this? Can you explain? But generally I feel that I have a really good understanding of what and why things might happen.'* (Naomi 1-92)

Attitudes to care and the relationship with health professionals were linked to beliefs about what and who influences one's own and the baby's health in pregnancy. Jane's sense of responsibility for her own health was accompanied by a degree of cynicism and a belief that health professionals are not always right.

*'... I work with doctors and nurses, which is why I'm, I am cynical sometimes [...] every doctor will have a different opinion, so, I'm just very careful of that.'* (Jane 1-46)

This was in strong contrast to Naomi:

*'I do think that midwives and medics do generally know what they're doing and that they generally, genuinely do have your best interest at heart, and that you know they will do what they think is safest to get baby here, you know, in one piece. Therefore, if they suggest something and say we think that this is the best option, then I am prepared to defer to them, unless for some bizarre reason I would think I had more, more knowledge than them, but I generally don't.'*  
(Naomi 1-97)

This was also linked to her views on maternity care:

*'And, but I don't have those strong feelings about how I want things to be, umm, if they want to take my blood, if they want to poke me with needles, then, you know, that's alright.'* (Naomi 1-95)

***Discussion: control***

The complexity of the concept of control is reflected in the interviews. While there was some convergence, there were also clear differences. The women felt they had varying degrees of control over the pregnancy, their health and their baby's health. This depended to some extent on what happened during the pregnancy and whether there were major physical problems, but there also seem to be some fundamental differences between the women. For example, while Jane felt a strong sense of responsibility over her own health, others felt it was more down to chance.

The degree to which the women felt pregnancy had affected their sense of being in control of their body and their life also varied and seemed to depend to a large extent to how they felt physically during pregnancy. There are also some clear differences with regards to attitudes to health professionals and control over maternity care.

### 7.5.3 Identity

For all women, pregnancy had an effect on their sense of identity, to varying degrees. While for most it had led to a degree of conflict, for others it had also confirmed aspects of their sense of identity.

#### ***Sub-theme 1: Challenges to the sense of identity***

For *Isabel*, pregnancy seems to have had a negative effect on her body image and her identity as a young and attractive woman, exacerbated by the advice not to have sex due to a suspected low-lying placenta.

*'I'd say that, I mean, I'm not sure if it's because I'm quite a young mother, you know, younger, I don't feel kind of sort of sexy or attractive as I did before the pregnancy. And then obviously to have it so that we can't have sex as well, you know, it's been quite difficult. Ummm, so I mean that it's the only, I wouldn't say it's disappointment, it's just kind of frustration I think. And ummm, I do find as regards me wearing clothes, I can't dress how I like, perhaps for going out, for dinner or to the theatre I can't dress as nicely as I would have done in the past.'* (Isabel 1-16)

*Nikki* found the physical effects of HG and, later in pregnancy, weight gain frustrating and restrictive; they interfered with her ability to 'just get on' as she normally would. This affected her emotionally and may also have impacted on her sense of identity.

*'So, I'm more, I'm quite frustrated at the minute, sort of not being able to do, I like trying to carry on as normal and I know the further on I get I'm probably going to be more restricted with things I do, so...'*

(Nikki 1-17)

*'I've been really frustrated ... I hate being restricted from, like, if I am a very active person. Anyway and when I'm not allowed to do certain things or people should, I find a lot of people say, oh you shouldn't be doing that.'* (Nikki 1-49)

Her experience of pregnancy also confounded her expectations of what being pregnant would (or should!) be like – which might have implications for her view of her identity as a (future) mother.

*'Just worried, concerned, umm, even questioning at one point is this actually worth it because I was literally bedridden and it was just awful really. Questioned having another, I don't like that.'* (Nikki 1-11)

*'Yeah, I haven't bloomed at all. Only outwards, but not like skin-wise or anything. So, I just look the same, I just like, as my sister says, I look like a stick insect that swallowed a Malteser. I'm just all bump.'* (Nikki 1-52)

Sarah spent a considerable time in the first interview (Sarah 1-21 to Sarah 1-28) talking about the lack of support from health professionals during and after pregnancy, while at the same time saying that she does not need support.

*'And however much, and I'll be honest you don't, I'll be honest, I don't think nowadays when you have a baby, from what it was like years ago, I think, I've got more support years ago than I think you get now. And I think it's more, oh no, you're fine. I think the emotional aspect, you'd love somebody to actually talk to you a bit more.'* (Sarah 1-21)

*'I think, like I, it doesn't affect me because like I say I carry on, I just do my own thing.'* (Sarah 1-45)

*'And I can see, if there is people that are pregnant, like me, the midwife think they cope. So couldn't really say if I'm healthy, she doesn't really know me. I don't think they get to know you, I don't think they know nothing about you. You are a number and a piece of paper. But some people won't ask for help where they deep down want help. And I think that's what is the scary, scary think.'* (Sarah 1-46)

While Sarah emphasized that she did not need the support, it sounded as if she really would have liked more support, but the midwives assumed that she needed less support because she was healthy and already had two older children. She also

portrayed herself as somebody who is very independent and likes to be in control, who just carries on and likes to keep busy:

*'I'm one of these people who don't go to the doctors I just sort of go to the chemist, I just carry on.'* (Sarah 1-10)

*'... I am a very independent person, I try to do all things myself ...'*  
(Sarah 1-15)

*'I've got some days I feel a bit, probably tired, but I think I'm one of these people, I just carry on anyway. [laughs]'* (Sarah 2-25)

However, Sarah also said the following in the first interview, which suggests a degree of vulnerability and need for support which she may have tried to hide most of the time:

*'And I think you, your, everyone says I'm still the same, but I'm sure part of me, like every woman, you know, your hormones are going and you probably get a paranoid feeling...'* (Sarah 1-29)

Sarah found out about the pregnancy relatively late and was told first of all that it was probably an ectopic pregnancy. She found this traumatic and referred to having 'a dreaded feeling' as a result. This sense of not being in control may have

given rise to a conflict in identity as she otherwise portrayed herself as somebody who needs to be in control.

For *Naomi*, there was a possible challenge to her identity in terms of control. She said that both in her last and her current pregnancy she had lost some control over her body as well as 'life', particularly work. This seemed to be a major concern for her. Her career was clearly important to Naomi and she seemed at times to struggle with the impact pregnancy had on it.

*'I think I felt that during the first few months when I felt really sick, I just felt I wasn't in control because nothing I could do made me feel any better, but yet I had these other things that I had to do, you know. There you know there were a few times when I was like, ooh, I don't want this, just go away, just stop feeling sick.'* (Naomi 1-87)

The potential challenge to identity is less clear for *Claire*. Work was very important to her; she enjoyed work and took pride in not normally having time off sick, but the very difficult pregnancy meant that she had to take time off, leading to feelings of guilt and 'uselessness':

*'I've not done any on-call since I was five weeks. So, and now I've stopped work because the obstetricians have sent me home, so I've been a bit useless, basically.'* (Claire 1-1)



*'So, I think the chances of me working again in this pregnancy are zero. [...] I feel very guilty about it. Incredibly guilty about it. Because the work is still there, it still needs doing.'* (Claire 1-38 and Claire 1-39)

### ***Sub-theme 2: Confirming identity***

Naomi made an explicit contrast between her and 'other people' or 'some people' more than a dozen times during the first interview. The strongest contrast was between her and women who refuse scans or other tests, have strong feelings about what they want during labour, get very stressed during pregnancy and who love being pregnant. Examples include:

*'the same kind of people talk about turning down other appointments, you know, for various different tests for various things, and I just kind of like, well, why, I don't see the need to'* (Naomi 1-64)

*'... I know some people, like I've had friends who're very certain that they want a homebirth and a hypnobirth, you know they've got very strong feelings on what they want. As far as I'm concerned, as long as the baby gets here, I don't really care what happens, just the easiest way for that to happen.'* (Naomi 1-75)

*'some people seem to make a lot of fuss and get very anxious about things and I just do think, I do sometimes think, I can't see what, but maybe that's just, I'm just, maybe that's just me and, but I also know that I probably have more medical understanding than some people do' (Naomi 1-80)*

*'Again there are some strange women who look forward to [birth]. [laughs]' (Naomi 3-30)*

These contrasts between herself and 'other people' express two issues: she was 'happy to go along with' what health professionals suggest and did not subscribe to a 'natural pregnancy/childbirth paradigm', and she was not anxious and generally healthy. In this regard, her experience of pregnancy seemed to have confirmed these aspects of her sense of identity.

For *Jane*, pregnancy seemed to have largely confirmed her sense of identity. For her, taking care of herself, physically and emotionally, was very important and she had a very strong sense of responsibility for her own health, as discussed above. Her pregnancy had gone very smoothly and this experience confirmed her approach to health. If she had had a more difficult pregnancy, it is conceivable that this may have provided more of a challenge to her sense of identity.

*'I have invested a lot into this, so I have been doing a lot of taking care of myself, so I don't know if that's counteracted any of that. But,*

*yeah, I've been taking care of myself very well emotionally.'* (Jane 1-6)

*'So I don't know how much I can put that down to I did all the right things, umm, and I read a lot and did various things.'* (Jane 1-55)

Interestingly, Jane said the following in the final interview, which would indicate that she feels it is not all under her control:

*'I mean, as I've said, very lucky. I haven't had any problems, so, umm, compared to some things I hear, what other women have had, I've been lucky so far, just a bit uncomfortable at the moment ...'* (Jane 3-5)

### ***Discussion: identity***

Pregnancy has been described as a period of transition (e.g. Lundgren & Wahlberg 1999; Imle 1990); it is likely that the profound physical changes and a new focus on motherhood will have some impact on a pregnant woman's sense of identity. The above example clearly concern only some aspects of the women's sense of identity; there will be other aspects which may have not been affected by pregnancy or have been affected differently. Yet the issues highlighted above stood out from the interviews and provide some insight into the complex changes that can occur to a pregnant woman's sense of identity.

Bailey (1999) identified six themes in pregnant women's discursive construction of identity: self-identity and mothering identity, the body and the self, the working person, practices of the self, the relational sense of self and experience of space and time. In this study, which did not focus specifically on identity, several of these themes were apparent, particularly the body and the self, the working person and practices of self. The embodied experience of pregnancy and its impact on identity affected the women differently. Isabel, for example, experienced the physical changes of pregnancy as a challenge to her identity, while for Jane they confirmed her identity as somebody who takes responsibility for her health and care of her body – she was far more comfortable with the changes to her body than the other women. Several women talked about the impact of pregnancy on their work in negative terms; Claire, for example, felt 'useless' and guilty that she has not been able to work for a large part of pregnancy. Practices of self, as described by Bailey (1999) include changes to diet, behaviour and lifestyle, which several of the women talked about, but not specifically in terms of identity.

Identity is commonly expressed in terms of differences and similarities with respect to other people (Jenkins 1996). This was expressed strongly by some of the women. Naomi, for example, referred frequently to 'other people' who act and feel differently from herself.

## **7.6 Overall discussion**

This section will focus on some of the issues raised by the analysis of the interviews, namely: the uniqueness of individual experiences; the importance of seeing and feeling in getting to know the baby; and the experience and significance of 3/4D scans for the women in this study.

### **7.6.1 Unique experiences of pregnancy**

It is evident from the second superordinate theme, 'Experiences of pregnancy', that the women have all experienced pregnancy very differently – the physical experience, the emotional impact, their attitude to pregnancy, their sense of control and identity, how they relate to the fetus – vary considerably, though there are also similarities. The physical experience of pregnancy in particular has played an important role in the divergent experiences, demonstrating how tightly linked the embodied and emotional experience of pregnancy are.

Consequently, women are likely to choose 3/4D scans for different reasons (although there was considerable overlap) and are affected differently by the scans. Women's physical experience of pregnancy, underlying individual psychological differences, personal relationships, presence or lack of support and other circumstances are likely to affect the way women experience 3/4D scans and how they are affected by them. For some women the 3/4D scan provided some reassurance, for others it did not. For some women it may have enhanced some elements of bonding, for others it is unlikely to have done so. It is therefore

impossible to make generalisations about the impact of 3/4D scans and, for example, claims that 3/4D scans will increase bonding cannot be justified.

### **7.6.2 Getting to know the baby: seeing and feeling**

While there were some differences between the women with respect to how they 'got to know' their baby, due either to individual differences and/or differences in their experience of pregnancy, the similarities were striking. All of the women expressed a curiosity about, and a desire to get to know and 'meet', the baby, wanting to make it familiar, not just to themselves but also the wider family. However, for some women, notably Claire, this was less the case than for others

Lundgren and Wahlberg (1999) conclude from their phenomenological / hermeneutical study of pregnant women's diaries that the women's experience of pregnancy is essentially a "transition to the unknown". Consequently, a curiosity about, and desire to get to know, the fetus is likely to be very common during pregnancy. The most obvious method of doing so seems to be seeing the baby during ultrasound scans. However, it is clear from the interviews that fetal movement and physical interaction with the baby also play a large part in this process.

Furthermore, it could be argued that both seeing and feeling the fetus occur at different levels and with different intentions and outcomes, and that there are clear parallels between the two 'modes of knowing' (see Table 7.2).

**Table 7.2 Seeing and feeling: parallels in experience**

|                            | <b>Seeing</b>                                                                                                                                                                                                                                  | <b>Feeling</b>                                                                                                                                                       |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... is enjoyable & amazing | Seeing the baby is an enjoyable, amazing and emotional experience, as is sharing images with others and keeping them as mementos. It can also be a strange experience which does not always 'match up'.                                        | Most women describe fetal movements in positive terms, as enjoyable and exciting. They can also feel strange and sometimes uncomfortable.                            |
| ... is knowing             | Seeing the baby provides knowledge that 'everything is ok', what the baby looks like, and what the baby 'is like' – his/her likes, dislikes and temperament. Mediated by professionals, it also provides knowledge about fetal sex and health. | Awareness of movement, movement patterns and reactions to stimuli provides knowledge about the baby's well-being, characteristics, temperament, likes and dislikes.  |
| ... is believing           | Building on knowledge gained about the baby, seeing is also believing. It makes the baby more real as a person and individual and as a family member, both to the pregnant woman and her partner and to the wider family.                      | Fetal movements help to make the baby real and help turn it into a person and individual. Quickening may serve as confirmation of the pregnancy as well as the baby. |
| ... is meeting             | Being able to see the baby is a way of meeting the baby before birth; this is likely to be linked to having more knowledge about the baby on one hand, and feeling an emotional connections with the baby on the other.                        | Touching or 'prodding' the baby enable pregnant women to directly interact with the baby, especially if the baby reacts to the touch.                                |

As discussed in Chapter 2, it has been argued by Duden (1993) that haptic ways of gaining knowledge of the fetus (feeling, touching) have been overtaken by optic ways (ultrasound). However, Duden (1993:55) acknowledges that 'woman's flesh, in spite of all evidence to the contrary, remains quick even in the age of the fetus'. The results presented here support this: feeling the fetus move and interacting

with it are still important to pregnant women. Furthermore, movement and touch seem to provide something that ultrasound scans cannot. The women in this study use information gained from scans as well as fetal movements to gain knowledge about the fetus and construct it as an individual, person and family member.

These narratives also demonstrate that some women may use the visual information from scans to make sense of their physical experience of the fetus, as in the case of Sarah. Milne and Rich (1981) argue that women might combine ultrasound images with interoceptive knowledge acquired through feeling and touching. Roberts (2012a:308), who observed 3/4D ultrasound scans, also suggests that scans may give 'pregnant women information about the fetus that may complement or conflict with their embodied knowledge of the fetus'.

There is one important difference between learning about the fetus through seeing and doing so through feeling. In order to gain knowledge from seeing, the pregnant woman needs to have an ultrasound scan, which provides a 'snapshot' of the fetus at one moment in time. Feeling the fetus move, however, is not dependent on others or restricted to a particular time – the pregnant woman can do so at any time and it is under her direct control. Unlike seeing the baby at a 3/4D scan, it is also free.

Furthermore, feeling the baby move is something that is, with some exceptions, available only to the pregnant woman and more direct and intimate than scan images:



‘the foetus’ movements are wholly mine, completely within me, conditioning my experience and space. Only I have access to these movements from their origin, as it were. For months only I can witness this life within me, and it is only under my direction of where to put their hands that others can feel these movements. I have privileged relation to this other life, not unlike that I have to my dreams and thoughts, which I can tell someone.’ (Young 1984:48)

Conversely, ultrasound scan images are not only mediated through technology and experts, but also shared extensively with others.

### **7.6.3 Experiences and significance of 3/4D scans**

Considering that 3/4D scans are typically marketed as ‘bonding scans’ (Chapter 5), it is striking how little the women talk about these scans in terms of bonding. As discussed above, this may be because the components of bonding permeate the whole of the ‘Getting to know the baby’ superordinate theme, rather than being neatly encapsulated by the women in the term ‘bonding’. However, it does not appear that women choose 3/4D scans specifically with the intention of ‘feeling closer’ to their baby. While it is impossible to draw general conclusions from such a small sample, this research suggest that the overwhelming reason for booking a 3/4D scan is the desire to see the baby in more detail at a later point in pregnancy than with routine scans. This may be part of the wider construct of ‘bonding’, but it also presents 3/4D scans simply as a nice, interesting and sometimes emotional

experience. However, while the majority of women said it was a nice experience, these expectations were not always met.

The women's narratives demonstrate that 'bonding' is a complex psychological construct and raise questions regarding what exactly constitutes 'bonding' and how women experience it – which may contrast with professional and academic conceptualisations. What role does knowing more about the fetus, e.g. physical appearance, sex and behaviour patterns, play in 'bonding'? Or is it more about feelings towards the baby, which may not be as strongly affected by the 3/4D images as has been suggested e.g. by Campbell (2006a)? These issues will be discussed further in Chapter 9.

When the women in this study talked about what they gained from scans, both in terms of enjoyment and knowledge, they were in most cases referring to both routine 2D scans and private 3/4D scans. There were some differences however. Knowledge about fetal health and sex was attained almost exclusively through routine scans, though in some cases 3/4D scans confirmed fetal sex and provided reassurance about fetal health. On the other hand, the enhanced surface imaging of the 3/4D scan made it easier for the women to gain a clearer picture of the baby's appearance and also seemed to make fetal 'behaviour' during the scan more vivid and more suited to being interpreted in terms of fetal likes, dislikes and temperament. The 3/4D images made the fetus look more like a 'real', newborn baby, which seemed to make it easier, at least for some of the women, to imagine the baby as a person. Sarah, who had found it difficult to imagine the

baby before the 3/4D scan, talks about how the baby seemed so much more real after the 3/4D scan. For others however, the 3/4D scans seems to have much less significance in this sense.

Like routine scans, private 3/4D scans also have the potential to offer reassurance. However, as the focus is less on medical aspects, though this varies, 3/4D scans appear to lead to less pre-scan anxiety compared to 2D scans. For some women, the 3/4D scan may be reassuring regarding specific concerns.

For these women, the scan seems to have been more about having a nice, interesting and potentially emotional experience or, in the case of the women who had a 3/4D scan with an older child, an attempt to treat both children equally.

#### **7.6.4 Concluding thoughts**

The themes emerging from the interviews were far wider ranging than simply attempting to describe and explain the experience of attending a 3/4D scan. In this analysis the women's voices were privileged; their individual stories are evident throughout. While it is impossible to generalise from these individual voices, it is possible to offer some tentative conclusions. The experiences reported here provide a useful background to the contemporary practice of private 3/4D scanning; may deepen our understanding of the psychology of pregnancy; may help us in interpreting psychological phenomena such as bonding, however we conceptualise it, vis-à-vis the application of new imaging technology and may assist in establishing how such new technologies should reasonably be promoted.

These interviews have also confirmed that even though 3/4D scans are not overtly medical, they nonetheless constitute a 'hybrid practice' (Taylor 1998), like routine scans, for pregnant women: they are both a social and a medical event. Wanting 'to see that everything is ok' was important to most of the women and some of them seem to have gained a degree of reassurance from them. This does, however, not apply to all women equally; for some of the women the 3/4D scan was almost exclusively a social event, while for others the medical aspects were more significant.

## Chapter 8 Case studies

### 8.1 Introduction

A case study is not a method in itself, but an approach to research which makes use of different methods. It is ideographic and holistic in nature and does not aim for generalisations, but to provide 'a rich picture with many kinds of insights coming from different angles, from different kinds of information' (Thomas 2011:21).

Wieviorka (1992) suggests that case studies contain two elements: a subject and an analytical frame. The subject is what the focus is on, what one is interested in. However, the subject in itself is not a case study; it may simply be a description of the case. What makes it a case study is the analytical frame that is employed and which provides purpose and direction for the study of the subject, narrowing the focus to a particular aspect. Both elements are necessary for a case study (Thomas 2011).

In these case studies, the subject is the individual pregnant woman having a 3/4D scan; the analytical frame focuses the analysis on the 3/4D scan, exploring how it has affected the pregnant woman's psychological experience of pregnancy and how she relates to the fetus. Becker, Geer, Hughes and Strauss (1977) suggest that

what is a particular case should emerge as research progresses, rather than having been defined clearly at the beginning. For these case studies, only the subject was defined at the outset. The two superordinate themes emerging from the analysis of the qualitative interviews (Chapter 7), 'experiences of pregnancy' and 'getting to know the fetus', helped to refine the analytical frame: the effect of 3/4D scans on pregnant women's experiences of pregnancy and how they relate to the fetus. Unlike the interview analysis, which focuses on the women's wider psychological experiences of pregnancy and the scan, the focus of the case studies is very firmly on the 3/4D scan.

## **8.2 Analysis**

### **8.2.1 Data sources**

These case studies draw on two main sources of data: interviews and questionnaires. Some use is also made of personal notes taken during the data collection period. Study design, sampling, data collection and ethical considerations have been discussed in Chapter 6.

The interviews have been analysed separately using Interpretative Phenomenological Analysis (Chapter 7). There is some overlap in what is used from the interviews for the case studies and the IPA, but the case studies also use parts of the interviews that did not appear in the IPA, particularly with respect to 3/4D scans. While the focus of the IPA is on experience, meaning and interpretation,

the case studies make use of what was said in the interviews at a simpler level of analysis. They are separate and independent from the IPA. However, as the case study analysis was completed after the IPA, the latter has influenced the use of interview data in the case studies because understanding and interpretation has evolved through the IPA. Consequently, the interview component of the case studies is not entirely separate from the IPA; it could be argued that this is an advantage as it has added further depth to the contribution the interviews have made to the case studies.

The questionnaires data is only used in the case studies and not presented separately, as originally planned, as the very low numbers made a purely quantitative analysis not feasible. The quantitative results will therefore be presented in this Chapter.

Personal notes taken at the time of collecting interview and questionnaire data were also used. These largely consist of thoughts on the women's mood, non-verbal communication and body language (in the case of face-to-face interviews) and additional information not contained in the transcripts, the location of face-to-face interviews, feelings and thoughts about how women felt about pregnancy, the fetus and the scan, as well as additional information provided by the women, such as occupation, living arrangements and further details about partners and/or older children. These personal notes also contain a degree of reflexivity. While they do not contribute as much as the questionnaires and interviews, they do nonetheless add depth and additional information.

The case study analysis focuses on women's reasons for, and expectations and experiences of, 3/4D scans, the impact of the scan on their psychological experience of pregnancy and the impact of the scan on how they relate to the fetus. Information on demographic background and the current pregnancy and, if applicable, previous pregnancies is also provided.

### **8.2.2 3/4D scan: reasons, expectations and experiences**

From the first questionnaire, the woman's description of why she decided to have a scan, the ranking of the list of reasons and the description of her expectations for the scan were collated separately for each woman and then presented in tables comparing all women. The second and third questionnaire asked women to rate their experiences, both of the scan and of what they could see of the fetus, compared to their expectations on a scale from -3 to +3. These results were presented in a graph. Women were also asked to describe the extent to which their expectations had been met; these results were also collated for each woman and presented in a table for all women.

Most women talked about reasons, expectations and experiences in the interviews, though the extent to which they did varied. Comparisons were then made between the information in the questionnaires and what women said in the interviews.



### **8.2.3 Impact on the experience of pregnancy**

The experience of pregnancy was explored in terms of women's attitude and feelings towards the pregnancy and their emotional state during pregnancy. This part of the analysis draws on the results from the attitude scale and the HADS in the questionnaires and on what women said in the interviews about how they felt about their pregnancy and the emotional impact of being pregnant.

For each woman the adjectives from the adjective scale (see Section 6.4.3) were split into positive and negative and then, together with additional adjectives if chosen, presented in charts for each timepoint. For the HADS (Zigmond & Snaith 1983), see Section 6.4.6, average scores for the anxiety and depression subscales were presented in graphs comparing all women.

### **8.2.4 Impact on how women relate to the fetus**

How the women relate to the fetus focuses mostly on bonding, which is explored in the questionnaires and also discussed in the interviews. Reference is also made to women's perceptions of what affects fetal health, i.e. the fetal health locus of control. This was assessed in the questionnaires and some women also talked about it in the interviews. While fetal health locus of control does not relate exclusively to how the woman relates to the fetus, the extent to which she feels she herself has control over fetal health does nonetheless touch upon this.

The Prenatal Attachment Inventory (PAI) (Müller & Mercer 1993) was used to assess antenatal bonding (see Section 6.4.5). Total scores are presented in a graph,

with higher scores indicating higher levels of bonding and showing average scores at each timepoint for each woman and comparing all women. For the Pictorial Representation of Attachment Measure (PRAM) (van Bakel et al. 2013), distances between the centres of the circles representing the baby and the pregnant woman were calculated and results presented in a table.

Fetal health locus of control was assessed using the Fetal Health Locus of Control scale (FHLC) (Labs & Wurtele 1986), see Section 6.4.4. The results are presented in graphs showing average FHLC scores and scores for the three FHLC subscales at each timepoint, both for individual women and comparing all women, with higher scores indicating higher levels of locus of control.

### **8.2.5 Presentation of case studies**

The results of the case studies are written up as individual narratives for each woman. The analysis and writing up was done on a basis of ‘theoretical propositions’ (Yin 2009), using the original research questions and objectives (Section 4.1) to focus the narrative. After providing background information and describing the woman’s reasons for choosing a 3/4D scan, her expectations and her experience of the scan, each case study attempts to answer two questions:

1. How did the 3/4D scan affect the psychological experience of pregnancy, including her feelings about pregnancy and levels of anxiety?
2. How did the 3/4D scan affect how she relates to, and thinks about, the fetus?

In the interest of coherence, the narratives contain not only the results but also a certain amount of discussion for each individual case study. In the overall discussion (Section 8.5) cross-case comparisons are made between the individual case studies and similarities and differences are highlighted.

Quotes from the interviews are referenced in the same way as for the IPA (Chapter 7), while questionnaires are referred to by number, i.e. Q1 refers to the first questionnaire.

## **8.3 Quantitative results**

### **8.3.1 Demographic background**

The demographic background of the six women, presented in Table 6.1 in Chapter 6 was surprisingly varied in terms of age, relationship status, education and income, though none of the women were from socio-economically deprived backgrounds.

### **8.3.2 Pregnancy information**

Information about gestational age at the three timepoints and the 3/4D scan, current pregnancy and, if applicable, previous pregnancy/pregnancies is collated in Table 8.1. The comments are the women's own words, as given in the questionnaire. The pregnancies experienced by these women varied greatly; while some had very smooth pregnancies, others had serious problems. All except

Sarah's were planned, though some happened sooner than expected. Three of the women were expecting their first child, the others already had at least one older child.

**Table 8.1 Questionnaires: summary of information about pregnancy**

|               | Older children | Previous pregnancy/ies                                                                                                               | Planned pregnancy | Problems in pregnancy                                                                                                                     | Number of scans (by TP1) |
|---------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Isabel</b> | No             | n/a                                                                                                                                  | Yes               | Low-lying placenta – restricted exercise, no flying or sexual intercourse; gestational diabetes and high blood pressure in late pregnancy | 2                        |
| <b>Nikki</b>  | No             | n/a                                                                                                                                  | Yes               | Severe morning sickness, off work for 2 months                                                                                            | 2                        |
| <b>Sarah</b>  | 2              | [blank]                                                                                                                              | No                | [blank]                                                                                                                                   | 2                        |
| <b>Jane</b>   | No             | n/a                                                                                                                                  | Yes (IVF)         | No                                                                                                                                        | 5                        |
| <b>Naomi</b>  | 1              | Pregnancy was relatively troublefree except minor SPD at later stages. Scan detected kidney problems with baby but these were minor. | Yes (not as soon) | No                                                                                                                                        | 3                        |
| <b>Claire</b> | 1              | Hyperemesis, difficult delivery, mastitis + septicaemia, not the best pregnancy!                                                     | Yes               | Yes – hyperemesis, UTI, abnormal 20 week scan                                                                                             | 9                        |

(these are the women's own words from the questionnaires)

### 8.3.3 Attitude to pregnancy

The frequency with which each adjective was chosen is shown in Table 8.2, while Figure 8.1 presents the choice each woman made. Words shaded in orange represent 'negative' attitudes, those in light blue 'positive' attitudes. While Isabel, Jane and Naomi chose mostly positive adjectives, those chosen by Nikki, Sarah and Claire were mostly negative. The relative proportions of positive and negative attitudes changed over time for all women except Claire. For the other women, apart from Sarah, the proportion of negative attitudes was higher at TP3 than TP1.

**Table 8.2 Attitude to pregnancy: frequency of chosen adjectives** (over all timepoints)

| Attitude                                                                            | Frequency |
|-------------------------------------------------------------------------------------|-----------|
| excited                                                                             | 13        |
| happy, anxious                                                                      | 10        |
| maternal                                                                            | 8         |
| protective                                                                          | 7         |
| vulnerable                                                                          | 5         |
| fulfilled                                                                           | 4         |
| ugly, apprehensive                                                                  | 3         |
| powerful, invaded, detached, nervous                                                | 2         |
| confident, serene, depressed, out of control, stressed, elated, worried, frustrated | 1         |
| beautiful, in control, nothing special, resentful, angry                            | 0         |

### 8.3.4 3/4D scans: reasons, expectations and experiences

#### *Reasons*

Table 8.3 presents responses to the question 'What made you decide to have this scan?' and the ranking of the reasons given in the first questionnaire.

**Figure 8.1 Attitude to pregnancy**

**Isabel:**

| TP1        |            | TP2        |            | TP3        |            |
|------------|------------|------------|------------|------------|------------|
|            | excited    |            | excited    |            | excited    |
|            | happy      |            | happy      |            | happy      |
|            | fulfilled  |            | fulfilled  |            | protective |
|            | protective |            | protective |            |            |
|            | maternal   |            | maternal   |            | maternal   |
| vulnerable | serene     | vulnerable | powerful   | vulnerable | powerful   |
| anxious    | elated     | anxious    |            | anxious    |            |

**Nikki:**

| TP1        |         | TP2      |            | TP3     |         |
|------------|---------|----------|------------|---------|---------|
| frustrated |         |          | excited    | nervous |         |
| worried    |         | stressed | happy      | ugly    |         |
| nervous    |         | ugly     | protective | anxious | excited |
| ugly       | excited | anxious  |            |         |         |
| anxious    | happy   |          |            |         |         |

**Sarah:**

| TP1       |  | TP2     |         |
|-----------|--|---------|---------|
| depressed |  | anxious | excited |
| anxious   |  |         |         |

**Jane:**

| TP1          |           | TP2          |           | TP3          |          |
|--------------|-----------|--------------|-----------|--------------|----------|
|              | excited   |              | excited   |              | excited  |
|              | happy     |              | happy     |              | happy    |
|              | fulfilled |              | fulfilled |              | maternal |
| apprehensive | maternal  | apprehensive | maternal  | apprehensive | maternal |

**Naomi:**

| TP1     |            | TP2     |            | TP3            |            |
|---------|------------|---------|------------|----------------|------------|
|         | excited    |         | excited    |                |            |
|         | happy      |         | confident  |                |            |
|         | protective |         | happy      | vulnerable     |            |
| invaded | maternal   | invaded | protective | out of control | excited    |
|         |            |         | maternal   | anxious        | protective |

**Claire:**

| TP1      |  | TP2      |  |
|----------|--|----------|--|
| detached |  | detached |  |
|          |  | anxious  |  |

**Table 8.3 Reasons for having a 3/4D scan**

|               | <b>What made you decide to have this scan?</b>                                                                                                                                                                                                                                                             | <b>Ranking of reasons</b>                                                                                                                                                                                                                                                                                       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Isabel</b> | <ul style="list-style-type: none"> <li>wanted to see if placenta has moved</li> <li>wanted to see baby's features</li> <li>and see she's ok</li> </ul>                                                                                                                                                     | <ol style="list-style-type: none"> <li>Meet the baby</li> <li>Curiosity</li> <li>Find out more about the baby</li> <li>Make sure baby is ok</li> <li>Give partner chance to meet the baby</li> </ol>                                                                                                            |
| <b>Nikki</b>  | <ul style="list-style-type: none"> <li>concerned they told me wrong sex of baby</li> <li>wanted to check all is well</li> </ul>                                                                                                                                                                            | <ol style="list-style-type: none"> <li>Make sure baby is ok</li> <li>Curiosity</li> <li>Find out more about the baby</li> <li>Meet the baby</li> <li>Give partner chance to meet the baby</li> </ol>                                                                                                            |
| <b>Sarah</b>  | <ul style="list-style-type: none"> <li>cannot repeat it after the child's born</li> </ul>                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>Make sure baby ok *</li> <li>Curiosity</li> <li>Recommended by others</li> </ul>                                                                                                                                                                                         |
| <b>Jane</b>   | <ul style="list-style-type: none"> <li>curiosity</li> <li>to see baby's face clearly</li> <li>to 'meet' him/her</li> </ul>                                                                                                                                                                                 | <ol style="list-style-type: none"> <li>Meet the baby</li> <li>Give partner chance to meet the baby</li> <li>Make sure baby is ok</li> <li>Find out more about the baby</li> <li>Curiosity</li> </ol>                                                                                                            |
| <b>Naomi</b>  | <ul style="list-style-type: none"> <li>had one in last pregnancy &amp; enjoyed it</li> <li>felt it was more bonding than 2D scans</li> <li>this time we wanted to repeat the experience</li> <li>&amp; involve our son in the process</li> <li>both children will have same pictures when older</li> </ul> | <ol style="list-style-type: none"> <li>Find out more about the baby</li> <li>To let both children have same scan pictures when older (other)</li> <li>Meet the baby</li> <li>Make sure baby is ok</li> </ol>                                                                                                    |
| <b>Claire</b> | <ul style="list-style-type: none"> <li>had one in last pregnancy, want this baby to have one too so she doesn't feel 'left out' when she is older</li> </ul>                                                                                                                                               | <ol style="list-style-type: none"> <li>Both children have DVD (other)</li> <li>Everybody else has done it</li> <li>Recommended by others</li> <li>Curiosity</li> <li>Find out more about the baby</li> <li>Make sure baby is ok</li> <li>Meet the baby</li> <li>Give partner chance to meet the baby</li> </ol> |

\* Sarah did not rank the reasons, but just ticked the ones relevant to her

Table 8.4 shows how the individual women's choices compare with each other. A number of results stand out:

- Three of the women (Isabel, Nikki and Jane) chose the same five reasons, but ranked them differently. All of them are expecting their first child.
- Naomi chose three of these five reasons, as well as an additional one.
- Sarah chose two of these five reasons, as well another one.
- The reasons which were chosen by the majority of women do not seem as important to Sarah and particularly Claire, who has made very different choices to the others.
- Naomi and Claire, who had a 3/4D scan with an older child, chose wanting to do the same for both children as their second and first reason respectively.
- For Claire, the five reasons most commonly given by the other women are the least important ones.

**Table 8.4 Ranking of reasons for having a scan: comparisons between women**

| Reason                        | Isabel | Nikki | Sarah | Jane | Naomi | Claire |
|-------------------------------|--------|-------|-------|------|-------|--------|
| Find out more about the baby  | 3      | 3     | x     | 4    | 1     | 5      |
| 'Meet' the baby               | 1      | 4     |       | 1    | 3     | 7      |
| Give partner chance to 'meet' | 5      | 5     |       | 2    |       | 7      |
| Make sure baby is ok          | 4      | 1     |       | 3    | 4     | 6      |
| Bought as gift                |        |       |       |      |       |        |
| Everybody else has done it    |        |       |       |      |       | 2      |
| Curiosity                     | 2      | 2     | x     | 5    |       | 4      |
| Recommended by others         |        |       | x     |      |       | 3      |
| Other                         |        |       |       |      | 2     | 1      |



### ***Expectations***

The women mostly expected and hoped to be able to see what the baby looks like, though there were some differences:

Isabel: 'Expecting to see what our little girl looks like, check she's ok, see if placenta has moved. Hope to see her "activities" in the womb, what she looks like.'

Nikki: 'A clear view of baby and to know everything is ok. Also to check the sex.'

Sarah: 'More clearer view.'

Jane: 'A clear detailed image of the baby (moving)'

Naomi: 'Most interested in seeing baby's face & what she looks like. Also want to check gender & see what she 'gets up to' in the womb!'

Claire: 'Nice pictures! Possibly dysmorphic features related to congenital heart disease.'

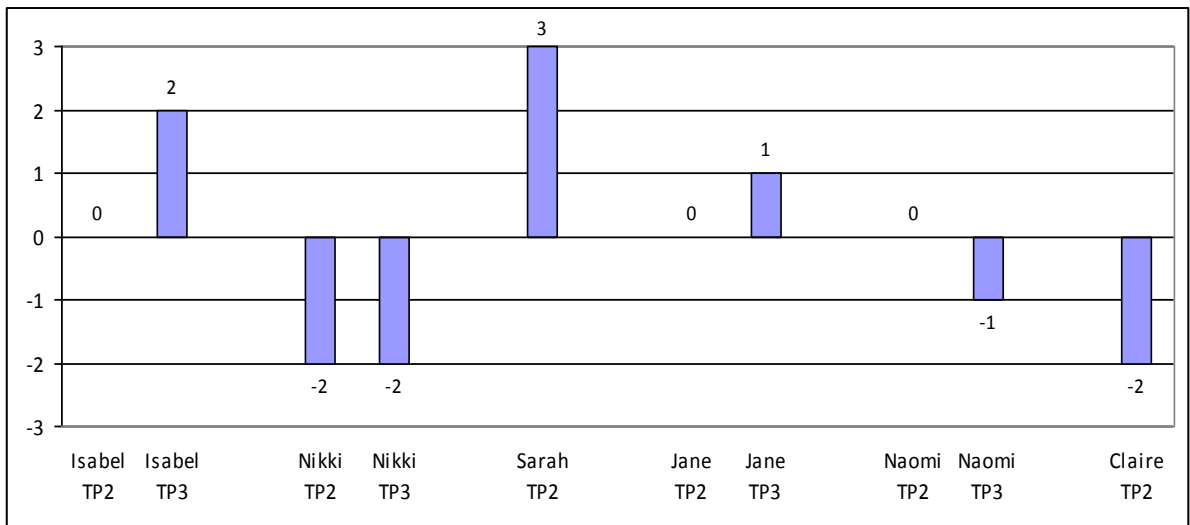
### ***Experiences***

Table 8.5 presents what the women said in the second and third questionnaires about their experience of the scan and the extent to which their expectations had been met. Sarah did not complete this section. How the women rated the experience of the scan and the experience of what could be seen of the baby against their expectations varied considerably (Figures 8.2 and 8.3). Half the women said that the experience of the scan had met or exceeded their expectations; for some women this changed over time. Expectations of what could be seen of the baby were met or exceeded for only two of the women.

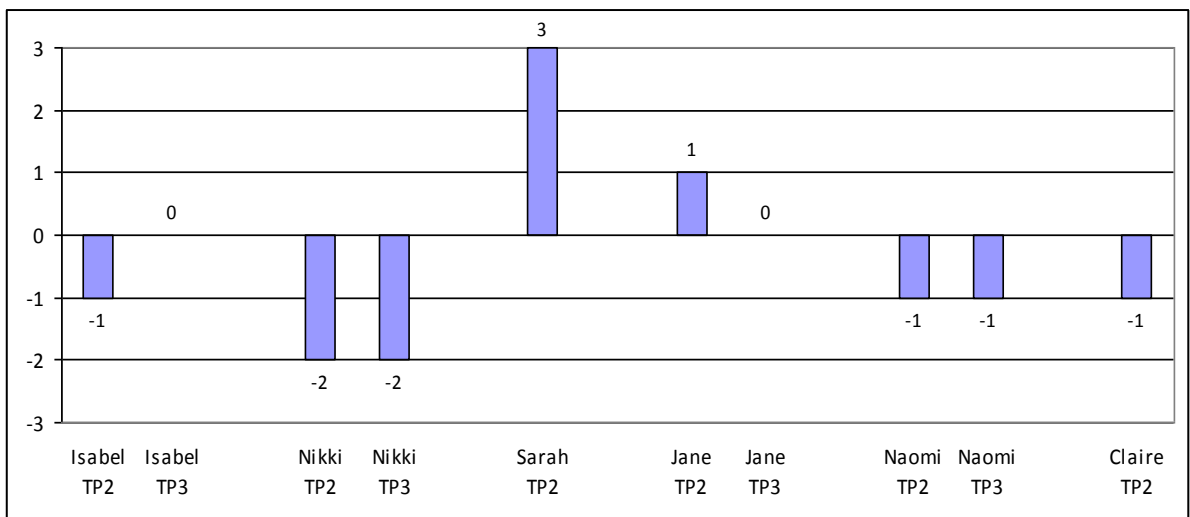
**Table 8.5 Experience of the scan and extent to which expectations were met**

|               | <b>TP2</b>                                                                                                                                                                                                                                                                   | <b>TP3</b>                                                                                                                                           |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Isabel</b> | I was expecting to see more of her body, i.e. torso, legs etc but as I am 28 weeks they focused on her head, face and upper body. Not sure if I expected a clearer picture but still an amazing experience and well worth while!                                             | It was great seeing our little girl's profile and seeing what she 'gets up to' in the womb. Definitely helped me identify more with her as a person. |
| <b>Nikki</b>  | Was unable to get any really clear pictures. Seemed like they just gave up after a while, would have liked to have it more personal, a lot of people in the room while viewing photos.                                                                                       | Was not able to get a very good picture, thought it would be more clear. They seemed to give up getting a clear picture.                             |
| <b>Jane</b>   | More or less as I expected, mainly focused on baby's face – we didn't want to know the sex, so avoided looking too closely further down! Baby didn't move very much at the time so not many different positions but it was still v. exciting to see the baby in such detail. | Not quite as clear as hoped, but still quite a good image – it just moved very quickly.                                                              |
| <b>Naomi</b>  | Baby was not in the best position which limited what could be seen. We did however get some good pictures of her face. Otherwise the scan was as expected following from our experience of a 3D scan in a previous pregnancy.                                                | Baby was in awkward position so couldn't see as much as hoped for. Images weren't quite as clear as I'd hoped.                                       |
| <b>Claire</b> | Scan very different from 4D scan in previous pregnancy. Much shorter (20 minutes) compared to approx. 1 hour last time. Seemed much more clinical. Did see the 4D images of baby like last time, but not as many & images not as good.                                       |                                                                                                                                                      |

**Figure 8.2** Extent to which expectations of the scan have been met



**Figure 8.3** Extent to which expectations of what could be seen of the baby have been met



### 8.3.5 Fetal health locus of control

Figure 8.4 shows FHLC subscale scores for all women, averaged across timepoints.

There are two patterns: for most of the women (four out of six) FHLC-I was highest and FHLC-P lowest. Two women, Sarah and Claire, showed a divergent pattern, with FHLC-I lowest and FHLC-C highest.

**Figure 8.4 Average FHLC subscale scores for all women**

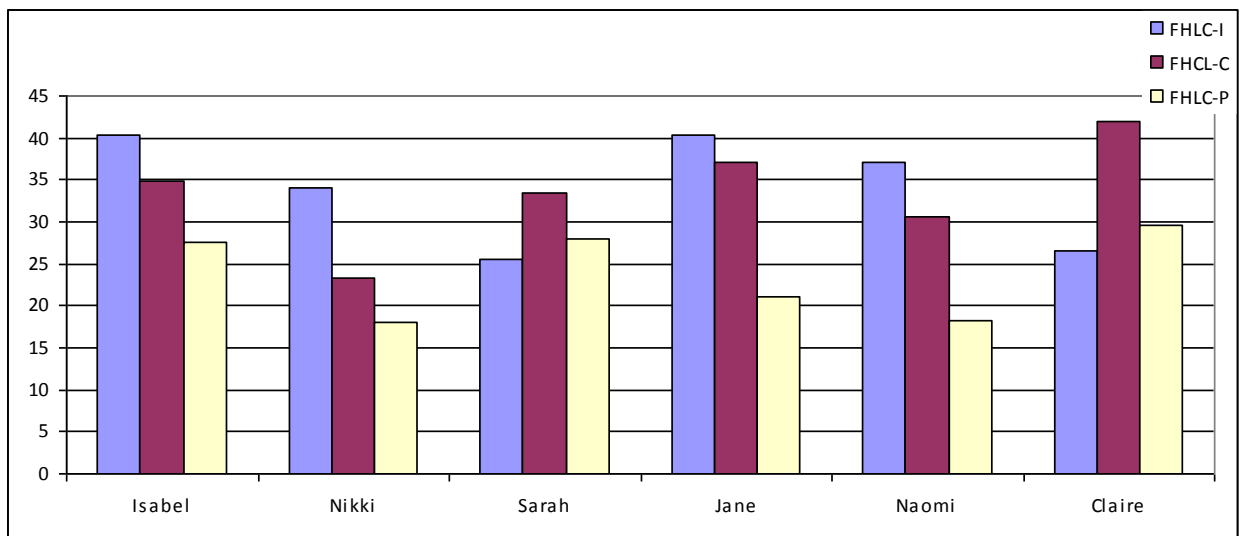
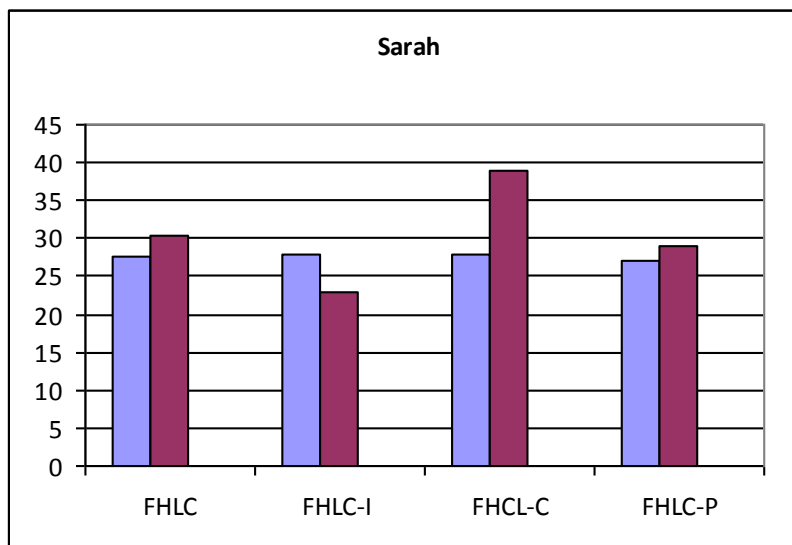
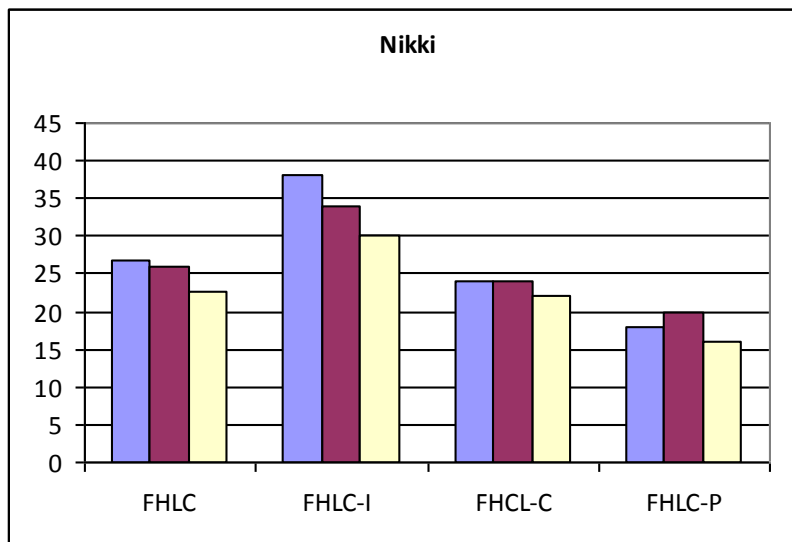
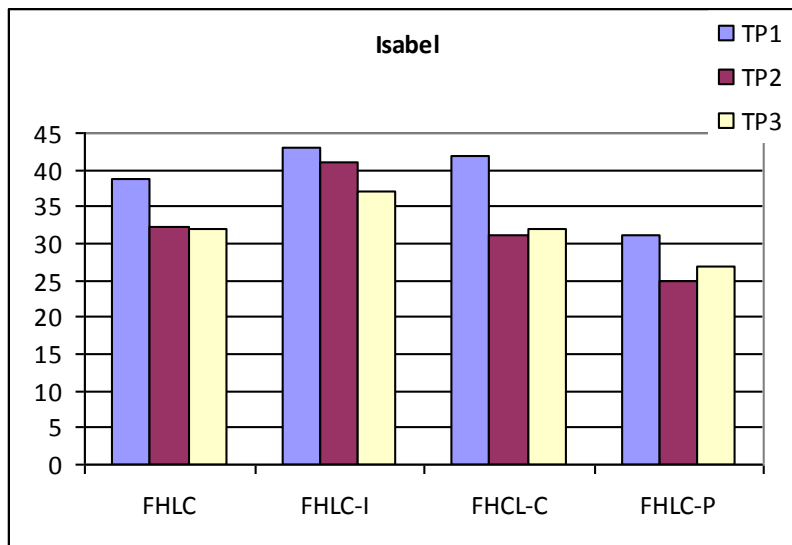
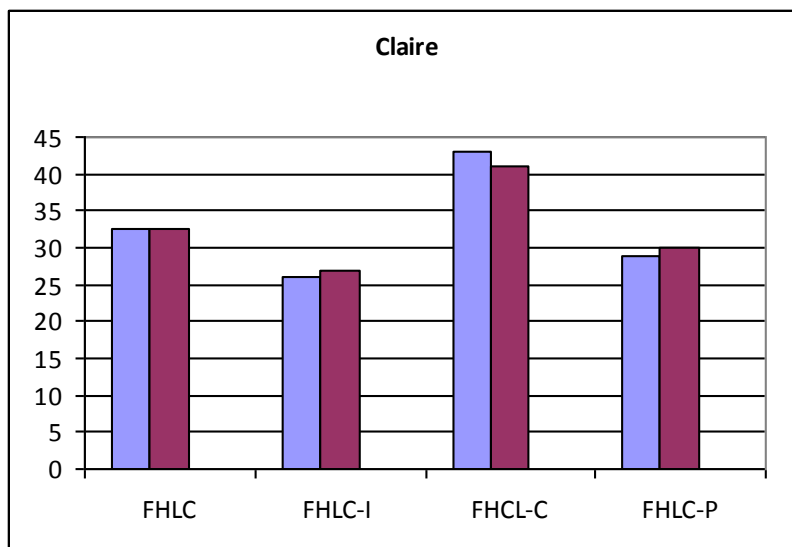
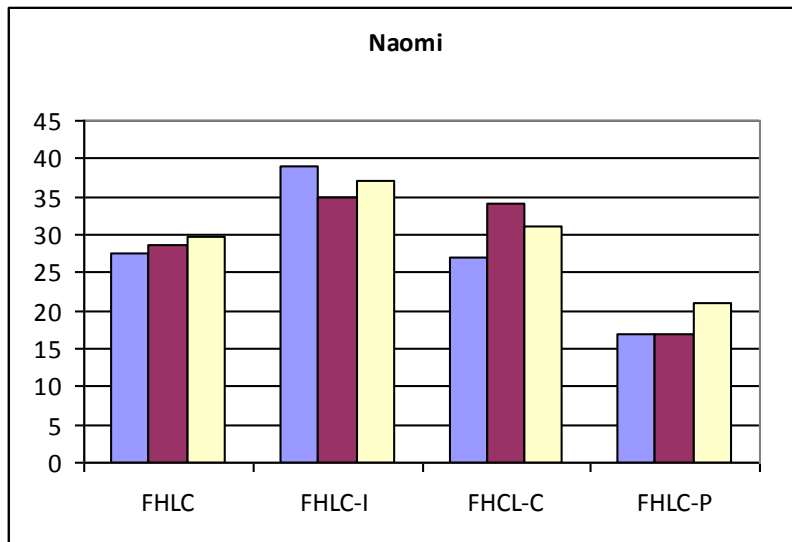
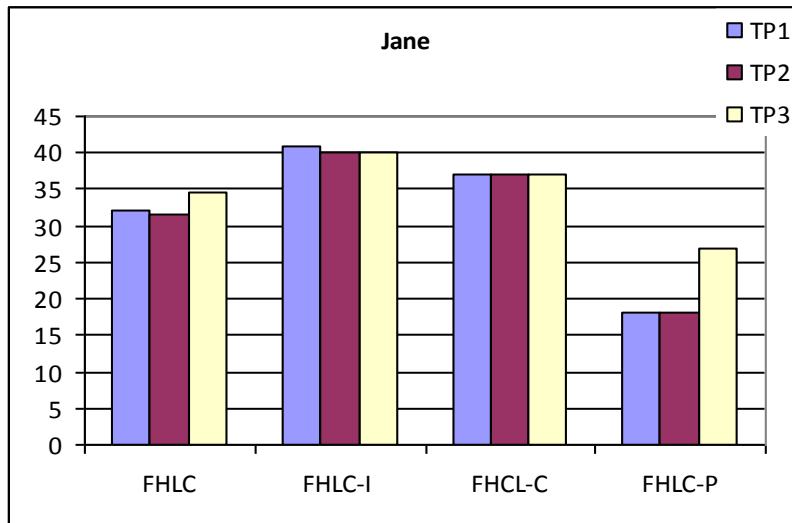


Figure 8.5 shows how FHLC subscale scores changed over time for individual women. For most women subscale scores were lower at TP3 than TP1, particularly for FHLC-I.

**Figure 8.5 FHLC subscale scores at each timepoint for individual women**



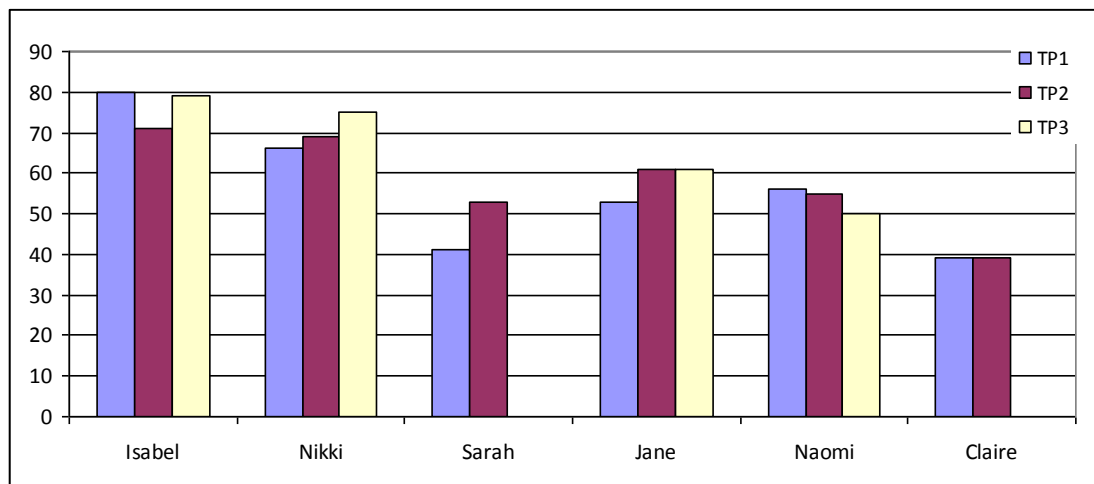
(Figure 8.5 continued)



### 8.3.6 Bonding

There is considerable variation in PAI scores between women (Figure 8.6), with the highest score being double that of the lowest. There is some change over time for most women; however, there is no clear pattern regarding the direction of change. For some women scores increase over time, while they decrease for others.

Figure 8.6 PAI scores for all women



Results for the PRAM (Table 8.6) vary considerably between women and there are some changes over time. For most women the trend is for the circles to get closer with time, but this is not the case for all. There are convergences as well as divergences compared to PAI results.

**Table 8.6 PRAM: distance (mm) between centres of circles**

|               | <b>TP1</b> | <b>TP2</b> | <b>TP3</b> |
|---------------|------------|------------|------------|
| <b>Isabel</b> | 17.5       | 10.0       | 8.0        |
| <b>Nikki</b>  | 20.5       | 19.0       | 20.0       |
| <b>Sarah</b>  |            | 3.0        |            |
| <b>Jane</b>   | 9.0        | 7.5        | 3.0        |
| <b>Naomi</b>  |            | 15.0       |            |
| <b>Claire</b> | 58.0       | 69.0       |            |

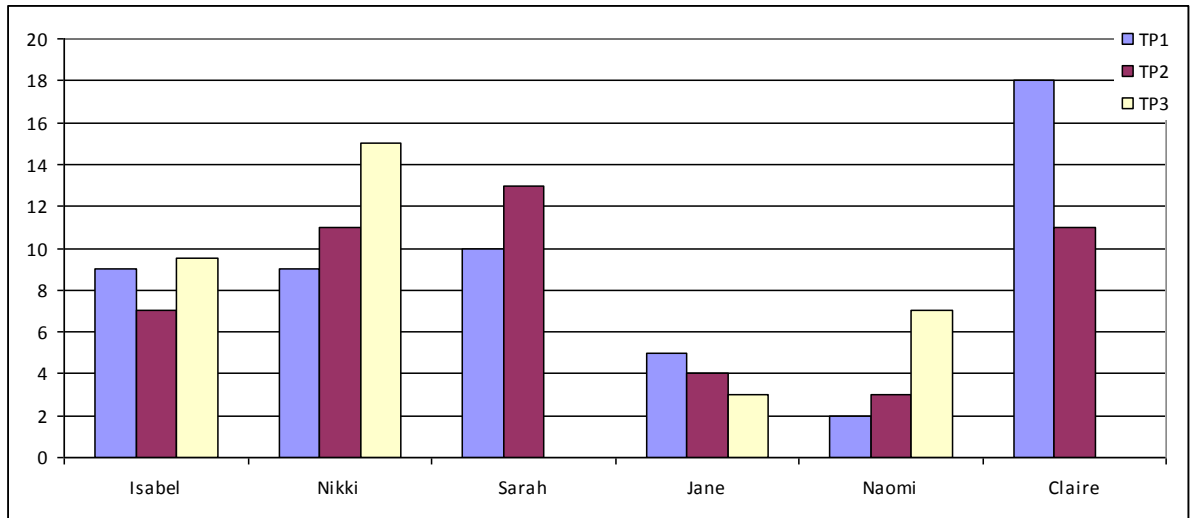
### **8.3.7 Anxiety and depression**

Results for the anxiety subscale of the HADS vary considerably (Figure 8.7). They are relatively low for Jane and Naomi, but reach levels of ‘possible anxiety’ (above 8) for four women and ‘probable anxiety’ (above 11) for three women at least once. Anxiety levels vary over time, increasing for some women and decreasing for others.

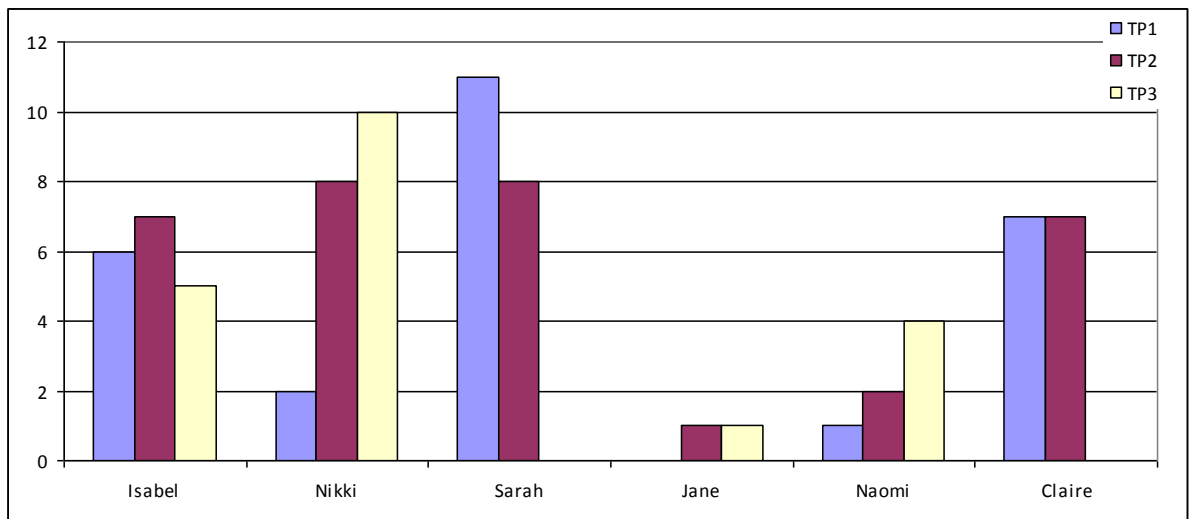
Depression levels also vary (Figure 8.8), but are lower overall. Again, Jane and Naomi have the lowest levels. Nikki and Sarah’s scores reach levels of ‘possible depression’, and Sarah shows signs of ‘probable depression’ at the first timepoint. Scores change over time, but not always in the same direction.



**Figure 8.7 HADS: anxiety scores**



**Figure 8.8 HADS: depression scores**



## **8.4 Individual case studies: results and discussion**

### **8.4.1 Isabel**

Isabel was expecting her first child in a planned pregnancy. At the time of the first interview, she had had a problem-free pregnancy, except for a suspected low-lying

placenta. By the third interview (37/38 weeks) her baby was breech and she had been diagnosed with high blood pressure and gestational diabetes; she was going to be induced at 38 weeks.

She had two routine NHS scans (12 and 20 weeks) and a scan in late pregnancy to check the location of the placenta. The three interviews took place at 26, 31 and 37/38 weeks gestation and were conducted by telephone; the questionnaires were completed at 26, 28 and 37/38 weeks gestation. She had a private 3/4D scan at 27 weeks at an NHS hospital.

### ***3/4D scan: reasons, expectations and experience***

Isabel said in the first interview that wanting to see the baby was *'the real reason'* (Isabel 1-50) for having a 3/4D scan and that *'it was something I always wanted to do'* (Isabel 1-47). In the first questionnaire, she said that she wanted to see the baby's features, and she lists meeting the baby, curiosity and finding out more about the baby as the most important reasons for having the scan (Figure 8.3, page 280). Seeing the baby seems to have been her main motive. However, she also hopes to gain reassurance from the scan: she said in the first questionnaire that she wanted to see if the placenta had moved and that the baby was ok; the latter also came up as the fourth-ranked reason in the first questionnaire. Her expectations of the scan were closely linked to these reasons: *'... to see what our little girl looks like, check she's ok, see if placenta has moved'* (Isabel Q1).

In the second questionnaire, Isabel rated her experience of the scan as expected and the experience of what could be seen of the baby as lower than her expectations. She said that she expected a clearer picture and to see more of the body, while the sonographer focused on the head, face and upper body. However, she also said: *'still an amazing experience and well worth while!'* (Isabel Q2). In the third questionnaire, she rated the experience of the scan as better than expected and the experience of seeing the baby as expected. Her comments in the third questionnaire were more positive than in the second: *'It was great seeing our little girl's profile and seeing what she 'gets up to' in the womb. Definitely helped me identify more with her as a person'* (Isabel Q3).

The more negative view in the second questionnaire was not reflected in the second interview; she did say that the focus had been on the face rather than the body, but not that she had wanted to see more of the face. Isabel did not mention in the second interview that she expected the image to be clearer; she seemed very happy with the quality of the image. Even though the scan had not quite met her expectations, she said it had been a positive experience (Isabel 2-24) as well as having been *'quite emotional, because obviously it was nice to see. And afterwards you're kind of on a high'* (Isabel 2-23).

### ***Impact of the 3/4D scan on Isabel's experience of pregnancy***

It is evident from the interviews that Isabel was happy to be pregnant and seemed to enjoy pregnancy. She chose mostly positive words from the adjective scale in the questionnaire (Figure 8.1, page 279). There was no difference in the adjectives

chosen immediately before and after the 3/4D scan, except that she did not choose 'elated' as an additional adjective immediately after the scan. Both positive and negative feelings largely reflect what Isabel said in the interviews.

Isabel chose 'anxious' as an adjective at every timepoint and reassurance seems to have been an important factor in choosing the 3/4D scan. In the HADS, her anxiety scores reached levels of 'possible anxiety' at TP1 and TP3 (Figure 8.7, page 290). They were raised for 'I get a sort of frightened feeling as if something awful is going to happen' and 'Worrying thoughts go through my mind', which may be due to anxiety about the baby. In the interviews she said she was not usually anxious, but worried about bleeding due to the suspected low-lying placenta and, at the end of pregnancy, gestational diabetes and high blood pressure, which might explain why anxiety was raised again at TP3. In addition, there was also likely to be some more general concern about the baby; 'something awful is going to happen' and 'worrying thoughts' are unspecific and likely to apply to most women's fears about pregnancy and/or birth.

It is possible that the lower anxiety score on the HADS at TP2 was due to the 3/4D scan. Scores for the items 'I get a sort of frightened feeling as if something awful is going to happen' and 'Worrying thoughts go through my mind' were lower at TP2. It is possible that both are related to concern about fetal health and may have been lowered by the 3/4D scan. Having been able to see that the placenta had 'moved' may also have contributed to a reduction in anxiety. However, the change is comparatively small and not reflected in the interviews – Isabel did not say after

the scan that she was relieved that everything was ok; this does of course not mean that she was not relieved, but it is not seem to be something that stood out for her.

### ***Impact of the 3/4D scan on how Isabel relates to the baby***

#### ***Bonding***

Isabel's PAI scores were the highest of all the women, both at individual timepoints and overall (Figure 8.6, page 288); the score at TP1 (80 out of a maximum of 84) was considerably higher than averages in the literature (Saastad, Israel, Ahlborg, Gunnes & Frøen 2011; Della Vedova et al. 2008; Kleinveld et al. 2007; Hjelmstedt et al. 2006; Turiff-Jonasson 2004; Armstrong 2002; Siddiqui & Hägglöf 2000; Siddiqui et al. 1999), which are in the region of 51 to 61. On the PRAM, the distance between the centres of the circles got closer at each timepoint (Table 8.6, page 289), indicating increased bonding. While the PAI scores suggest that bonding decreased at TP2 and then increased again at TP3, the PRAM suggests that bonding increased at each timepoint. The decrease in the PAI at TP2 was relatively small and may not be relevant.

For item 13 ('I feel love for the baby') Isabel chose the highest score at all three timepoints. In the first interview she said: *'I think to actually see it would umm make me feel even closer to her'* (Isabel 1-52) – she had already given a high score but expected to feel even closer to the baby. However, when asked in the third interview whether she felt closer to the baby after the scan, she said: *'Ummm, I don't think so ... I already felt close to her'* (Isabel 2-19). It is possible that 'feeling

close to the baby' was already at such a high baseline that there was little scope for further increase.

Isabel said in the first interview that seeing the baby and wanting to know what the baby looks like was one her reasons for having a 3/4D scan. The scan seems to have made it easier to imagine the baby: *'I have that kind of image in my head of her'* (Isabel 3-14). Unlike some of the other women, she still looked at the image regularly at the end of pregnancy (Isabel 3-8).

Another component of bonding is thinking about the baby as a person, an individual and a family member; this includes thinking of the baby having a certain temperament or 'personality' and exhibiting intentional behaviour. While Isabel talked in these terms to some extent in the first interview, there did not seem to be a definite change after the 3/4D scan. Pertinent items in the PAI did not change in response to the scan. However, the scan might have made a difference with regards to 'introducing' the baby to family and friends, and therefore turning the baby into a new family member, through the images and DVDs. It was evident in the second interview that she enjoyed sharing the images and DVD with others (Isabel 2-24) and she still showed the images to others in late pregnancy (Isabel 3-8). The 3/4D scan also allowed Isabel to look for family resemblances: *'She definitely has my nose'* (Isabel 2-14).

### *Fetal health locus of control*

The subscale patterns of the FHLC were the same as for the majority (four out of six) of women: FHLC-I was highest, followed by FHLC-C and FHLC-P (Figure 8.5, page 286). Scores for all three subscales were slightly higher for Isabel than for the average in this study and comparable with results in the literature (e.g. Clarke & Gross 2004). Scores, particularly FHLC-C, were lower at TP3 than TP1.

It is difficult to explain the considerable drop in FHLC-C with the information available. It may be possible that the 3/4D scan played a role; maybe seeing the fetus at the 3/4D scan made it seem less likely that his/her health and development depend on chance. On the other hand, FHLC-I and FHLC-P also decreased, rather than increasing at the same time. Furthermore, considering that the gap between TP1 and TP2 was relatively large (more than 4 weeks) it is possible that it was due to other factors or chance.

Compared to the interviews, the high FHLC-I score seems surprising. She said that while there were some things under her control, like preparing for pregnancy, exercise and diet (Isabel 1-39, Isabel 3-33), control was on the whole limited: *'I don't think there's much that you can control [...] I feel it's sort of out of my hands now'* (Isabel 1-39) and *'but there are some things that you just can't control. So, you have to kind of leave it to I think kind of chance'* (Isabel 3-33).

#### **8.4.2 Nikki**

Nikki said in the first interview that it had taken her ten months to conceive and she was relieved to be pregnant with her first child. She had severe morning sickness in the first and second trimester, resulting in weight loss and being signed off work for two months. She was also worried about the effects of her caffeine addiction, but had managed to cut down a little. At the time of the first interview, she had had two routine scans (13 and 20 weeks).

The first interview, by telephone, took place at 29 weeks. She had the 3/4D scan just before 30 weeks and the second interview occurred just after that. Questionnaires were completed at the same time, as well as a further one at 39 weeks. Unfortunately no third interview took place. The 3/4D scan was done by a small independent company with clinics in three locations.

#### ***3/4D scan: reasons, expectations and experience***

Nikki had decided fairly late to have a 3/4D scan; in the first interview she said the main reason was initially because she wanted to be sure of the fetal sex. This was also reflected in the first questionnaire. However, once she had looked at 3/4D scans she was taken with the detail the 3/4D scan promised to provide:

*'I looked into getting a scan done and I saw that you could sort of get them done a lot cheaper than I thought and then I saw the detail they could get into, and you know, things like that and you could actually check that they are all developing ok and I thought*



*that's something I'd like to get done and keep it for future reference for the baby. So I thought that would be quite nice.'*

(Nikki 1-60)

The desire for reassurance alluded to in the above quote was also reflected in the first questionnaire; not only did she say that she wanted to *'check all is well'* (Nikki Q1), she also ranked *'make sure baby is ok'* as the most important reason for choosing the scan. She also said in the first interview that she wanted to have the 3/4D scan *'for health reasons'* (Nikki 1-61). Curiosity, finding out more about the baby and meeting the baby were also given as important reasons (Table 8.5, page 283).

In the first questionnaire she said her expectation were to get *a 'clear view of the baby and to know everything is ok. Also to check the sex'* (Nikki Q1). She talked in the first interview about expecting to see the baby clearly; her expectations were very high: *'you can see literally what she is going to come out looking like'* (Nikki 1-64).

Nikki was unfortunately unable to obtain good images of the baby at the scan, partly because she had the scan quite late (30 weeks) and partly because the baby was not in a good position or, as she put it, *'wasn't playing ball again'* (Nikki 2-13).

In the second and third questionnaires she rated the experience of the scan and the experience of what she could see of the baby as far below her expectations (Figures 8.2 and 8.3, page 284): *'Was not able to get very good picture, thought it*

*would be more clear. They seemed to give up getting a clear picture'* (Nikki Q3). Her disappointment was also clearly reflected in the second interview. She accepted that to some extent there was nothing that could be done, but also seemed to feel that the scanning company was too busy and therefore gave up too soon instead of trying harder to obtain good images. While her expectations of being able to see what the baby looked like were not met, the sonographer was able to confirm fetal sex.

### ***Impact of the 3/4D scan on Nikki's experience of pregnancy***

For Nikki, negative feelings about pregnancy outweighed positive ones (Figure 8.1, page 279). It is notable that she did not choose 'happy' in the third questionnaire; this may reflect a raised depression score in the HADS at TP3 (Figure 8.7, page 290). This was already increased at TP2, which may have been due to the disappointing scan. However, the considerable increase by TP3 ('possible depression') suggests that there are deeper problems.

The additional adjectives she chose at TP1 and TP3 were all negative. 'Anxious', 'stressed' and 'nervous' stand out. Anxiety and worry also featured quite heavily in the interviews, particularly worry that the severe morning sickness and caffeine addiction might have affected the baby. Nikki's anxiety score in the HADS was raised considerably, indicating 'possible anxiety' at TP1 and 'probable anxiety' at TP2 and TP3. The score at TP3 was the highest among all the women.

In the first interview Nikki talked about being anxious and nervous, partly about becoming a mother (Nikki 1-14, Nikki 1-15, Nikki 1-18), but mostly that *'something would be wrong'* (Nikki 1-26), which seemed to focus on concerns that the baby was affected negatively by severe morning sickness (Nikki 1-6, Nikki 1-26). However, Nikki also appeared to minimise her anxiety by saying *'I'm still a bit anxious, just first time round, as nervous as any to-be mum'* (Nikki 1-13) and *'Yeah, I think it's just the nerves everyone gets, that's what I'm telling myself anyway'* (Nikki 1-16).

It is difficult to say if/how the 3/4D scan affected her feelings about/during pregnancy. Both 'protective' and 'stressed' were chosen for the first time just after the scan. It is conceivable that having seen the baby at the scan she felt more protective towards it, but this is speculation. While 'stressed' was chosen at TP2, similar adjectives ('nervous', 'worried') disappeared from the list. The anxiety score increased after the scan, but this may be unrelated, especially as it increased even further by TP3. The depression score increased considerable after the scan, which may possibly have been due to the disappointing scan experience; however, it also increased at TP3, so may be unrelated.

### ***Impact of the 3/4D scan on how Nikki relates to the baby***

#### ***Bonding***

Nikki's overall scores on the PAI were high, the second highest after Isabel (Figure 8.6, page 288), and increased at each timepoint. With the PRAM, there was little change in the distance between circles over time (Table 8.6, page 289). The circles

representing her and the baby did not touch or overlap but became slightly closer at TP2, thus diverging from the PAI scores. She did not talk about this explicitly in the interviews, except saying that she felt 'more connected' with the baby after the 20 week scan (Nikki 1-40) and expecting the same from the 3/4D scan (Nikki 1-63).

On the PAI, scores for several items related to feeling movement were relatively low. For 'I can make my baby move' however they increased sharply by TP3, presumably because of changes in fetal movement. Compared to most of the women, her scores for 'I enjoy feeling the baby move' were relatively low, particularly at TP3, when movement may have become more uncomfortable. In the first interview, Nikki said that feeling movement was 'weird', 'bizarre' and 'exciting' (Nikki 1-32, Nikki 1-33, Nikki 1-35); she did not explicitly say that she liked it. She did however say that she 'asks' the baby to 'settle down' because movement was uncomfortable (Nikki 1-36, Nikki 1-37).

Her scores for item 1 ('I wonder what the baby looks like') were relatively high at TP1 and TP2, but dropped by one point at TP3; this may be related to her disappointment with the scan. These high scores were also reflected in the interviews (e.g. Nikki 1-62, Nikki 1-69). Nikki's scores for 'I feel love for the baby' were high and increase from 3 to 4 after the 3/4D scan; it is not clear whether this was due to the scan.

### *Fetal health locus of control*

On the FHLC, the subscales followed the same pattern as for the majority of women: highest for FHLC-I, lowest for FHLC-P (Figure 8.4, page 285). Compared to the other women, Nikki had the lowest overall FHLC-C and FHLC-P scores. While FHLC-I and FHLC-C decreased at each timepoint (Figure 8.5, page 286), FHLC-P increased slightly at TP2 and dropped again at TP3. In contrast, one of the items on the PAI related to fetal health locus of control ('I know things I do make a difference to the baby') increased at each timepoint. The 3/4D scan did not seem to have had an effect on FHLC scores.

In the first interview, Nikki talked about her diet and how she worried about the severe morning sickness and caffeine addiction having a negative effect on the baby (Nikki 1-54, Nikki 1-56). However, she did say little else about her own control over fetal health. She also did not specifically talk about the influence of chance or health professionals on fetal health, except to say that she felt unsupported by midwives regarding the caffeine addiction (Nikki 1-48).

### **8.4.3 Sarah**

Sarah already has two older daughters (young teen / pre-teen) and had been told after the birth of her last child that she would not be able to have more children because *'they discovered that my womb is very damaged'* (Sarah 1-4). For the same reason she was also going to have a caesarean in this pregnancy. She only found out about this pregnancy at 12 weeks, when she went to the GP with a suspected urinary tract infection, but was told that she was pregnant and that it

was probably an ectopic pregnancy due to the pain she was experiencing. A scan on the following day showed that the pregnancy was not ectopic and all was well with the fetus. For the remainder of the pregnancy she had no significant physical problems, except some back pain and difficulties sleeping later on.

She had two NHS scans (12 and 20 weeks). The first interview (by telephone) and questionnaire were completed at 25 weeks and the 3/4D scan took place at just over 25 weeks at an independent scanning company with several clinics. The second questionnaire was completed at 30 weeks and the second interview at 36 weeks; this second interview was in effect, as regards timing, the third interview and consequently the third interview schedule was used.

### ***3/4D scan: reasons, expectations and experience***

In the first questionnaire, Sarah said she decided to have the 3/4D scan '*as you cannot repeat if after the child's born*' (Sarah Q1). She also said that she wanted to have the scan to check that the baby is ok, out of curiosity and because it was recommended by others. Sarah said in the first interview that other people had recommended the 3/4D scan, saying it was '*the most fantastic thing they've ever done*' (Sarah 1-35) and that it was '*a personal choice ... more for fun*' (Sarah 1-30).

̄In the first questionnaire she said that her expectation of the scan was to get a clearer view. In the first interview it is clear that she expected an amazing experience and said she was excited about the scan, but she did not talk in detail about her expectations. In the second questionnaire, Sarah rated both the

experience of the scan and the experience of what could be seen of the baby as much higher than her expectations (Figures 8.2 and 8.3, page 284). It is clear from the interview that she was very pleased with the scan and she described the whole experience, including the clinic, very positively.

### ***Impact of the 3/4D scan on Sarah's experience of pregnancy***

Sarah's choices of adjectives regarding her feelings about the pregnancy (Figure 8.1, page 279) were entirely negative at TP1 and more mixed at TP2. She chose 'depressed' at TP1, which tallies with her HADS depression score of 11 ('probable depression') at TP1 (Figure 8.8, page 290). At TP2, when she did not choose 'depressed', the score was 8 ('possible depression'), which may possibly be related to the very positive experience of the 3/4D scan.

Sarah chose 'anxious' at both timepoints, which was also reflected in the interviews, particularly the first one. HADS scores for anxiety were also high: 10 at TP1 ('possible anxiety') and 13 at TP2 ('probable anxiety') (Figure 8.7, page 290). Her score at TP1 matched what she said in the first interview, in which she talked several times about the 'feeling of dread' she had (see Section 7.5.1). In the second interview, however, anxiety featured less prominently, though she did talk about being nervous about having a caesarean and staying in hospital (Sarah 2-27, Sarah 2-28).

### ***Impact of the 3/4D scan on how Sarah relates to the baby***

#### ***Bonding***

Sarah's PAI scores were low, particularly at TP1 (Figure 8.6, page 288); the average score was well below the average from the literature (Saastad et al. 2011; Della Vedova et al. 2008; Kleinveld et al. 2007; Hjelmstedt et al. 2006; Turiff-Jonasson 2004; Armstrong 2002; Siddiqui & Hägglöf 2000; Siddiqui et al. 1999). The considerable increase between TP1 and TP2 was higher than for any of the other women. There were parallels in the interviews: in the first interview, she talked little about the baby and said she found it very hard to imagine the baby (Sarah 1-34), whereas in the second interview she talked about the baby in quite different terms. She said the 3/4D scan has made the baby more real for her (Sarah 2-21, Sarah 2-30); this may have been reflected in the way she felt and talked about the baby in the second interview – as well as in the higher PAI score in the second questionnaire.

The only time Sarah talked about movement was with respect to seeing it during the 3/4D scan (Sarah 2-14, Sarah 2-15, Sarah 2-16); even then the focus was on *seeing* movement rather than *feeling* it. However, her score for item 3 on the PAI ('I enjoy feeling the baby move') increased from 2 to 4 after the scan. This may have been due to changes in movement, but may also have been related to the scan: it is possible that this was due the baby being more real and/or having seen movement during the scan.



Despite the strong social desirability for pregnant women to express love for their baby, Sarah scored quite low on this item on the PAI and the score increased only slightly after the scan. Excitement when thinking about the baby (item 21) increased slightly by TP2, which was reflected in her choice of adjectives (see above) and the interviews. Again, this may have been due to her positive experience at the 3/4D scan.

#### *Fetal health locus of control*

The FHLC subscales for Sarah followed a pattern which is contrary to the majority of the other women, except Claire: FHLC-I was lowest (rather than highest as for the other women) whereas FHLC-C had the highest score (Figure 8.4, page 285). Average scores over both timepoints were noticeably lower for FHLC-I compared to the other women and relatively high for FHLC-P.

Looking at each individual timepoint, there was even more divergence with the other women (Figure 8.5, page 286). At TP1, scores for FHLC-I and FHLC-C were the same, while the score for FHLC-P was slightly lower. At TP2, FHLC-C increased considerably, FHLC-I was reduced (from 28 to 23) and the score for FHLC-P increased a little. So whereas FHLC-I reduced over time, FHLC-C and FHLC-P increased, FHLC-C considerably. As pregnancy progressed, Sarah's sense of internal control over fetal health decreased, whereas sense of external control, particularly chance, increased. It is impossible to say whether this may be related to the 3/4D scan.

#### **8.4.4 Jane**

Jane was pregnant with her first child, conceived through IVF, and had a problem-free pregnancy. She had had five scans by the time of the first interview: two NHS scans at 12 and 20 weeks, private scans due to the IVF treatment at 6 and 9 weeks and a private scan at 12 weeks at the same clinic as the 3/4D scan. She had two further scans in late pregnancy to monitor the position of the placenta.

Jane completed the first interview and questionnaire at 25 weeks and four days, the second at 27 weeks and the third at 39 weeks. All interviews were done by telephone. The 3/4D scan took place at 26 weeks at a private clinic run by an obstetrician/gynaecologist.

#### ***3/4D scan: reasons, expectations and experience***

Jane's reasons for having a 3/4D scan focused on meeting/seeing the baby and finding out more about the baby. She also hoped to gain some reassurance from the scan and she liked the detailed growth report provided with the scan. She expected '*a clear detailed image of the baby (moving)*' (Jane Q1). In the first interview she said that she was expecting a lot of detail and a clear picture, particularly of the face.

In the second questionnaire, Jane rated the experience of the scan as having met her expectations, and the experience of what could be seen of the baby as slightly above her expectations. She described her experience as '*More or less as I expected, mainly focused on baby's face - we didn't want to know the sex, so*

*avoided looking too closely further down! Baby didn't move very much at the time so not many different positions but it was still v. exciting to see the baby in such detail'* (Jane Q2).

In the third questionnaire, the rating of the experience and seeing the baby was reversed: she rated the experience of the scan as slightly higher than expected, and the experience of what she could see of the baby as expected. The slightly lower satisfaction with what could be seen of the baby might have been because she had seen 3/4D images of other babies since and thought that they were better than the ones they obtained at the scan (Jane 3-14). She particularly did not like the way the baby's nose appeared distorted on the image. On the second questionnaire, she added: *'not quite as clear as hoped, but still quite a good image - it just moved very quickly'* (Jane Q3).

Jane said in the second interview that she *'was really pleased that we did it actually'* (Jane 2-13). She particularly liked that the scan included a health check and detailed growth report. She also enjoyed looking at the images and sharing them with others. In the third interview, however, she said *'I've forgotten about it for a while [...] I haven't really looked at it too much'* (Jane 3-13), and expressed more dissatisfaction with the image, but said that she was still happy with it (Jane 3-14).

### ***Impact of the 3/4D scan on Jane's experience of pregnancy***

The adjectives Jane chose were predominantly positive (Figure 8.1, page 279). This was reflected in the interviews; she was very happy about the pregnancy and had enjoyed it. She chose 'apprehensive' as an additional adjective on each occasion, adding '*hoping all continues to go well*' at TP1. 'Apprehensive' is less strong than anxious or stressed, but along the same lines. This also came across in the interviews: she did not talk about feeling particularly anxious, but it was clear that there was some worry – or apprehension. This seemed to be related to a feeling that the pregnancy had been almost 'too easy' so far and that something might go wrong. The only other negative adjective, 'vulnerable', could be seen as one that is more 'acceptable' for pregnant women. This positive experience of pregnancy was also reflected in the HADS scores (Figures 8.7 and 8.8, page 290), which were low for depression and anxiety.

Her scores on the anxiety subscale were slightly higher than for depression, with a downwards trend as pregnancy progressed. Even though the anxiety score was lower after the 3/4D scan, it was such a slight change that it cannot be attributed to the scan. In the interviews she did not talk much about anxiety either, certainly less than the other women. The choice of 'apprehensive' as an additional adjective may suggest that there was some apprehension and worry, possibly about the baby and/or birth, but no anxiety. However, Jane chose to have additional private scans early in pregnancy and said during the first interview '*I liked having lots of scans, if I could have one every week I would, just to check that everything is still OK*' (Jane 1-13). This would suggest that there were some underlying anxieties

which she did not talk about much in the interview, but which may be related to IVF and fundamental concerns about her ability to become and remain pregnant.

### ***Impact of the 3/4D scan on how Jane relates to the baby***

#### *Bonding*

In the interviews Jane talked about 'attachment' to the baby a number of times. She said for example: *'... the minute they mention your embryos and how well they are doing you start getting attached'* (Jane 1-11). However, her PAI scores were not particularly high (Figure 8.6, page 288). There are at least three possible explanations. It is possible that Jane responded to the PAI more honestly, and with less concern for social desirability, than some of the others, or alternatively that she over-emphasized the degree of attachment in the interviews. It is also possible that the PAI simply did not reflect how Jane experienced attachment.

The scan seemed to have made it easier for her to have an image of the baby in her head and imagine what he/she was doing: *'I've now got that picture in my head'* (Jane 2-22). In the second interview she talked about how she and her partner attended a hypnobirthing class the day after the scan:

*'it was all about getting to know the baby, imagining the baby's environment. So it all sort of fitted in. [...] because with this hypnobirthing we've been doing relaxation and I started to notice how the baby responds to that, so [...] because I've now got an image in my head, I'm imagining him or her, what they're doing*

*while I'm doing these relaxation exercises. I think I am starting to think, ooh there is, cause I'm starting to recognise a bit of a pattern to movement, I couldn't do that last week, so if he doesn't do that, I think, come on, wake up, you know, if he's having a lie-in, I was joking he was having a lie-in yesterday morning, umm, just silly little things really [laughs], putting these traits on a little being inside that, I think the scan combined with the hypnobirthing has really strengthened that.'* (Jane 2-21)

So while the 3/4D scan did not turn the baby into an individual, a person, by itself, it presented a further piece of the puzzle by providing her with a strong image of the baby, which together with fetal movements and a deliberate focus on the baby during a relaxation exercise, seemed to have made the baby more real.

#### *Fetal health locus of control*

The pattern of subscales for the FHLC was the same as for most women: highest for FHLC-I and lowest for FHLC-P (Figure 8.4, page 285). Compared to the other women, FHLC-I and FHLC-C scores were high, while the FHLC-P score was relatively low. Jane's scores for 'I know things I do make a difference to the baby' on the PAI were relatively low, which is surprising considering her high FHLC-I score and what she said in the interviews about personal responsibility for her and her baby's health.

Looking at the interviews, the high FHLC-I is not surprising, given Jane's strong sense of responsibility for her own and her baby's health and well-being (e.g. Jane 1-47, Jane 1-64). The relatively high score for FHLC-C may seem to be in conflict with this, but in the interview she also talked about some things being down to chance or luck (e.g. Jane 1-, Jane 3-5). The low FHLC-P score was also reflected in the interviews and her cynicism towards health professionals (e.g. Jane 1-46).

While Jane's FHLC-I and FHLC-C scores changed little or not at all over time, the FHLC-P increased considerably at TP3 (Figure 8.5, page 287). This increase was largely due to two items, both related to the influence of care and advice from health professionals on the health of the baby. It is possible that this became more relevant to Jane in late pregnancy. She had two late scans to monitor the position of the placenta, which may have increased the importance she attributed to what health professionals do. Professional advice may have seemed more relevant in late pregnancy and Jane may also have been thinking ahead to labour at this point. The 3/4D scan itself did not seem to have affected Jane's fetal health locus of control.

#### **8.4.5 Naomi**

Naomi was expecting her second child in a planned pregnancy. At the time of the first interview she had had a fairly problem-free pregnancy, except some morning sickness early on and some pelvic pain, which worsened towards the end of pregnancy. She had had four scans by then: a private early 'reassurance scan',

routine 12 and 20 week scans and a private gender scan at 16 weeks. She had a further scan between TP2 and TP3 when she felt reduced fetal movements.

The first interview and questionnaire were completed at 29 weeks, the second at 31 weeks and four days and the last at 37 weeks. The first and third interviews were done face-to-face. The 3/4D scan took place at 31 weeks at an independent company with clinics in several locations.

### **3/4D scan: reasons, expectations and experience**

Naomi chose to have a 3/4D scan because they *'had one in last pregnancy & enjoyed it. Felt it was more bonding than 2D scans. This time we wanted to repeat the experience & to involve our son in the process. Also, both children will have same pictures when older'* (Naomi Q1). She also said that she wanted to find out more about the baby and meet her, but having a 3/4D scan in the first pregnancy seemed to be the main reason, which she also talked about in the interviews. She said in the first questionnaire, that she was *'Most interested in seeing baby's face & what she looks like. Also want to check gender & see what she 'gets up to' in the womb!'* (Naomi Q1). This reflects what she said in the first interview about wanting to see the baby and what the baby was doing, as well as checking the fetal sex again.

As the baby was not in an ideal position at the 3/4D scan, the images were not as good as Naomi had hoped, though she was able to obtain some good pictures of the face. She rated her experience of the scan as expected and slightly below her



expectations in the second and third questionnaires respectively, while rating the experience of what could be seen of the baby as slightly below her expectations on both occasions. In the post-scan interview, Naomi said that the 3/4D scan *'was really good'* (Naomi 2-1), but also that she thought the images from the 3/4D scan with her older child were better. In the third interview, she seemed less positive about the scan: *'if we hadn't had one I don't think we would have missed having it. But it was nice, you know, it was nice to see her and to umm sort of, to have that experience'* (Naomi 3-6) and *'actually this time I probably felt a bit underwhelmed. Just, I don't know, maybe it's because we'd had one before, so maybe I thought it was going to be really, I don't know, it didn't seem to last as long as I thought it would, it didn't seem to, as I've said, it wasn't quite as clear'* (Naomi 3-10). She also said that she had not looked at the images recently (Naomi 3-14) and had not viewed the DVD at all (Naomi 3-15).

Overall, Naomi described the 3/4D scan as *'generally a positive experience'* (Naomi 2-19), but also said it was a bit of an anticlimax:

*'not life changing, not that kind of umm [hesitates]. But, I mean I suppose a lot of hype is put on kind of scans and things like that, a lot of people say, oh you're having a scan and so you kind of sort of, and because we booked it a month in advance, it's another kind of milestone you've set up in your head. And then I was kind of, oh, ok, so.'* (Naomi 3-11)

### ***Impact of the scan on Naomi experience of pregnancy***

Naomi chose overwhelmingly positive adjectives in the attitude scale (Figure 8.1, page 279). However, towards the end of pregnancy the number of negative adjectives increased. The large number of positive adjectives at TP1 and TP2 did not quite reflect the interviews, in which she said that even though she was happy to be pregnant and wanted another child, she did not enjoy pregnancy (Naomi 1-105, Naomi 1-106). The feelings of being 'invaded' and 'out of control' match what Naomi said in the interview, particularly when she talked about feeling out of control and wanting her body back (e.g. Naomi 1-85, Naomi 3-28). Her choice of 'anxious' at TP3 might have reflected mostly worry about labour and particularly about coping with a newborn and a toddler (e.g. Naomi 3-21). After the 3/4D scan, she chose 'confident' as a further positive adjective, but it debatable whether this was due to the scan.

Naomi's scores on the HADS were low (Figures 8.7 and 8.8, page 290); though the anxiety score increased towards the end, it still remained below the cut-off point. This might indicate an increase in apprehension or worry, which is reflected in the choice of 'anxious' on the attitude scale at TP3, and in the interviews, in which she talked about feeling nervous about labour and coping with a toddler and newborn after the birth. Neither anxiety nor depression levels seem to have been affected by the scan.

### ***Impact of the 3/4D scan on how Naomi relates to the baby***

#### *Bonding*

Naomi had medium PAI scores compared to the other women (Figure 8.6, page 288). Unlike the others, and contrary to findings reported in the literature (Della Vedova 2008; Cannella 2005; Heidrich & Cranley 1989), they decreased slightly at each timepoint. The scores for 'I feel love for the baby', 'I wonder what the baby looks like' and 'I try to imagine what the baby is doing in there' decreased over time. This decrease in curiosity about the baby is interesting; was she maybe less curious towards the end of pregnancy because she knew she would soon see the baby 'properly'?

Naomi talked about wanting to see the baby and what the baby was doing in the interviews, but did not talk about bonding or how she felt about the baby explicitly. In the context of scans she talked about routine scans and the previous 3/4D scan increasing bonding to some extent (e.g. Naomi,1-53, Naomi 2-10), but she also qualified this: *'So, yeah, it was enjoyable but I didn't kind of feel massively bonded or anything afterwards'* (Naomi 3-10).

Naomi said in the first interview that the previous 3/4D scan provided a clearer image and made the fetus look more like a 'real' baby. However, paradoxically she also talked about how seeing the baby during scans was 'unreal' and a little strange. In the first interview, she talked about how she found it difficult to make sense of the image of the baby on the screen and the real baby inside her (Naomi 1-38):

*'I find it a bit, quite strange. It's [hesitates] quite difficult to really get your head round that that image [...] still there is a, I find, an element, a bit of an element of detachment of that's not really me, that's not my baby, you know, even at 20 weeks when [...] I could feel the baby moving [...] but it still didn't quite match up, if that makes sense.'* (Naomi 1-26)

Even though Naomi said the 3/4D scan made it easier to imagine the baby because the image was more 'baby-like' (Naomi 2-11), it does not seem to have resolved this 'mismatch':

*'I'm very aware of where she is, but it's still, I find it difficult to really conceptualise her as a baby, I don't think of, until she is actually here, I can't quite, so an images I have of her, as an actual, an actual baby, is looking ahead. [...] But yeah, it's still, I think there's still a gap between the two at the moment.'* (Naomi 3-23)

Maier and colleagues (1997) suggest that the more 'baby-like' 3/4D images may deprive some women of their own mental perceptions of the baby. While there is no direct evidence of this in this study, Naomi's experience highlights the potential for a conflict between the imagined baby and the 'real' baby of the scan images, and the relevance of this for pregnant women's conceptualisations of, and relationship with, their unborn baby.

For Naomi, being certain of the baby's sex was very important and even though a private gender scan and the 20 week scan confirmed that she was expecting a girl, she was still not entirely convinced and, like Nikki, wanted to confirm the sex at the 3/4D scan.

Naomi said in the second interview that she felt the 3/4D scan has not really given her much insight into what the baby was like in terms of 'personality', but that she got

*'more information on sort of personality just by, sort of movement and time, kind of times of day she wakes up [...] You know, those kind of things more than what I saw on the screen. But I suppose if you start to put the two together you build more of a picture'* (Naomi 2-14).

#### *Fetal health locus of control*

Naomi's scores for the FHLC subscales followed the most common pattern in this study: highest for FHLC-I and lowest for FHLC-P (Figure 8.4, page 285). Naomi's FHLC-I score decreased slightly after the 3/4D scan, the FHLC-C score increased and the FHCL-P score remained the same (Figure 8.5, page 287).

In the interviews, Naomi did not really talk about what she felt affects fetal health. She did, however, say that she was happy to defer to health professionals and do what they told her (e.g. Naomi 1-95, Naomi 1-97), which would suggest that she

felt they have a strong influence on her baby's health. Nevertheless, her FHLC-P scores were quite low. Is it possible that doing what health professionals say is not primarily linked to enhancing fetal health but is just 'what one does', i.e. a medical model. It may also have been a way for her to attain, rather than relinquish, control, i.e. rather than having let health professionals do something to her (against her will) it may have been her choice to do what they say.

#### **8.4.6 Claire**

Claire was expecting her second child in a pregnancy that was planned but happened sooner than she expected, as with the first pregnancy it took her five years to get pregnant. She suffered from hyperemesis gravidarum (HG; severe morning sickness) and urinary tract infections, and at the 20 week scan the baby was diagnosed with possible congenital heart disease. Several subsequent scans were unable to offer a definite diagnosis. By the first timepoint, she had had nine scans, including routine scans at 12 and 20 weeks. She declined the combined test for Down's Syndrome and an amniocentesis despite being offered one due to the increased risk of chromosomal abnormalities with the congenital heart disease (Claire 1-53).

At the time of the first interview (face-to-face) and questionnaire she was almost 30 weeks pregnant. The 3/4D scan took place several days later at an independent company with clinics in three locations. The second interview and questionnaire were completed at 31 weeks, just after the 3/4D scan. Unfortunately no further interview or questionnaire were completed.

### ***3/4D scan: reasons, expectations and experience***

Like Naomi, the main reason why Claire wanted a 3/4D scan was because she had had one in her first pregnancy and wanted to treat both children the same. She said that they had a 3/4D scan for their first daughter because *'we just wanted to see what she looked like [...] But we've seen all the adverts, we've seen all the nice pictures and we thought that might be quite nice'* (Claire 1-24). Unlike the other women, she did not seem to feel as positive or excited about the 3/4D scan:

*'... in one way it's a bit of a nuisance, cause I've had so many scans, so many hospital appointments, it's another thing to do, another appointment and another scan. So, nuisance is maybe the wrong word, but umm, because I do want to do it and it will be nice, cause I don't want this baby to not have it because [older daughter] had it and that's not fair, that's very much why, why we're doing it, but it's just, it's just another scan. And another thing to do. We've seen so many so far ...'* (Claire 1-30)

For Claire the 3/4D scan did not seem to be something she really wanted to do, but something she felt she ought to do so that both her children would have the same images.

In the first questionnaire, Claire said she expected *'Nice pictures!'* from the 3/4D scan and was hoping to possibly see *'dysmorphic features related to congenital heart disease'* (Claire Q1). The latter is not something that would usually be

possible for a lay person, but Claire is a medical professional with special expertise in this area. She also talked about this in the interview (Claire 1-52). This was likely to affect the way she approached, and felt about, the scan: she was not only a pregnant woman having a 3/4D scan, but also a professional who may find out more about the baby's physical condition.

After the 3/4D scan, Claire rated her experience of the scan as lower than expected and her experience of what could be seen as slightly lower than her expectations. She said: *'Scan very different from 4D scan in previous pregnancy. Much shorter (20 minutes) compared to approx. 1 hour last time. Seemed much more clinical. Did see the 4D images of baby like last time, but not as many & images not as good.'* (Claire Q1). She confirmed this in the second interview and seemed particularly disappointed with the quality of the DVD. She also said that the 3/4D scan had *'not really made that much of a difference'* (Claire 2-17) and had not affected how she felt about the baby (Claire 2-13).

### ***Impact of the 3/4D scan on Claire's experience of pregnancy***

Claire's choices of adjectives were entirely negative (Figure 8.1, page 279), which also came through in the interviews; even though the pregnancy was planned and she wanted another child, she found pregnancy very hard physically and the uncertain diagnosis made this even more difficult. She expressed her feelings about pregnancy very clearly in the first interview: *'I hate being pregnant, I loathe it with a passion. If you could get children any other way, apart from being*



*pregnant, it would be fantastic'* (Claire 1-47). She was the only woman who chose 'detached' on the attitude scale.

Claire's depression score on the HADS was just below the cut-off point at both timepoints (Figure 8.8, page 290), but her anxiety scores were very high: 18 at TP1 and 11 at TP2 (Figure 8.7, page 290); both are classed as 'probable anxiety'. Claire described herself in the interviews as somebody who is not normally anxious and thrives in an often stressful job (Claire 1-41). It is therefore highly likely that her high anxiety levels were due to the possible congenital heart disease and the uncertainty surrounding this diagnosis. Anxiety levels were lower after the 3/4D scan; it is difficult to say whether this was due to the 3/4D scan. She did not say whether she was able to see dysmorphic features; it is likely that she would have said so if she had. It is possible that not seeing any dysmorphic features was reassuring for her. If this was the case, however, it is surprising that she did not talk about it. In contrast to the HADS score, she chose 'anxious' on the attitude scale at TP2 but not TP1.

### ***Impact of the 3/4D scan on how Claire relates to the baby***

#### ***Bonding***

Claire's PAI scores were the lowest amongst all the women (Figure 8.6, page 288); they were also low compared to the literature. They did not change after the scan. She did score the maximum for 'I dream about the baby' (16); the dreams she had had not necessarily been positive though, but may have reflected her concerns

about the baby. The low PAI scores were mirrored in the PRAM: she placed her own circle as far away as possible from the baby's circle (Table 8.6, page 289).

The very low scores for many of the items in the PAI are reflected in the first interview and are influenced heavily not only by her concerns about the baby's health, but also her professional experience:

*'... because of what I do, I find it slightly difficult to get very very attached to the baby. Because I know that not all pregnancies are viable, not all pregnancies go to term and not all pregnancies produce life babies. So I guess to an extent I maintain a degree of emotional detachment from the baby. [laughs] It's a self protection mechanism.'* (Claire 1-17)

*'I guess I'm just [laughs] feeling a bit sort of, I don't know, don't get attached to this thing until it's out and it's fine. [laughs]'*  
(Claire 1-33)

She was the only woman who chose 'detached' on the attitude scale; presumably this is a very unusual choice as, even if a woman feels detached, it is something that goes against what is expected of pregnant women: 'good mothering', which now starts long before birth, means that she "should" feel attached to her unborn baby. It is also possible that as Claire openly talked about maintaining a sense of

detachment from the baby, she had mixed feelings about the 3/4D scan; she may even have worried that it might have increase her feelings for the baby.

#### *Fetal health locus of control*

The overall pattern of the FHLC subscales was like Sarah's, but unlike that of the majority of women (Figure 8.4, page 285). Both her FHLC-C score and her FHLC-P were the highest of all the women, while her FHLC-I score was almost the lowest . The high FHLC-C score is arguably not surprising: the most difficult issues in her pregnancy, hyperemesis and the diagnosis of congenital heart disease, probably felt very much out of her control. She said in the first interview that she had '*no control whatsoever over this pregnancy*' (Claire 1-43). Health professionals (i.e. powerful others) also had no control over these problems – they may be able to diagnose and, to a limited extent, treat, but could not have prevented them in the first place. There was little change in the subscales over time, which suggests that the 3/4D scan itself did not affect overall and subscale scores for the FHLC.

## **8.5 Cross-case discussion**

The women's demographic background, especially age and socio-economic background, varied. While for some it was their first pregnancy, others already had at least one child. Some had very 'easy', problem-free pregnancy, whereas others had felt very unwell and faced considerable difficulties. It is evident from these

differences that there is not one 'type' of woman who chooses to have a 3/4D scan; even in this small sample there is considerable variation.

### **8.5.1 3/4D scan: reasons, expectations and experiences**

#### ***Reasons and expectations***

The biggest difference between the reasons women had for choosing a 3/4D scan is between women who had a 3/4D scan in a previous pregnancy and those who did not. Naomi and Claire both had a 3/4D scan previously and chose to have a scan this time because they wanted to treat both children the same. Neither of them seemed that excited or emotional about the scan itself, possibly partly because it was their second pregnancy and they had already had a 3/4D scan.

Those women who expected their first baby or, like Sarah, had not had a 3/4D scan in previous pregnancies, put more emphasis on wanting to see and 'meet' the baby and showed more curiosity about what the baby looked like. For them, the 3/4D scan was a means of finding out more about the baby, a chance to get to know the baby a little better. In addition, the scan was also considered an exciting, nice experience and a unique opportunity.

Even though private 3/4D scans are generally not considered to have a clinical purpose, several women chose the 3/4D scan partly to gain reassurance. This seemed particularly important for Isabel, who wanted to check if the placenta had 'moved', for Nikki, who was anxious about fetal health, and for Jane, who said specifically that she liked getting a detailed growth report with the scan. The

extent to which the 3/4D scans contained medical elements varied greatly. While some included a growth report or health check, others actively seemed to avoid this and focused solely on seeing the baby.

This illustrates the blurred boundaries between the social and the medical with regards to 3/4D scans. They are not done overtly for medical reasons, and indeed many private scanning company websites state that they do not have a medical purpose and do not replace routine scans (see Chapter 5). They are therefore positioned predominantly within the social domain. However, as discussed in Chapter 2, ultrasound scans in pregnancy are inherently medical, they cannot be separated from their original purpose. Therefore even private 3/4D scans retain medical connotations and the potential to provide reassurance. Nevertheless, the women in this study predominantly chose a 3/4D scan for its social aspects: to see and meet the baby, to find out more about the baby.

The expectations the women had of the scan are less diverse: they all expected clear, detailed images of the baby, particularly the face. These expectations are not surprising, considering that 3/4D scans are advertised as offering a clear image of the baby, a chance to see what the baby looks like before birth. However, the company websites also market 3/4D scans as 'bonding scans' (see Chapter 5), yet none of the women said explicitly that they had chosen the scan to increase bonding, neither did any of them say that this is what they expected from the scan.

The limited body of research into 3/4D scans so far has not explored why women choose private 3/4D scans or what they expect of them. Does this compare to why women choose to have routine scans? Routine scans exist in a very different context in that they are not only an integral part of maternity care, but also of the contemporary experience of pregnancy. It could be argued that many women do not make an active, informed choice to have a routine scan; indeed, some may not be aware that they can decline the scan. As argued in Chapter 2, routine scans are part of the medicalisation of pregnancy and have a clear medical purpose. However they have become part of the experience of pregnancy not simply due to their medical purpose, but also for socio-cultural reasons, resulting in even greater pressure on women to have routine scans. Nicol (2007:526), for example, argues that 'informed choice is not possible within the obstetric ultrasound environment due to the influences of hospital and social cultures, combined with a woman's recently encultured need of visual "proof" of pregnancy'.

However, women are also complying with routine scans to 'achieve their own goals, which are not the same as those of health professionals' (Nicol 2007:527). These goals include wanting to see and meet the baby, obtaining visual 'proof' of the pregnancy and baby, and wanting to have images of the baby to share with others (Nicol 2007; Ekelin et al. 2004; Harris et al. 2004; Dykes & Stjernqvist 2001). In a study of women's reasons for requesting scans in the absence of clinical indications in Denmark, where obstetric scans have become routine only relatively recently, Gudex, Nielsen and Madsen (2006:149) found that 'women acknowledge

the clinical grounds for prenatal ultrasound but have additional reasons for wanting it', including simply wanting to see the baby.

Thus while the overwhelming reason why women have routine scans may be because they are part and parcel of the medical model of pregnancy, they also have other reasons. From this study it is evident that the reasons why women choose 3/4D scans are very similar to those for routine scans, though 3/4D scans involve a more deliberate choice. It seems therefore that women's reasons for, and expectations of, routine and 3/4D scans are similar: wanting to see the baby, confirmation that all is well, curiosity and a sense of being able to 'meet' the baby.

### ***Experiences***

The women's experiences of the 3/4D scan varied. Sarah, in particular, was very happy; she was amazed at what she had been able to see and it seemed to make the baby more real for her. For the others, the experiences were more mixed. Isabel and Jane's experience of the scan was positive overall, but they were a little disappointed with the quality of the images and said their expectations had not quite been met. Naomi and Claire both said that while they enjoyed the scan to some extent, they felt that the 3/4D images and/or DVD had been better at the 3/4D scan they had during their previous pregnancy. Nikki was very disappointed as she had not been able to obtain good, clear images.

There is, so far, no research specifically into women's experiences of private 3/4D scans to which these case studies can be compared. What is strikingly different to

routine 2D scans is the importance of clarity and detail, particularly of the face, with 3/4D scans. The women's expectations of what they hoped to be able to see of the fetus were very high; most expected to be able to see 'what the baby looks like'. In parallel, scanning company websites emphasize not only the scans' detail, but also that they make the fetus appear more 'baby-like' than 2D scans (see Chapter 5); several websites have pages comparing 3/4D images to the newborn baby.

Lapaire and colleagues (2007) suggest that poor 3/4D images are likely to lead to disappointment due to these high expectations, while Ji et al. (2005) found that women's expectations of 3/4D scans were higher than for 2D scans and that they were more disappointed when the images were not sufficiently clear. This is reflected in these case studies. For the majority of women in this study the expectations of what could be seen of the baby had indeed not been met.

Romero and colleagues (2006) found that a third of women undergoing a 3/4D scan immediately after a routine 2D scan were very satisfied with the 3/4D scan, even though image quality was assessed as low by the professional carrying out the scan. Antonelli, Romoscanu, Quayoom, Boulvain and Irion (2006) found that women were more satisfied with 3/4D than with 2D ultrasound scans, but do not give figures for the percentage of women who were satisfied with the 3/4D scan. Lapaire et al. (2007), however, found no difference in satisfaction levels with 2D and 3/4D scans, though they do report that a large majority of women preferred the 3/4D scans. It is important to bear in mind that none of these studies looked a



private 3/4D scans; instead 3/4D scans were offered to women in addition to routine scans. It could be argued that if women pay to have a private scan their expectations may be even higher.

### **8.5.2 Impact of the 3/4D scan on the experience of pregnancy**

Despite the seemingly clear-cut contrast between positive and negative feelings, it is important to bear in mind that a certain degree of negative feelings are normal and expected. Indeed, some negative feelings, like anxiety, may serve a purpose. It is also important to note that there is a discourse around how pregnant women should feel which means 'good mothering' starts in pregnancy. Consequently, some negative feelings are more 'acceptable' than others. For example, while it is more acceptable, probably even expected, that a pregnant woman may feel anxious or vulnerable, feeling detached, resentful or angry is likely to be seen more negatively.

The women's attitudes to, and feelings about, pregnancy varied considerably. Isabel, Jane and Naomi chose mostly positive feelings and the negative feelings chosen by Isabel and Jane are 'acceptable' ones ('anxious', 'vulnerable', 'apprehensive'). By contrast, Nikki, Sarah and Claire's feelings were mostly negative. Not surprisingly perhaps, it seems that those women who had more difficult pregnancies also had more negative feelings about it. Sarah and Claire in particular stand out as feeling very negative about the pregnancy, though Sarah felt more positive ('excited') at the end. Sarah chose only negative feelings at TP1, as did Claire at both timepoints.

It is difficult to say with certainty what role the 3/4D scan played. For example, Nikki and Naomi respectively chose 'protective' and 'confident' on the attitude scale after the scan, but this may not be related to the 3/4D scan itself and is not reflected in the interviews.

There is slightly more evidence that the scan may have had an impact on anxiety for some women. Isabel, for example, had a lower HADS anxiety score after the scan and said in the interview that the scan confirmed that the suspected low-lying placenta was not a problem, which would have been reassuring. Claire's HADS anxiety score is considerably lower after the scan; it is possible that not seeing dysmorphic features at the 3/4D scan may have reassured her.

Leung et al. (2006) found that 3/4D scans had no greater effect on anxiety than that of 2D scans, even though the women in the study said that the 3/4D scan made it easier to understand that there were no abnormalities (see Chapter 3). For Isabel, anxiety about the location of the placenta may have been reduced by the 3/4D scan – but this could also have been achieved by a 2D scan, thus supporting the findings of Leung et al. (2006). It is likely that in many cases, like that of Isabel, the reduction in anxiety would be brought about through reassurances of professionals that all was well, rather than through what the pregnant woman herself could see at the scan. As 3/4D scans currently have limited clinical use (Kurjac et al. 2007) this is not surprising.

It could therefore be argued that 3/4D scans do not provide reassurance because they are 3/4D, but because they offer the opportunity of a further scan and the presence of an expert, as suggested by some of the scanning company websites (Chapter 5). Supporting Leung et al.'s (2006) findings, there is no evidence in these case studies that the 3/4D nature of the scan itself provides reassurance. If the inherent ability of 3/4D scans to increase reassurance is indeed the same as that for 2D scans (or possibly less due to the lower clinical effectiveness), it is useful to look at the effect of 2D scans on anxiety. As discussed in Chapter 3, this evidence is not clear-cut: while scans may initially reduce anxiety, this may increase again later on. Furthermore, routine scans themselves seem to increase anxiety before the scan, as there is likely to be concern about finding problems during the scan. The latter is not evident in these case studies; none of the women seem anxious before the 3/4D scan. Presumably this is because 3/4D scans, unlike routine scans, do not have the explicit purpose of looking for problems. Furthermore, at that stage all the women in this study had already had an anomaly scan which, except for Claire, had not found any problems.

In the case of Sarah and Nikki it may be possible that the 3/4D scan affected their feelings of depression. For Nikki these increased after the 3/4D scan; though this may not be related to the scan, it could also be due to the disappointing scan experience. Sarah, on the other hand, has a lower HADS depression score after the scan and chose 'depressed' before but not after the scan. For her the scan was such a positive experience and seemed to help her related to the baby so much

better, that this may have had an impact. She also seemed happier about the pregnancy in the second interview.

### **8.5.3 Impact on relating to the fetus**

#### *Bonding*

For Isabel, the 3/4D scan made it easier to imagine the baby; she said that the scan image was the image of the baby she has in her mind. She enjoyed sharing the images with others and was still looking at them by the end of her pregnancy. The scan may therefore have aided some components of bonding, but it is hard to say what the overall effect was. According to the PAI, bonding decreased after the scan (but increased again later), while the PRAM suggest that bonding increased, which may be unrelated to the scan. From the interviews, it appeared that Isabel already felt very attached to the baby; no change was apparent over time.

For Nikki, the 3/4D scan seemed to have had little effect on how she felt about the baby, which may not be surprising as she was not able to obtain clear images. However, Nikki had at least gained more certainty about the baby's sex from the 3/4D scan, which may have helped her to relate to the baby in a more personal way. By contrast, for Sarah the scan seemed to have made a big difference. Before the scan she found it difficult to think about or relate to the baby, but the scan made the baby more real, more familiar, more of a person and an individual.

For Jane, who said in the interviews that she already felt 'very attached' to the baby, the scan may also have increased some components of bonding. Like Isabel,

she had the scan image in mind when thinking about the baby. She talked about how the scan image, in conjunction with fetal movements and 'tuning in' to the baby during relaxation exercises, had helped her to visualise a more complete image of the baby.

Naomi also talked about the importance of movement, and for her this seemed to be a richer source of knowledge about the baby than the scan image. She talked about a 'mismatch' between images of the baby from routine scans and the 'real' baby, and while the scan had possibly given her a clearer image of the baby, there was still a 'mismatch', a certain sense of unreality even with the more 'baby-like' 3/4D image. Like Nikki, for Naomi the 3/4D scan had also made her more certain of the baby's sex, which in her case was important for seeing this baby as an individual, distinct from her older son.

Claire had maybe experienced the smallest, or possibly no, effect on bonding from the scan; she said in the second interview that the scan had not affected how she felt about the baby. However, this was not something she wanted; she wanted to maintain a degree of detachment.

It is clear from these case studies that bonding is a complex, multifaceted concept which is difficult to conceptualise, let alone measure. It is not possible from the evidence presented here to conclude that 3/4D scans increase bonding. However, they may enhance some of the components of bonding for some women. In this

sense, this evidence is similar to that from research into the effect of routine scans on bonding (see Chapter 3).

The little research that has been done into the effect of 3/4D scans compared to 2D scans on bonding is also inconclusive (Chapter 3). It is generally easier for lay people to recognise fetal structures in 3/4D compared to 2D (Lapaire et al. 2007); however this does not seem to simply translate into increased bonding. Whereas some studies suggest that 3/4D scans may, compared to 2D scans, have a greater positive impact on some components of bonding, such as the ability to form an image of the baby (Ji et al. 2005) and aspects of bonding related to imagination, wonder and curiosity (Pretorius et al. 2006), other research has found that there was no significant difference between 3/4D and 2D scans (Lapaire et al. 2007; Sedgmen et al. 2006; Righetti et al. 2005; Rustico et al. 2005). This has been discussed in more detail in Chapter 3.

A final note on bonding may be appropriate here; it is a very emotive subject which is closely tied to what is expected of pregnant women and relates to discourses around 'good mothering' (see Chapter 3). Social desirability is an important factor and may have influenced the qualitative and, particularly, quantitative evidence, which may account for some of the high scores. Nevertheless, not all women scored highly in the PAI; Jane, for example, who talked a lot about being 'attached' to the baby in the interviews, had relatively low PAI scores, while Claire openly talked about maintaining detachment.

It also seems that, for some of the women at least, bonding was already at such a high baseline that the scan made little difference, particularly with Isabel and possibly Jane. Similar observations have been made in the literature (e.g. Lapaire et al. 2007).

#### *Fetal health locus of control*

Turiff-Jonasson (2004) found that a strong internal FHLC was predictive of higher levels of bonding. As the small sample size in this study did not allow a detailed statistical analysis, it is not possible to draw comparisons to her study in this respect. However, the two women with the lowest internal FHLC (Sarah and Claire) also had the lowest scores for bonding. How the 3/4D scan affected women's perception of control over fetal health is difficult to assess in these case studies. Neither quantitative nor qualitative data have been able to shed much light on this relationship. While there are some changes in FHLC scores and subscales over time, they are either too small to draw firm conclusions or impossible to attribute to the scan itself. The interviews do not provide sufficient evidence either.

#### **8.5.4 Quantitative and qualitative evidence**

These case studies have raised some methodological issues pertaining to individual psychological measures, but also to the combined use of quantitative and qualitative evidence. As regards psychological measures, those used to assess bonding, PAI and PRAM, raised most questions. In some cases they converge, but there are also divergences. Furthermore, a close look at individual items on the PAI, FHLC and HADS also raises questions about the appropriateness of these

measures. In this way, the qualitative data helped to deconstruct some of the quantitative measures and take a closer look at them. This has highlighted some of the difficulties with quantitative measures when looking at complex psychological phenomena. For example, Claire had a very low overall score on the PAI and also said in the interviews that she was trying to maintain a degree of detachment from the fetus. However, she scored very high on some items of the PAI, for example for 'I dream about the baby' – but from the interviews is clear that this preoccupation with the baby which seemed to be reflected in frequency of dreams was likely to be due to worry about the potentially severe problems her baby may have; they were more likely to be nightmares, rather than positive dreams.

The qualitative and quantitative data have enhanced each other and led to new insights. The in-depth interviews have provided a deeper, more nuanced understanding of the quantitative measures, as well as highlighting some inconsistencies. This will be discussed further in Chapter 9.



## **Chapter 9 Discussion**

### **9.1 Introduction**

The evidence gathered in this study, together with a review of the relevant literature, has furthered our knowledge not just regarding 3/4D scanning in pregnancy, but also pertaining to how women begin to relate to, and conceptualise, their unborn child. The exploration of women's psychological experiences of these scans and the wider discourses around them have provided valuable insights. This section presents a synthesis of the evidence relating to the psychological impact of 3/4D scans, the issue of bonding, ways of knowing about the fetus, and different perspectives on 3/4D scans.

### **9.2 Strengths and limitations**

#### **9.2.1 Strengths**

There have been several previous studies into 3/4D ultrasound scans, mostly quantitative studies of their psychological impact, as well as two observational studies (Roberts 2012a; Kroløkke 2009, 2011). However, this study offers perspectives on 3/4D scans which have not been explored previously. While the observational studies by Roberts (2012a) and Kroløkke (2011, 2009) were on private scans, they did not specifically explore psychological issues; neither did they collect data before and after the scan. Unlike the quantitative, mostly

psychological, studies, this research explores the psychological impact of *private* 3/4D scans, rather than scans that are offered as part of a research project. How women experience these scans and how they are affected by them psychologically is likely to be different for scans they have actively chosen themselves, rather than in an artificial research setting. This study therefore provides a degree of ecological validity. Furthermore, it allows exploration of why women choose 3/4D scans and what they expect of them.

This study is longitudinal, using both pre- and post-scan data. It is the first study in which women have been interviewed in-depth before and after the 3/4D scan, thus allowing deeper insights into women's experiences of these scans. Data was collected over at least 10 weeks for most women and it was therefore possible to explore how women's experiences of pregnancy, their relationship with their unborn child and their attitudes to and experiences of the 3/4D scan changed over a considerable amount of time, rather than just providing a brief snapshot of these complex psychological phenomena.

This study also provides the first critical discourse analysis of scanning company websites, providing insights into the discourses, identities and genres in evidence on these websites. This has made it possible to demonstrate how 3/4D scans are conceptualised and marketed by commercial companies, and subsequently to explore how these messages are absorbed by women and reflected in their narratives.

Three different research approaches are used in this study. This has made it possible to explore issues around 3/4D scans from different perspectives. Even though the quantitative element was different to what was originally planned, it was possible to utilise the quantitative data in conjunction with the interviews. The combined use of quantitative and qualitative data enable a fuller picture of how each woman was affected by and experienced the 3/4D scan. In many cases the different sources of data supported each other, but there were also divergences which provided an opening for the discussion of conceptual and methodological challenges. The critical discourse analysis allowed for a comparison of women's experiences with other discourses around 3/4D scans, as well as situating 3/4D scans within wider discourses and beyond women's experiences.

Overall, this thesis has taken a multidisciplinary approach and issues around 3/4D scans have therefore been approached from different directions, offering more depth. While the main focus has been psychological, the inclusion of sociological, historical and anthropological literature has provided a rich background and situated ultrasound scans within a wider context.

### **9.2.2 Limitations**

While this research provides some unique insights into the understanding of private 3/4D scans from different perspectives there are also limitations to this study. The difficulties with recruitment have resulted in a small sample; while this was appropriate for the IPA, it was insufficient for a full statistical analysis. It is

therefore not possible to make generalisations about the psychological impact of 3/4D scans.

The necessary changes to the methodology had to be made during the early stages of the study. While this provided an opportunity to enhance the study by taking a more holistic approach and including an analysis and discussion of wider discourses, the timing has also given rise to some limitations. If case studies had been planned from the outset, a wider range of data sources could have been used. Observations could have provided a deeper insight into the experience of 3/4D scans and would have added a valuable further dimension to the case studies. Diaries may also have provided further insights, as may have interviews with sonographers or owners of commercial scanning companies.

Generally IPA requires a relatively homogenous sample (Smith et al. 2009; Smith & Osborn 2003), making comparisons between participants easier and potentially more meaningful. While the small sample was appropriate in terms of numbers for the IPA, it was relatively heterogeneous, especially with regards to the experience of pregnancy. On the other hand, there was also considerable homogeneity between some of the women, notably with regards to socioeconomic and professional background. Furthermore, some of the differences between women, such as older children or previous experiences of 3/4D scans, enabled comparisons between women with these different experiences and highlighted some important differences.

Most of the interviews were carried out over the telephone. Ideally more would have been face-to-face. However, this was not possible in most cases due to distance and time limitations. While the majority of telephone interviews were sufficiently in-depth, it is possible that interviewing these women in person may have enabled them to open up further and provide richer data. On the other hand, some women may have felt more comfortable talking on the telephone. A further limitation here is that three of the women did not complete either all interviews or all questionnaires. As data was collected over three timepoints, it was still possible to obtain at least two interviews and questionnaires for each woman, but a complete set for all women may have provided an even fuller picture.

The interviewing itself has been a learning process as it was the first time the author had carried out qualitative interviews within a research project. The first few interviews were noticeably shorter and questions were less probing and sometimes less open than in the later interviews.

The participants were all self-selected, responding to the notices and adverts and were as such very motivated to take part. Their reasons for having a 3/4D scan and their expectations and experiences of the scan may have been different to other women.

One further limitation of this research is that the perspective of expectant fathers was not included, as had been originally planned. Insights into fathers' experiences of 3/4D scans are important not just in themselves, but also because of how they

may affect the pregnant woman's experience and their relationship as a couple. However, within the available timeframe a focus on just pregnant women allowed a more in-depth exploration of their experiences.

### **9.3 The psychological impact of 3/4D scans**

#### **9.3.1 Claims made regarding the psychological impact of 3/4D scans**

While there has been no unified theory on the psychological impact of ultrasound scans, strong theoretical threads have been running through academic research and professional discourses since the early 1980s. As discussed in Chapter 3, it has been theorised that seeing the fetus during an ultrasound scan (a) reduces anxiety by reassuring pregnant women all is well and that 'the baby is real', in the case of early scans; (b) increases 'bonding' because the fetus becomes more real and more of a person, thus providing the opportunity of a 'meeting' with the fetus even before birth, and (c) encourages pregnant women to engage in positive health behaviours because the fetus has become more real and more of a person. Empirical evidence only partially supports these theoretical claims, as discussed in Chapter 3.

These theoretical propositions have also been extended to 3/4D scans. There has been speculation regarding the psychological impact of 3/4D scans within the academic and professional community (e.g. Campbell 2002; Maier et al. 1997), with suggestions that, as 3/4D scans make the fetus look more 'baby-like' and real,

these scans would promote bonding, reassurance and positive health behaviours even more than conventional scans. (Chapter 5). According to these theoretical propositions, seeing the 3/4D scan makes the fetus look more like a 'real' baby and makes it possible to observe fetal 'behaviour'; this consequently helps to transform the fetus into a person and a family member. As a result, pregnant women, and other family members, are assumed to 'bond' with the fetus and potentially increase positive health behaviours. Seeing the fetus in such detail is also assumed to be reassuring: it is now possible to *see* that everything is well. These claims are also clearly evident on the scanning company websites

Several studies investigating the effect of 3/4D scans on bonding and reassurance do not, on the whole, support these claims (see Chapter 3). However, so far no studies have been carried out into pregnant women's experience of these scans, or into the psychological impact of *private* 3/4D scans, which are located within a different context than 3/4D scans offered as part of a research study.

### **9.3.2 What this research adds**

The case studies and IPA study demonstrate that 3/4D scans have no clear and consistent impact on bonding, anxiety or fetal health locus of control. The quantitative analysis of the questionnaires does not show a consistent pattern of positive changes after 3/4D scans for any of the constructs measured. There is some evidence in the interviews that 3/4D scans provided some reassurance in the case of specific health concerns for some women and may have helped some women with some aspects of bonding. However, there is no overwhelming

evidence of either increased bonding or reduced anxiety after the 3/4D scan. Fetal health locus of control was also not affected.

While it is not possible to generalise from the qualitative findings and the sample size was very small for the quantitative analysis, which as a consequence remained descriptive, there is no evidence in this study that 3/4D scans have a measurable positive, or negative, psychological impact. Despite the small numbers here, this finding reflects those of the majority of studies into the psychological impact of 3/4D scans (de Jong-Pleij et al. 2013; Lapaire et al. 2007; Leung et al. 2006; Sedgmen et al. 2006; Righetti et al. 2005; Rustico et al. 2005).

In this study, the experiences and effects of 3/4D scans, like the reasons women have for choosing them, seem to be individually mediated. The physical and emotional experience of pregnancy, as well as individual circumstances and psychological characteristics, are instrumental in how women experience 3/4D scans and how they are affected psychologically by them.

However, the interviews do suggest that 3/4D scans may have something extra to offer, specifically regarding having a better idea of 'what the baby looks like'. To some women, a (supposedly) clearer, more 'baby-like' image seems to make a difference – though this is not a measurable difference. This cannot be referred to as 'increased bonding', but seems to be more about the women enjoying seeing what they perceive as a more 'accurate' and more detailed image of the fetus. In addition, for some women the 3/4D scan seems to help them to form an image of



the fetus, or at least a more detailed image. Again, this may not be measurable in terms of 'bonding'. Furthermore, for some women this is more about their *expectations* of the scan; their very high expectations of a clear, 'baby-like' image are not necessarily fulfilled. The issue of bonding will be discussed in more detail below.

Regarding the effect on anxiety and reassurance, there is an important difference between routine 2D scans and private 3/4D scans which goes beyond image quality: the purpose of 3/4D scans is not to look for problems and therefore women are less likely to be anxious before the scan. This is reflected in the interviews, in which the women talk about some anxiety before routine scans, followed by reassurance if scan results are normal. These findings echo findings on the impact of routine 2D scans on anxiety (e.g. Kowalcek et al. 2002; Zlotogorski et al. 1996).

Even though some women talked about wanting to 'see if everything was ok' with the 3/4D scan, the focus was not on reassurance – though for some women it provided some reassurance with regards to specific concerns, such as the location of the placenta. Unlike with routine 2D scans, however, none of the women talked about being anxious before the scan. This may explain why 3/4D scans did not seem to affect anxiety levels, despite providing some reassurance for some women: unlike with routine scans, 3/4D scans do not raise and then reduce anxiety, thus giving a 'false' picture of reassurance provided by scans. In the case of routine scans, many women experience some anxiety because of the scan, due

to concerns about what the scan may show and the implications of adverse findings (Harpel 2008; Williams et al. 2005; Harris et al. 2004; Saetnan 2000).

### ***Theoretical implications of this research***

Where does this leave suggestions and assumptions by researchers and professionals that 3/4D scans increase (or even initiate) bonding and provide reassurance as well as increased positive health behaviour?

With regards to anxiety, the context for 3/4D scans is very different from that of routine scans in that they are not primarily carried out for diagnostic purposes. The interviews and case studies did consequently not suggest that the women were anxious before the scan – diagnostic scans had already been carried out by this time. There was therefore no ‘artificially’ reduced anxiety after the scan. However, seeing the fetus appears to have provided some reassurance for some of the women, particularly with regards to specific health concerns, such as a low-lying placenta. Reassurance may not just come from being told by a professional that ‘everything is ok’; there is evidence in the interviews that just seeing the fetus in the detail provided by clear 3/4D images may be to some extent reassuring. However, this does not equate to measurably reducing clinically significant levels of anxiety levels.

While ‘bonding’ was a prominent theme on the scanning company websites, there was no evidence in the interviews or case studies of a consistent, measurable effect of 3/4D scans on ‘bonding’. There was some evidence in the interviews that,

provided good images can be obtained, the image quality and the fact that scans take place later in pregnancy than routine 2D scans make the fetus look more 'baby-like' and enables prospective parents to look for family resemblances and make inferences about fetal 'behaviour' and 'personality'. However, there is no evidence in the interviews and case studies that this translates into 'increased bonding'.

Instead, it would appear that 3/4D scans allow prospective parents to find out more about the fetus and thus get to know him/her better. Pregnant women and their partners seem to enjoy this and have indeed a keen desire to do so. Learning more about the fetus is, however, only part of the complex construct of 'bonding' and could be argued to be the beginning of the developing relationship. Furthermore, while 3/4D images may help with this, there are other ways for parents to 'get to know' the fetus, including fetal movement.

This research does therefore not support theoretical claims that 3/4D scans reduce anxiety or increase bonding. It does, however, suggest that 3/4D scans are part of a more complex theoretical framework which involves *elements* of reassurance of bonding, but mainly involves a process of 'getting to know' the fetus and future child, reducing the unknown and uncertainty and finding a place for the fetus (and future child) within the family. In addition, it was clear from the interviews that 3/4D scans were anticipated as an exciting, enjoyable event – even if in some instances there was some disappointment with the scan.

### **9.3.3 A social rather than a psychological experience?**

This research suggests that pregnant women do not explicitly choose 3/4D scans in order to increase bonding or to seek reassurance and that 3/4D scans do not have a measurable psychological impact. Rather than being a psychological experience, it could be argued that they are a social experience with a number of potential meanings.

The interviews and case studies in this study show that 3/4D scans have multifaceted meanings for pregnant women. This reflects observations of 3/4D scans by Kroløkke (2011, 2009) and Roberts (2012a, 2012b), which suggest that 3/4D scans are an enjoyable, exciting experience, a family event, an opportunity to construct the fetal identity and a transformative performance. As this study did not include observations of scans, it is not possible to confirm whether the scan functioned as a transformative performance. However, the interviews certainly demonstrate that women see the scan as an experience, a family event and a chance to construct fetal identity. These multifaceted meanings of scans are reflected in the analysis of websites undertaken for this study.

#### ***An experience***

For the women in this study, the 3/4D scan seems to be mostly an interesting, emotional and exciting experience. They looked forward to seeing the fetus and watching the fetus move, considering it as something enjoyable, fun and entertaining. Those who did not obtain good images, particularly Nikki, were disappointed. For Sarah, the experience of the scan was as good as, or better than,

expected: an overwhelmingly positive, enjoyable experience. In this sense, the entertainment discourse on the websites seems to be the one most relevant to the women themselves.

The scan as an experience, as presented on the websites and experienced by the women in this study, can be seen as part of what Pine and Gilmore (1998) coined the 'experience economy', as also suggested by Kroløkke (2009). As such it is inextricably linked to consumerism and the commercialisation of pregnancy: the 3/4D scan is something else that can be purchased during pregnancy. The inherent risk here is that it becomes something that *should* be purchased within the discourse of good mothering. For some women, having a 3/4D scan may be an integral part of the pregnancy journey, like purchasing a pram, attending an antenatal course or deciding how to decorate the nursery. This may put additional pressures on pregnant women in terms of moral obligations during pregnancy, which would be particularly challenging for those women who cannot easily afford a private scan. In this sense, 3/4D scans are clearly part of a consumerist approach to maternity care.

### ***A family event***

While 2D scans can also be family events, this is particularly true for 3/4D scans. Scanning company websites market 3/4D scans as a family experience, emphasising that pregnant women can bring a number of family members and others with them. Scan images and DVDs are presented as keepsakes that become part of family history and can, and maybe should, be shared with family members.

In addition, 3/4D images may be easier to interpret by lay people, which suggests that they may play a larger role in 'introducing' the fetus to the family and enabling the construction of fetal identity.

This was evident in the women's accounts in this study. They talked about sharing 3/4D images and DVDs with other family members (Chapter 7), using them to introduce the new baby to the family even before birth and to establish family resemblances. Observations of 3/4D scans by Kroløkke (2011, 2009) and Roberts (2012a, 2012b) confirmed the importance of the presence of family members at the 3/4D scan and the involvement of the wider family in co-creating the narratives of the fetus as a family member and an individual, and of the new family structure. While this cannot be directly confirmed by this study, as it did not include observations of scans, a parallel dynamic is evident in the women's accounts of how they share images and DVDs with other family members.

### ***The construction of fetal identity***

The women in this study used scans, particularly 3/4D scans, not only to gather information about physical characteristics of the fetus, such as appearance and sex, but also to construct an identity for the fetus, including likes, dislikes and temperament (Chapter 7). A greater sense of 'knowing' the fetus may make it easier for women to relate to him/her, which may in turn relate to bonding, though it does not directly translate into 'increased bonding', thus highlighting the complexity of this construct. While 3/4D scans may positively affect some aspects of bonding, this may not be measurable. This is seen mostly clearly in the

interviews with Sarah, for whom the 3/4D scan seemed to make it easier to not just form an image of the fetus, but also to enable her to begin to relate to him. These findings reflect research by Kroløkke (2011) and Roberts (2012a, 2012b), who suggest that the identity of the fetus is constructed through the joint narrative by the sonographer, the pregnant woman and other family members during the scan. While this is only directly accessible through observations of scans, echoes of this process are clearly evident in some of the interviews carried out for this study.

### ***A performance***

The analysis of scanning companies' websites has highlighted the portrayal of 3/4D scans as performances, with the fetus as the 'star of the show', the clinic/sonographer as the director and the expectant parents and family as the audience. The theme of the scan as a performance was less evident in the interviews and case studies, but has been confirmed by observational research by Kroløkke (2011, 2009).

### **9.3.4 The significance of 3/4D scans**

While it has been suggested above that 3/4D scans may be used by pregnant women and others to integrate the baby into the wider family and to create new identities, these scans are clearly not the only means of doing so, i.e. they are not essential in order to achieve this. The majority of pregnant women do not have 3/4D scans, yet are still able to adopt new maternal identities and the fetus/baby is still transformed into a family member. Pregnant women, their partners and

other family members have other way of achieving this, such as through other scans, fetal movement or thinking about and imagining the fetus/baby, as is evident in the interviews.

For some women, 3/4D scans may accelerate these processes. For Sarah, for example, the scan may have had this effect. However, on the whole it seems unlikely that 3/4D scans will make much a difference, especially over time: babies will still become individuals and members of the family, pregnant women will transform into mothers and expectant fathers into fathers. Furthermore, it seems that for a number of women the images and DVDs of the scan will, after the initial excitement, be put away and more or less forgotten about. They seem to be very much of the moment, rather than something of lasting significance which women return to again and again. The evidence from this research concurs with Leung et al. (2006:253), who suggested that:

‘3D/4D ultrasound is just one of the techniques available for enhancing women’s awareness of becoming mothers and reducing the levels of anxiety that this state can generate. Just like the bond between mother and fetus, however, it is far too complex a psychological phenomenon to be modified by mere imaging.’

It may be relevant here to consider 3/4D scans in terms of pregnant women, and others, wanting to ‘accelerate’ the process, wanting to get a glimpse into the future which this technology makes possible. In the interviews, several women



talked about impatience as well as curiosity with regards to the 3/4D scan: being impatient to see and 'meet' the baby, being curious what he/she looked and behaved like – what type of person he/she was. In this sense, the desire for 3/4D scan could be seen as part of the contemporary desire not just to see, but to know. It is now possible to see the fetus in detail and accurately (at least, that is the promise made by scanning companies) months before birth and the mere existence of that possibility, of that technology, may mean that some pregnant women have a strong desire to make use of it.

Considering the importance of sharing the scan and the images/DVDs with others and the apparent significance of the scan as a family event, it is also conceivable that pregnant women see it not so much as an opportunity for themselves to 'meet the baby', but a chance for others, who do not have the direct physical experience of the baby, to do so. The social aspects of the scan and the involvement of the wider family seem to be a crucial part of it.

It also needs to be considered whether more women would have a 3/4D scan if they did not have to pay for it. At the moment, the majority of pregnant women do not have these scans; while anecdotally some say that they dislike the idea of 3/4D scans, find the images unsettling or feel they are too intrusive, it is likely that more women would have these scans if they were cheaper or free. During the recruitment for this study, a large number of women and couples replied to a newspaper advertisement, assuming that participation in the research would include a free 3/4D scan. When they found out that this was not the case, none of

them decided to take part. This indicates that many more women would have these scans if they were free.

## **9.4 Bonding: 3/4D scans, conceptual and methodological challenges**

### **9.4.1 'Bonding scans' and women's narratives**

The analysis of clinic websites (Chapter 5) clearly demonstrates that 3/4D scans are marketed as 'bonding scans'. This was particularly the case for some companies, which also portrayed 'bonding' as something which not only exists as a concept, but also something that is beneficial and desirable – something that should be achieved during pregnancy as a marker of being a 'good mother'. 'Bonding' as a concept is also evident in the academic and health professional literature, though other terms, especially 'attachment', are also used.

However, the women's narratives in this study (Chapter 7) demonstrate that they have not chosen 3/4D scans explicitly as a means of increasing 'bonding'. None of the women echoed the rhetoric of 'bonding' on the scan websites, though for some women some components of bonding, such as seeing (i.e. finding out more about) and 'meeting' the baby were relevant when choosing scans. Nevertheless, none of the women said that they chose the 3/4D scan because they wanted to bond with their baby.

Neither did they talk directly about bonding – with two exceptions: two women, who were both psychologists, talked about ‘bonding’ and ‘attachment’. This may suggest that ‘bonding’ and ‘attachment’ are concepts constructed by professionals and academics which do not necessarily reflect women’s conceptualisations and experiences. It also raises questions about what exactly we mean by ‘bonding’ – with obvious implications for how we measure it. As discussed in Chapter 3, there is a lack of conceptual clarity regarding the maternal-fetal relationship (Redshaw & Martin 2013; Walsh et al. 2013; Walsh 2010; van den Bergh & Simons 2009). This study suggests that it is constructed in different ways by professionals/academics, scanning company websites (which are likely to express a wider societal discourse of ‘bonding’) and pregnant women themselves.

The women’s narratives in this research offer some insights into women’s experience and understanding of how they relate to the fetus. It involves finding out more about the fetus and thereby ‘getting to know’ the fetus, e.g. through fetal movement or scan images. Building on this, women develop an image of the fetus which encompasses not only physical appearance, but also a ‘personality’ and personal and family identity. Comparisons in terms of appearance and behaviour are made with other family members. In the interviews, the women did not talk much in terms of feelings for the fetus, e.g. feeling love for the fetus. However, while feelings of love for the fetus were rarely expressed explicitly, they seemed to underlie other aspects of relating to the fetus, such as wanting to get to know and meet him/her, concerns over fetal health and a sense of

responsibility. These feelings were expressed to some extent behaviourally, i.e. relating to diet and exercise or seeking medical advice.

#### **9.4.2 3/4D scans and bonding**

The quantitative analysis did not show any consistent, measurable positive impact on bonding (Chapter 8). This reflects previous research into the effect of 3/4D scans on bonding (de Jong-Pleij et al. 2013; Lapaire et al. 2007; Sedgmen et al. 2006; Righetti et al. 2005; Rustico et al. 2005). Claims that 3/4D scans increase, or even initiate, bonding are based on two assumptions which need to be unpicked. The first assumption is that 3/4D scans provide a clearer, more detailed and more accurate image of the fetus, which can be interpreted more easily by lay people. The second assumption is that this clearer image will increase bonding. These two assumptions appear to have been merged into one. In order to analyse this issue properly, it is necessary to separate them.

This study has shown that the quality of 3/4D images is not always as good as expected. Furthermore, the 3/4D image is an artificial image and not really 'accurate'; some features may be distorted and it does not show exactly what the fetus looks like. However, on the whole, 3/4D scans seem to show the fetus as more 'baby-like' than 2D scans: the women in this study experienced the 3/4D image as closer to their constructed image of a baby. It is usually easier to identify facial features and expressions. Therefore it could be argued that, with some limitations, the first assumption is appropriate.

However, if 3/4D scans do not increase bonding, as shown by this and other research (de Jong-Pleij et al. 2013; Lapaire et al. 2007; Sedgmen et al. 2006; Righetti et al. 2005; Rustico et al. 2005), it follows that the second assumption is incorrect: seeing the fetus more clearly and in more detail does not mean that bonding is increased. At least, this is the case for 'bonding' as a whole, as an overall concept. There may be *components* of bonding that benefit from the experience of the 3/4D scan. These may include having a clearer image of the fetus and constructing the fetus as an individual and family member. The women's narratives in this study demonstrate that these factors have been positively influenced by the 3/4D scan for some women. While having a better image of the fetus and transforming him/her into an individual and family member may be part of the wider concept of 'bonding', this is not a direct relationship. This research shows that these factors do not directly lead to increased bonding.

Situating 3/4D scans and their effect on (components of) 'bonding' within a theoretical framework, this research therefore suggests that these scans may enable prospective parents to form a more 'realistic', 'baby-like' image of the fetus and future baby, but that this does not automatically translate into 'increased bonding'. Rather, it seems to satisfy a desire to know more about the fetus, as well as making it easier for some women to conceptualise the fetus as 'their baby' and possibly facilitating some components of bonding.

### **9.4.3 Conceptualising bonding**

This raises questions about what exactly we mean by bonding, how bonding is conceptualised. The professional and academic discourse on bonding in pregnancy, which is also in evidence on the scanning company websites, largely represents bonding as an objective, measurable concept with positive effects on pregnant women and babies. However, despite presenting bonding as a measurable, scientific, objective concept, this discourse on bonding also has sentimental qualities and a moral dimension, which are most apparent on the scanning company websites: 'good mothers' bond with their children during pregnancy.

Linking bonding with 'good mothering' and the moral dimension around bonding can be problematic. As has been demonstrated in this research, women do not necessarily talk in terms of bonding. Furthermore, there can be good reasons why women do not bond or maybe even do not want to bond with their child during pregnancy, as in the case of Claire. This may not necessarily have long-term implications. Previous research has shown that seeing the fetus at a scan may make subsequent loss more difficult to cope with (Black 1992; Kohn et al. 1980). Once 'bonding' with the unborn baby has been set up as a moral imperative, it also creates additional pressures on pregnant women to be 'good mothers' and those women who find it difficult to relate to and develop positive feelings towards the fetus, may experience a pronounced sense of guilt and failure (Zechmeister 2001). For example, in this study, Claire said that she tried to maintain a sense of detachment due to her professional experience and the

potentially serious health problems of the fetus; while she rationalised these feelings, it was obvious in the interviews that she found this difficult to cope with. Even though this may always have been the case for her, it is reasonable to assume that it was made even more so through the dominant discourse that assume that all 'good mothers' will not only want to 'bond' with their baby during pregnancy but also manage to do so. This discourse is very prominent in the professional and academic literature, as well in lay pregnancy literature, the media and, as demonstrated by this study, the websites of scanning companies.

This research illustrates that bonding is multifaceted and complex and a process that takes place over time. A recent review (Walsh et al. 2013:496) highlights the lack of conceptual clarity and methodological challenges relating to bonding, as well as the importance of exploring 'women's ideas about their subjective experience of becoming and being a mother, their acceptance of the concepts' and how this features in their own narratives. Any conceptualisation and theory of bonding needs to take women's own narratives and experiences as the starting point. It is evident in the interviews that for the women a large component of bonding is related to getting to know the fetus and getting a closer sense of what he/she is like as a person. While there have been attempts in the literature to 'unpick' and theorise bonding, particularly in the development of instruments measuring bonding/attachment, these finer nuances appear to be discarded when bonding is discussed generally as a concept by health professionals and academics.

The concept of bonding during pregnancy encounters some fundamental difficulties. If a 'bond' refers to a relationship between two persons, is 'bonding' during pregnancy ever possible? Not only is it one-sided, but even if the fetus is considered a 'person', which legally it is not in the UK, the pregnant woman does not really 'know' him/her in the sense we usually think about knowing somebody. It is likely to be more the case that it is a 'relationship' with the image, literally and figuratively, of the fetus, a relationship with an imagined (future) baby. The analysis of company websites suggests that this is the case; the websites focus strongly on the image of the fetus and draw comparisons, in words and images, with the baby after birth. In this sense, the perceived relationship with the fetus can be likened to a para-social relationship or interaction, as, for example with prominent figures in the media (Giles 2002; Horton & Wohl 1956); while it is not a 'real', reciprocal relationship, it is experienced by prospective parents as an important relationship.

This way of relating to the fetus sits firmly in a contemporary context through the same processes that increasingly promote para-social relationships. We are now very familiar with the feeling of 'knowing' somebody we do not actually know, largely mediated through technology, particularly the internet. Our knowledge of, and access to, public figures is unprecedented, giving us a sense of knowing somebody we do not really know. In addition, we increasingly relate to others, including people we actually know, at one removed, through technology, rather than face-to-face. Therefore 3/4D scans mirror how a lot of 'relating' takes place – they are a very contemporary way of relating to the fetus.



There still remains a paradox though: even though the pregnant woman is in the closest possible contact with the fetus and despite knowing a wide range of facts about him/her, she cannot really get to know him/her as a person until birth, and even then getting to know each other is a lifelong process. Thus the fetus remains a stranger, albeit an intimate stranger. Scans, particularly 3/4D scans which provide a more baby-like image, increasingly give the illusion that it is possible to know the fetus even before birth.

There are striking parallels to Telfer's (1999) ethnographic study of photographs of children given to adoptive parents during the adoption process. The role and importance of these photographs resemble that of scan images. At this point, the prospective adoptive child is, like the fetus, a 'longed for but unencountered other' (Telfer 1999:144). Telfer (1999:146) describes how this photograph 'of the child, who they typically will not meet for weeks or months, is "read" for crucial signals, not only in relation to the child itself, but also in relation to the couple who are enmeshed in its adoration' – this equally applies to 3/4D scan images. The photographs, like scan images, elicit keen interest, strong feelings and a narrative of the future life with the child. Prospective parents study the face in particular, trying not only to ascertain what the fetus/child looks like, but also what the face can tell them about what he/she is like, as a person. Telfer argues that the adoption photographs call forth the 'adoration of an intimate stranger' (Telfer 1999:148).

This research suggests that 3/4D scans images have the same effect; the fetus is still effectively a stranger despite physical closeness and a wealth of knowledge about him/her. Furthermore, scan images, like adoption photographs, are emotionally highly charged. Some of the adoptive parents Telfer interviewed talked about bonding with the child as soon as they had seen the photograph. Like scan images, they also appeared to mark a transition to parenthood, possessing the power 'to transform the imagined to the real, the anonymous to the specific, the dream to experience' (Telfer 1999:151). The interview study in particular suggests that a similar process takes place with 3/4D scans. For the women interviewed for this research, the 3/4D scan appeared to offer an opportunity to not only find out more about the fetus and make him/her less of a stranger – while this is arguably illusionary, it does nonetheless be helpful to the process of relating to the fetus/child and the transition to motherhood for some of the women interviewed.

Righetti and colleagues (2005:134/135) state that: 'Starting from the assumption that attachment necessitates the detection of another to be attached to, the specific acceptance of pregnancy and the recognition of the unborn baby. The emotional integration of the fetus is an essential adaptation to develop good mothering behaviour'. This 'detection of another', i.e. the fetus, does not have to occur through seeing the fetus at a scan. It can also be achieved through feeling movement, an awareness of fetal responses to external stimuli, physical changes in pregnancy and just knowing that the fetus is there and growing. It appears that

in pregnancy women will construct an identity for the fetus using a variety of sources of information available to them.

This process of 'getting to know the baby', in whichever way, appears to be important for the construction of fetal identity – though this also makes use of 'imagined' characteristics of the fetus based on family experiences and resemblances. How does 'getting to know the baby' relate to 'bonding'? Righetti et al. (2005) suggest that it is a necessary condition for 'attachment' or 'bonding'. It may be a component of 'bonding' – or it may also be possible for some women to have acquired a great deal of knowledge about the fetus and still not feel a bond with the fetus. In this study, Claire was possibly the woman who had the most knowledge about her baby; she had had many more scans than the other women and her knowledge was enhanced through professional experience. Yet this did not translate into a closer bond with the fetus compared to the other women – she actively tried to maintain a sense of detachment.

### ***Measuring bonding***

The difficulties in defining and conceptualising bonding call into question how it can be measured. Analysis of the interviews and case studies in this study (Chapters 7 and 8) shows a degree of mismatch between how women talk about bonding in the interviews and the quantitative data, as well as between PAI scores for different women. Furthermore, a detailed look at the individual items of the PAI revealed inconsistencies and occasionally other explanations for particularly high or low scores. Considering the emotive nature of bonding it is also likely that

social desirability plays an important role (Sjögren, Edman, Widström, Mathiesen & Uvnäs-Moberg 2004); pregnant women will not necessarily complete the questionnaire honestly or objectively. Even in the interviews, women may not talk freely about their feelings regarding the baby, particularly negative ones – or may sometimes find it difficult to talk about. Further research into how women complete and experience these instruments would provide valuable insights. Finally, we may need to accept that there is no perfect instrument for measuring a concept as complex as bonding; any quantitative measurement will only provide an approximation. Additional qualitative exploration of the concept provides further information and necessary depth.

This study has shown that one aspect of how pregnant women conceptualise the fetus, and thereby begin this early relationship, relates to acquiring knowledge about the fetus, to begin to get to know him/her. This is achieved in different ways, including seeing the fetus in scan images and feeling the fetus move.

## **9.5 Knowing the fetus: haptic and optic**

### **9.5.1 Uncertainty and the desire to know**

Pregnancy is a time of uncertainty and, despite modern medical and diagnostic advances, the fetus is still unknown and essentially unknowable (Armstrong 2003). Despite the closest possible physical relationship, the fetus remains a stranger. Some pregnant women may find this uncertainty challenging, possibly particularly

those who feel a need to know and to be in control. In this study, this is, for example, demonstrated by Sarah, who talks about her 'feeling of dread' in relation to pregnancy, which seems to be affected by a sense of not being control, while '*I like to be in control of my life*' (Sarah 1-21) and '*I don't like not knowing*' (Sarah 1-43). Knowing more about the fetus, a sense of encountering the fetus on a more personal level, may help some women deal with this uncertainty. Interestingly, of all the women in the interviews, Sarah was the one who seemed to find the 3/4D scan most helpful in helping her to relate more to the pregnancy and to the baby. However, finding out more about the fetus is also about imagining the future baby and what he/she will be like – it is not necessarily based on factual information acquired through movement or scan images, but also on assumptions based on comparisons to other family members, including older siblings.

'Getting to know' the fetus here means not just finding out information about the baby (such as sex, possible physical problems, size etc.), but becoming familiar with the fetus, making him/her less strange and unknown. This extends to physical characteristics, sex and what the fetus looks like, but also to what the fetus is 'like' as a person: behaviour, temperament, likes and dislikes and comparisons to family members. All of this knowledge serves to make the fetus more familiar, more of a 'real' person, individual and family member.

### **9.5.2 Haptic and optic ways of knowing**

Pregnant women have different ways of getting to know the baby: seeing the fetus during ultrasound scans and on scan images/DVDs and feeling the fetus move,

interacting with him/her and an awareness of how the fetus reacts to stimuli seem to be the most important means of achieving this. As discussed in Chapter 2, the optic has become more and more important whereas the haptic seems to have been backgrounded to some extent, as exemplified by the theory proposed by Duden (1993). However, this research has clearly demonstrated that haptic ways of 'getting to know' the fetus are still important to women and provide significant information about the fetus. In the interviews, the women talked about both and appeared to use a combination of the haptic and optic to get to know the fetus.

This research adds to the theoretical knowledge of the complex process of how pregnant women get to know the fetus. At its root appears to be a fundamental desire to find out more about the fetus, which may be partly curiosity, but also based on wanting to 'get to know' this new person and begin to build a relationship with him/her. This can be achieved in a number of ways, including seeing the fetus during a scan and feeling fetal movements and interacting with the fetus – or a combination of both. This research extends Duden's (1993) work in a contemporary context, suggesting, for example, that some women make use of new technology to merge the optic and the haptic. The way the women in this study have used 3/4D scans to get to know the fetus reflects current cultural preoccupations with the visual and technology, as well as a contemporary perspective on pregnancy in which discourses of medicalisation and normality appear to collide. This is also clearly evident on the scanning company websites. These women seem to embrace both discourses: they use technology to enhance

their experience of pregnancy but at the time do not disregard the discourse of normality which encourages an awareness of their own body and the fetus within.

This research also makes a contribution to the theoretical understanding of how women get to know the fetus in that it clearly showed that this operates at two levels, both for the haptic and the optic. At one level, the image shows what the baby looks like and whom he/she might resemble. At another level, beyond the physical, the image and what the fetus does during the scan also allows the pregnant woman and other family members to make assumptions about what the baby is like, as an individual and family member, in terms of likes, dislikes, behaviour and temperament. This matched some of the discourses on the scan websites, which portray 3/4D scans as a way of meeting and getting to know the baby. The women also drew conclusions about what the fetus is like from movements, movement patterns and responses to external stimuli and interactions. Thus 'getting to know the fetus' does not just involve facts, but also a certain creative imagination of what the fetus and future baby is / will be like based on these facts.

### **9.5.3 Integrating optic and haptic**

For the women in this study, the 3/4D scans seems to have been a way of finding out more about the fetus, of getting to know the fetus and making him/her more familiar. Palmer (2009b) suggests that 3/4D scans in particular conflate seeing and knowing. The seemingly realistic and clearer 3/4D image is easier to interpret by the non-expert than the 2D image. This clarity and realism bestows a claim to truth

and objectivity on 3/4D images, which is reflected on the scanning company websites: this is what the fetus, and the future baby, really looks like. The women's expectations reflected the claims made by the websites; they expected to be able to see, clearly, what the fetus looked like. In the pre-scan interviews there was a sense of finally being able to see what the fetus was really like, physically and as an individual.

It is questionable whether these high expectations were met, even by the majority of women. Most women were somewhat disappointed with the quality of the images, even though they enjoyed the scan. Rather than 'really knowing what the baby is like', it appeared that the 3/4D scan simply provided a further piece of the jigsaw for the women, some additional information about the fetus. It is important to bear in mind that it is not really possible to truly know the fetus as it is not yet a complete person in its own right – which, as suggested above, brings into question the idea of 'bonding'.

During the 3/4D scan women can make use of the optic information to make more sense of their haptic experience. Some of the women talked about seeing the fetus move during the scan; for some, Sarah in particular, this seemed to make it easier to make sense of the experience of fetal movements. This confirms observational research by Kroløkke (2009), who suggests that 3/4D, and particularly 4D, scans are not merely visual, but an intersensory experience. The scan performance is framed by the sonographer to include, and evoke, other senses, such as the sound of the heartbeat, fetal movements and facial expressions visible on the screen.



Roberts (2012a) also observed during 3/4D scans that women relate what they can see on the screen to their physical experiences, such as the position, location and movement of the fetus.

It therefore seems likely that, some women at least, integrate haptic and optic ways of knowing at the 3/4D scan. There is not necessarily a dichotomy of haptic versus optic, but an experience beyond this. Rather than competing, haptic and optic ways of knowing may be complementary. Both ways of knowing, and the way they are integrated, help women to construct an image of their baby, both physically and in terms of temperament/'personality'.

It may also be the case that pregnant women are less reliant on scan images for knowing the fetus than has been assumed by some theorists (e.g. Duden 1993). As the interviews have demonstrated, the haptic experience of the fetus is still significant in this respect. However, in the contemporary context, women also make use of scan images as a further resource; for some women this includes 3/4D scans.

In terms of how the 3/4D scan is conducted, it is possible that a stronger focus by the sonographer on how the pregnant woman physically perceives the fetus, and how this compares to what can be seen on the screen, may enable some women to engage more with the physical experience of relating to the fetus.

## 9.6 3/4D scans: different perspectives and discourses

### 9.6.1 Different perspectives on 3/4D scans

Not surprisingly, there are a number of different perspectives on private 3/4D scans. A number of professional organizations, as well as some health professionals, consider the non-medical use of 3/4D scans risky and best avoided. A mostly critical perspective is also evident from within a feminist analysis. This study explores two further perspectives: the way private 3/4D scans are portrayed on scanning company websites and, arguably most importantly, the perspectives and experiences of pregnant women who have chosen to have a 3/4D scan.

The analysis of scanning company websites in this study shows that they portray 3/4D scans as a unique opportunity to see, meet and *bond* with the baby: 3/4D scans are an amazing, enjoyable experience which involves the whole family. In addition, they are also reassuring, offering 'peace of mind'. Furthermore, this is linked to 'good mothering': a 'good mother' wants to, and is able to, bond with the baby during pregnancy.

The women's narratives match this perspective to some extent, but there are also differences. The women in this study predominantly saw the 3/4D scan as an exciting, enjoyable experience, involving the wider family to some extent. They were less focused on bonding and reassurance than suggested by the scanning company websites. They saw the scan, at least in anticipation, as a fun, exciting

experience – though for some it was an anticlimax and there was some disappointment with image quality.

### **9.6.2 Conflicting discourses**

Underlying these different perspectives are conflicting discourses: a medical discourse and a critical feminist discourse. The medical discourse considers scans beneficial not just in terms of their diagnostic and monitoring capabilities, but has also extended this beyond their medical use with regards to positive psychological effects: increased bonding and reassurance (see Chapter 3). The feminist critique of scans considers scans as problematic, suggesting that they have been instrumental in dis-embodiment of women's experience of pregnancy, further medicalising pregnancy and separating the woman from the fetus (see Chapter 2).

This study demonstrates that a medical discourse is clearly in evidence on scanning company websites. The extent to which this is reflected in the narratives varies between the women. While this discourse is clearly present in some women's narratives, e.g. Naomi's, it is less dominant in others, e.g. Jane's. On the websites, this medical discourse extends to psychological aspects, presenting 3/4D scans as a chance to bond with the baby before birth and to gain reassurance. The websites also present 3/4D scan images as more real than the embodied experience of pregnancy: the 3/4D image of the fetus finally confirms to the woman that she really is pregnant and the baby is real. While there are elements of the medical discourse in the women's narratives, such as the desire to see 'if everything is ok' and using the scan to 'meet' and find out more about their unborn child, the

women's experiences do not fully reflect this discourse. Neither do the case studies, especially the quantitative element, support claims regarding the effect of 3/4D scans on bonding and anxiety.

However, neither does this study support claims that 3/4D scans may further dis-embodiment women's experience of pregnancy. There is no evidence of this in the interviews; for some women, 3/4D scans may even offer an opportunity to integrate their embodied experience of pregnancy and the fetus with the scan image, and possibly even enhance this experience.

### **9.6.3 Pregnant women's experiences of 3/4D scans**

The pregnant women in this study did not choose 3/4D scans explicitly to bond or to gain reassurance. For them, the 3/4D scan seemed to be predominantly a nice, exciting, emotional experience – or, in the case of the two women who had 3/4D scan with their older child, they wanted to treat both children the same. The scans were also a family experience, an opportunity to introduce and integrate the fetus into the wider family and a chance to transform the fetus into an individual.

Arguably, this study suggests that there may be a trend to over-theorise 3/4D scans from both 'sides'. They are presented either as a way of increasing bonding, or as dis-embodiment and disempowering women. Maybe neither is the case. Maybe they are just a bit of fun for the women who choose them, with the added bonus of learning more about the fetus and involving the extended family.

## 9.7 Reflexive statement

As discussed in Chapter 4, reflexivity is an integral part of qualitative research (Lambert et al 2010). This section will provide a brief account of reflexivity for this study; as it is a personal account, it will be written in the first person. I have kept a reflective journal throughout this research, on which I will draw for this section.

The role of the researcher in qualitative research is not neutral and objective, but affected by his/her own background, experiences, views and values. While people do always engage in a degree of reflection, qualitative research needs a deliberate, continuous reflection (Smith et al. 2009) throughout the research process and an awareness of where the researcher is positioned with respect to the research topic, the participants and the data (Smith et al. 2009). This does not only help to ensure the quality of the research (see Section 4.5.3), but can also enhance understanding of the phenomenon that is being researched.

Having been pregnant myself, I have my own experiences and views; at times, these were very different from some of the women who took part in this research. My own experience of pregnancy has been very different from that of some of the women; I had two problem-free pregnancies which I very much enjoyed, particularly the physical experience. This was quite different to some of the women, especially those who said they really disliked being pregnant. While I was aware of these differences during the interviews, I feel I was able to put my own experiences aside, partly due to my experience and training as an antenatal teacher, which required reflection on my own experiences of pregnancy, birth and

early parenting, and the ability and willingness to put aside my own views and experiences when encountering pregnant women, many of whom had very different views and experiences of pregnancy.

I have no personal experience of 3/4D scans, but nonetheless naturally have my own views on them. I would not personally have chosen to have a 3/4D scan and maybe felt rather sceptical about them at the beginning of this research. However, during the interviews I was able to set aside this scepticism and shared the women's excitement about the scan. As with other decisions a woman might make in pregnancy, I respected their choice to have a 3/4D scan. My views have changed to some extent through the period of the research. While I am not able to entirely set aside concerns about the safety of scans, I now think that they are probably just a nice experience for those women who choose to have one, and may even be helpful for some. Having a private 3/4D scan is a personal decision.

## Chapter 10 Conclusions

### 10.1 Towards a theory of 3/4D scans

This research provides the starting point for a theoretical framework around the psychological implications and women's experiences of 3/4D scans. The interviews and case studies do not support the theoretical position, proposed by some professionals and scanning company websites, that 3/4D scans have a positive psychological impact on reassurance and 'bonding'. The implications for anxiety and reassurance are different to those of routine 2D scans; while they do not appear to measurably reduce anxiety, they may however be reassuring for some women with specific concerns. In terms of 'bonding', the findings from the interviews and case studies reject theoretical suggestions that the clearer, more 'baby-like' images lead to increased bonding. This theoretical relationship is more complex, as discussed above. This research has shown that while commercial scanning companies promote 3/4D scans as 'bonding scans', pregnant women do not choose these scans overtly to 'bond' with the fetus. However, 'meeting the baby' and 'wanting to see what the baby looks like' appear to be motives for having a 3/4D scan; both can be considered components of bonding – a way of 'getting to know' the fetus and finding out more about him/her.

This study raises important theoretical considerations around what it means to 'get to know' the fetus and develop a relationship with him/her. The unborn child, while often treated as already a child, for example on scanning company websites

and in pregnancy magazines and other media, is still the not-yet-child – in a liminal state, neither one nor the other. While there has been some consideration of pregnancy as a liminal state in the literature, there is little on how the woman relates to, and conceptualises, the fetus – on the liminal relationship. The unborn is in many ways an enigma: we know it is there, we even know increasingly more facts about it, but we cannot ever really know it as a person at this stage; it is essentially unknowable – an intimate stranger. Yet the majority of pregnant women seem to have a strong desire to find out more about the fetus – not just in factual terms, but also in the sense of what sort of person the fetus is. Knowing more about the fetus may, for some women, reduce uncertainty: ‘A central human project in all forms of knowledge is knowing in order to predict, and thus to gain control in an uncertain universe’ (Oakley 2000:292).

For some women, 3/4D scans seem to be a way of addressing this desire, providing a way to find out more about the unborn, including the less tangible. The post-scan interviews in this study show that, for most of the women, the 3/4D scan has enabled them to ‘get to know’ the fetus better – both in the sense of knowing more about what the fetus looks like and what the fetus ‘is like’ in terms of likes, dislikes, ‘personality’ and resemblance to family members. Wanting to know more about the fetus, in both senses, was evident as a powerful motivation for the scans.

These scans may seem to enable a ‘meeting’, a way of making contact with the fetus – though essentially this meeting is one-sided and involves an element of the



future parent meeting the future child. However, while there are limits to the extent to which it is possible to really 'meet' or get to know the fetus at this stage, this also applies to the relationship after birth or indeed to any relationship: is it ever really possible really know somebody? At this point, during pregnancy, it is more about a slow, gradual 'getting to know', the beginning of something that continues for a lifetime. As discussed previously, 3/4D scans may provide an opportunity to get to know the fetus for some prospective parents, but they are by no means the only way to do so or essential to this process – they are simply a further way of achieving this, albeit one which appears to be particularly pertinent in the contemporary context which is so preoccupied not just with technology but also the visual.

However, the interviews also demonstrate that fetal movement, the haptic, in particular is also significant in this respect. This research therefore adds to Duden's (1993) theory of the haptic and optic: while the optic has undeniably become very important for the majority of women, the haptic is still very much evident in the interviews.

As suggested in the discussion, it could be argued that this research suggests that 3/4D scans are predominantly a social rather than psychological experience. They introduce the new baby to the wider family and can be used to construct an identity for the fetus. More than anything, the pregnant women in this study saw the 3/4D scan as an exciting and interesting experience – though for some there was sometimes considerable disappointment.

## **10.2 3/4D scans: good, bad or just a bit of fun?**

Three perspectives on private 3/4D have become apparent throughout this thesis, considering the scans beneficial, harmful or simply a nice experience.

### **10.2.1 3/4D scans as beneficial**

This perspective is evident on the scanning company websites: 3/4D scans are seen as beneficial for the pregnant woman and the fetus, specifically in encouraging bonding and providing reassurance, as well as providing an opportunity for other family members to 'meet the baby' and to 'create memories'.

As discussed above, there is currently no evidence to support claims that 3/4D scans enhance bonding and reassurance. However, there is some evidence from qualitative research (Kroløkke 2011, 2009) that suggests that 3/4D scans may be considered a transformative family experience, a way for women to take control and an opportunity for pregnant women to connect the image with their embodied experience. Evidence from the interviews conducted for this study also suggests that 3/4D scans may sometimes help to transform the fetus into a family member and individual. However, there is no evidence for consistent positive effects on reassurance or bonding. Furthermore, it is conceivable that if there are problems later on in the pregnancy, having transformed the fetus into an individual and family member may make this more difficult for pregnant women to cope with.

### **10.2.2 3/4D scans as harmful**

The FDA and other organisations have spoken out against the use of 3/4D scans for non-medical reasons (Rados 2004). There are concerns about safety and the danger of 3/4D scans giving a false sense of security, as well as women having 3/4D scans instead of diagnostic scans for financial reasons (in the US; this does not apply in the UK). Concerns about 3/4D scans have also been raised from within a feminist perspective, partially in extension of a critique of scans in general, suggesting that 3/4D scans may undermine women's embodied experience of pregnancy even further. Furthermore, the promotion of 3/4D scans as 'bonding scans' with the implicit assumption that 'bonding' is desirable and essential for 'good mothering', puts additional pressure on women and potentially increases a sense of guilt and failure if this is not achieved.

### **10.2.3 A nice experience**

The interviews, and to some extent the case studies, in this study suggest another perspective: 3/4D scans may simply be a nice, interesting, emotional experience and a bit of fun – something some pregnant women, their partners and families enjoy. All of the women talked, to varying degrees, about the scan with anticipation and excitement and most of them enjoyed the scan. This is supported to some extent by the observations of 3/4D scans by Kroløkke (2011, 2011) and Roberts (2012a, 2012b).

#### **10.2.4 3/4D scans: good, bad or just a bit of fun?**

This research supports a theoretical position which sees 3/4D scans as not simply either good or bad, nor they just a nice, fun experience. Elements of all three perspectives are likely to apply to the practice of private 3/4D scans. They are not a miracle procedure which will kick-start bonding and provide lasting peace of mind, as they are portrayed by scanning company websites. However, while it does not seem to be the case that 3/4D scans categorically increase bonding or reassurance, they may have a positive influence on both for some women, in some circumstances. Importantly, they do not seem to be overtly harmful in psychological terms. For some women a 3/4D scan offers an additional opportunity to find out more about the fetus and to possibly increase their sense of 'knowing' him/her; whether this has longer term implications is unclear.

The images from 3/4D scans are not always of good quality. In this study, women's expectations of the scan, the images and DVDs were very high and most women were at least partially disappointed. However, most of the women still enjoyed the scan and said they would have another one in a future pregnancy. All women shared either the scan or the images and DVDs with others, particularly family members. They talked about resemblances and began to build an identity for the fetus – though this is not exclusive to 3/4D scans. The effects of the 3/4D scan on a pregnant woman, and how she experiences the scan, is likely to vary depending on her particular circumstances, needs and attitudes, on how the scan is conducted and the quality of the images.

However, concerns about the safety of 3/4D scans should not be dismissed. While it is impossible to prove absolutely that 3/4D scans, or scans in general, are safe, further research is important, as is the regulation of non-medical 3/4D scans with respect to equipment, conduct of scans and training and expertise of staff. There has also been speculation that professional advice against 3/4D scans also reflects a power struggle over who should control ultrasound: professionals or pregnant women. Private 3/4D scans raise important ethical questions about the use of a medical procedure for non-medical purposes. However, considerations of the ethics or safety of 3/4D scans is beyond the scope of this thesis.

It is important to consider that 3/4D scans are situated at two levels: at the level of the individual woman and at a wider socio-cultural level. While this study and other research explore 3/4D scans at the individual level, there is so far little exploration of the wider impact of 3/4D scans. It is possible that they will further extend the impact of routine 2D scans on conceptualisations of the fetus and of pregnancy, at a societal and individual level. One definite wider impact so far is the role of 3/4D images in the recent debate around lowering the legal limit of abortions in the UK (Palmer 2009a).

## **10.3 Implications**

### **10.3.1 Implications for practice**

The importance of haptic experiences, fetal movements, suggests that it may help pregnant women if midwives and other health professionals can help them to orientate the fetus within them – e.g. explain fetal positions and how to determine these themselves. Talking to women about haptic experiences, beyond counting fetal movements to monitor fetal health, may also be beneficial.

This research also suggests implications for commercial 3/4D scan providers. Claims that 3/4D scan will increase bonding are not justified, and arguably unethical. During the scan, it may be beneficial for sonographers to make an explicit link between what can be seen on the screen and what women feel. This may enable women to ‘make sense’ of their embodied experience of the fetus, possibly even after the scan.

### **10.3.2 Implications for further research**

This study only included a small number of participants. A larger, quantitative study, as had been originally planned, might provide further insights into the psychological effect of 3/4D scans. Recruitment is likely to be difficult, but it may help to recruit participants through the NHS.

The findings from this research suggest a number of areas in which further research into 3/4D scans may be undertaken. This includes more detailed research

into the effect of the scans on women's embodied experience of pregnancy. An observational study of 3/4D scans may provide further insights into how pregnant women, their partners and other family members experience the actual scan. The views and experiences of expectant fathers and other family members need further research.

Extending critical discourse analysis beyond scanning company websites to other texts, newspaper articles, online discussion forums and professional literature, would allow the exploration of other discourses of 3/4D scans.

Currently it is not known what proportion of pregnant women has private 3/4D scans; it would be beneficial to find out more about how many women do have these scans. This study only included women who had chosen to have 3/4D scans; research with women who choose *not* to have a scan could provide further insights, particularly into their reasons for not having a 3/4D scan and how they find out more about the fetus.

Further research into how women experience the beginnings of the relationship with the fetus and how this compares to professional and academic discourses on 'bonding' would help us to gain further insights into this complex issue, as would women's experiences of completing instruments designed to measure 'bonding'.

Finally, this study has highlighted the importance of fetal movements. However, there is currently little research into how women experience fetal movements,

what significance fetal movements have for women, what they learn from them and how they interpret them. Further research in this area is important, as it may further our understanding of the maternal-fetal relationship and women's conceptualisations of the fetus and may have important implications for practice.



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## Appendix 1 Sample analytical template for CDA

### Analytical template

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Intertextuality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Which relevant other texts/voices are included?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>• BMUS protocols regarding safety</li> <li>• CQC and FMF accreditation</li> <li>• Studies into ultrasound safety</li> <li>• Patient satisfaction survey (results on website)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Which (potentially relevant) other texts/voices are significantly excluded?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• Previous clients who have had negative scan experiences</li> <li>• Research which shows that 3D scans do not have positive effects on bonding and reassurance over and above those of 2D scans</li> <li>• Organisations/individuals/research raising concerns about safety of scans</li> <li>• Professional organisations warning against ‘entertainment’ scans</li> <li>• The voices of pregnant women who would not consider a 3D scan</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Where other voices are included, are they attributed?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• BMUS: attributed (named, link to main webpage)</li> <li>• CQC and FMF: attributed (named, link to main webpage)</li> <li>• Studies into safety: very vaguely (only hinted at!)</li> <li>• Patient satisfaction survey: attributed (link to webpage) but not to individuals</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| How are attributed voices reported (directly/indirectly)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <ul style="list-style-type: none"> <li>• BMUS: very indirect reporting, meaning is implied</li> <li>• CQC, FMF: very indirect reporting, meaning is implied</li> <li>• Studies into safety: very indirect reporting, meaning is implied</li> <li>• Patient satisfaction survey: indirectly reported (link to full survey)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| How are other voices textured in relation to the authorial voice, and to each other?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Some are woven into the text and used to support claims by the authorial voice. Others (testimonials, also satisfaction survey) are on a separate page.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| What effect does the inclusion of other texts/voices have?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| They are all used to justify and promote 3D scans, by supporting claims regarding the safety (and quality) of scans or satisfaction by previous clients.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| What would have been different if the excluded texts/voices had been included?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| If concerns regarding safety had been included potential clients might have second thoughts about having a scan. Even if safety concerns had just been acknowledged and then refuted this might raise doubts – though some prospective clients are probably aware of them anyway. However, the fact that safety was referred to at all does imply that there are concerns about safety in the first place. Including the voices of dissatisfied clients would have led to doubt about the quality of the ‘experience’ offered by Baby Premier. Including research that shows no beneficial effect of 3D scans on bonding and anxiety would have undermined two of the main reasons set up for having 3D scans. Including the voices of pregnant women who are not planning to have a 3D scan would weaken the case for 3D scans and make them less of a ‘must have’. Including texts which suggest scans shouldn’t be done for entertainment (e.g. by BMUS) would have undermined clinic/scans. |



## 2. Assumptions

What existential, propositional, or value assumptions are made?

### Existential

- There is such a thing as 'bonding'

### Propositional

- 3D scans enable bonding
- Fetus = baby
- Women experience anxieties, frustrations and concerns throughout pregnancy
- Pregnancy is a 'special time'
- Pregnant woman has partner/close family (?)
- Scan allows woman/partner to 'relate' to the baby (in a personal way)
- Scan reveal 'miracles of baby's development'
- Scans safe as long as protocols followed
- Scans will show fetal movement (not always?)
- Baby makes 'animated facial images and movements'
- Mother and baby bonding: bonding particularly important for pregnant woman
- Hard to believe pregnancy
- Seeing the baby increases/promotes bonding / parents need to see baby to bond
- Scan = seeing baby
- Concerns may be raised in scan, post-scan care necessary (& good)
- Conveniently located
- Clients need advice (?)
- 'seeing is believing'
- Scans promote reassurance
- Parents want opportunity to bond
- 3D scans are reassuring and give 'peace of mind'
- Scan is 'thrilling'
- Fathers need to bond / can only bond through scan
- Father present
- There are 'key dates' for bonding in pregnancy

### Value

- Bonding/relating to baby before birth is good
- Good to reduce anxiety and concerns in pregnancy
- Pregnancy = special time = good
- Baby's development = miraculous (propositional?)
- Revealing 'miracles of baby's development' = good
- Monitoring ultrasound safety = good (?)
- Previous clients would recommend scans = good
- World-leader, latest equipment = good
- Used in NHS (equipment) = good

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Fetal movement and ‘animated facial images and movements’ = good (what people want) (‘precious moving images’)</li> <li>• Highly skilled and trained sonographers = good (= excellent care – propositional?)</li> <li>• Good to believe that ‘really pregnant’</li> <li>• Good to ‘be sure’ (not have to imagine)</li> <li>• Seeing baby = good</li> <li>• Accredited = good</li> <li>• Clinic offer full range of US = good</li> <li>• Leading retailers = good</li> <li>• Reassurance = good</li> <li>• Baby Premier scans = good/better</li> <li>• Good if father bonds with baby</li> <li>• Good to get a ‘sneak preview’ of the baby</li> <li>• Baby Premier better than other clinics (wider range of services etc)</li> </ul>                                                                                                                                                               |
| Is there a case for seeing any assumptions as ideological?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Yes. Women need technology (scans) in order to reduce anxiety in pregnancy.<br/> Women need technology (scans) in order to bond with the unborn baby.<br/> Women should bond with the baby during pregnancy.<br/> Need to consume (including during pregnancy).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>3. Orientation to difference</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Which (combination) of the scenarios of orientation to difference characterise the orientation to difference in the text?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>As there are several important ‘voices’ missing, orientation to difference is relatively low. Regarding Fairclough’s (2003:41/42) categories, this website shows signs of d) and e):</p> <ul style="list-style-type: none"> <li>- bracketing of difference, focus on commonality</li> <li>- consensus, normalization / acceptance of differences of power</li> </ul> <p>There is no acknowledgement of several (potential) differences:</p> <ul style="list-style-type: none"> <li>• that pregnant women have very different experiences of, and needs in, pregnancy – it paints a rather ideal, happy, sentimentalised picture of pregnancy</li> <li>• while concerns over safety are implicitly acknowledge (assertion that it’s safe as long as protocols are followed), there is no real acknowledgement of ‘voices’ that disagree</li> <li>• no acknowledgement at all of those who disagree that scans increase bonding</li> </ul> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>4. Preliminary notes on interdiscursive analysis</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>Genres:</p> <ul style="list-style-type: none"> <li>• Pre-genre: argument &amp; description – argument tries to persuade clients to book; description describes what 3D scans are etc; attempt at dialogue (testimonials), but no true dialogue; some instruction (how to prepare)</li> <li>• mixture of genres, particularly advertisement / promotional literature, health/patient information leaflets, lay pregnancy literature</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

- Promotion/advert: description of product/services (favourable!) and legitimisation for buying/using it
- Patient information leaflet: description (what happens), instruction (what do you need to do) and argument (legitimation)
- Lay pregnancy text (?): description (gushing, sentimentalised)

Discourses:

- medical discourse of pregnancy
- 'commercial' / business/corporate discourse?
- 'lay' discourse / discourse of 'good mothering'

Styles / identities:

- Identities constructed for clinic, scans, pregnancy, pregnant women (and partners/family), fetus
- Conflicting identities, dichotomy of meaning (medical – social)

## 5. Lexical analysis

### Choice of vocabulary

- 'baby' used very frequently (rather than fetus); often either as 'your baby' or just 'baby' (rather than 'the baby' or 'a baby') – also 'it'
- 'seeing is believing'
- Mostly referred to women or mothers, partner only mentioned once (check)
- 'mother' comes up three times – might not be mothers yet!, 'reducing' women to mothers etc
- 'partner' rather than father; father used twice on 'packages and prices' page
- 'close family' – but not specified what 'close family' is
- 'womb' (rather than uterus)
- 'baby movements' and 'babies movements'
- 'gender of your baby' (rather than 'sex')
- 'mum-to-be'
- 'you' and 'your' used a lot; also 'we', 'us' and 'our' (to refer to clinic)
- 'babies movement' (sic)
- 'private ultrasound organisation' (why organisation? Almost sounds coy, trying to avoid saying they are a business! – aligning themselves with professional/regulatory organisation?)
- 'private independent imaging provider'
- 'real time like images' – sounds odd!
- 'centres' (sounds less like business?)
- 'service'
- '4D image studio'
- 'patient'
- 'fetal movement'
- Words typical for advertisements / promotional literature, e.g. 'premier', 'high quality of our service', 'surpasses your expectations', etc
- Words typical for health care literature, e.g. patient, diagnose

- Words more typical of lay pregnancy literature / pregnancy magazines, e.g. baby, mother, 'mum-to-be'
- 'fetus', 'fetal'
- 'thrilling'
- 'sneak preview'
- 'extras'
- 'Premier Plus' (package)
- 'exclusive', 'stylish'
- 'Birth scan package'
- 'peace of mind'

What is notable:

- Use of conversational tone
- Emphasis on technical expertise, training, skills, latest technology etc
- Use of promotional language
- Some healthcare / medical terminology

#### Collocations

- 'baby scans', 'bonding scans', 'bonding and reassurance scan'
- 'unborn baby'
- 'your baby' or 'your baby's' (9 times) also 'your pregnancy'
- 'reassurance & bonding scan'
- 'seeing is believing'
- 'wonderfully bonded' (sounds OTT!)
- 'latest ultrasound machines' (x2)
- 'latest ultrasound technology'
- 'world leader' (x2)
- 'highly skilled and trained'
- 'experienced professionals'
- 'our sonographer' (x3), 'your sonographer' (x1)
- 'precious moving images'
- 'reassurance and bonding (scan)'

'Baby scans', 'bonding scans' (and 'bonding and reassurance scans') stand out as collocations in this text. [What does this mean? Attempts to establish these as terms which 'just go together' naturally? 'Baby scans' – focus on baby, baby is centre stage? 'Bonding scans' (and 'reassurance scans'): firmly establish link between bonding and scans – by frequently using these two words together (bonding scans) the assumption that scans promote bonding is established as 'fact'. It does not even need to be discussed further, for example by explicitly stating that scans promote (or have been found to promote) bonding. The text does not need to do this 'work' anymore – it presents it as a given by frequently referring to 'bonding scans'. In this case, the collocation is therefore strongly linked to assumption and the lack of dialogicality.

'Unborn baby': establishes fetus as 'baby', and therefore as person and member of the family – therefore in need of forming a relationship with!

'Your baby', 'your pregnancy': gives readers 'ownership'? involves them, 'draws them in'? makes them want to have scan? - typical tool in promotional literature / advertisements? conversational

'Seeing is believing': again, establishes this as fact; repetitions to emphasize

'Our sonographer': conversational, establishing identities

#### Overlexicalisation

- 'unborn baby during pregnancy' (x2) -
- 'unborn baby in the womb'
- 'relate to the baby in such a personal way'
- 'private independent'
- 'real-time moving images' (?)
- (relate and baby often appear together as well?)

The use of the phrases 'unborn baby during pregnancy' and 'unborn baby in the womb' is a clear example of overlexicalisation: an unborn baby will obviously refer to pregnancy and be in the womb. Instead of these phrases the word 'fetus' could be used as it denotes the unborn baby. However, it also has connotations of a more medical context and feels less personal than 'baby', which has connotations of being already a member of the family shifts the focus to the time after the birth. It could be argued that this particular overlexicalisation is an attempt by the clinic to establish the fetus as a person and a member of the family.

'relate to the baby in such a personal way' – doesn't relating to the baby (whatever that is) already imply that it is personal? Purpose: emphasize importance of bonding

The use of 'private independent' could also be seen as an overlexicalisation; 'private' would have been sufficient here. Are used to distinguish Baby Premier from the NHS?

#### Metaphors

Scan as performance.

#### Structural oppositions

Possibly 'Good parenting' or 'good mothering' – the opposite is not stated (see Machin & Mayr 2012:39)

'Good parenting/mothering' is characterised by:

- Seeing pregnancy as a 'special time'
- Being prepared to spend money 'on the baby'
- Wanting to 'relate to the baby' and 'bond' with the baby
- Wanting to 'ease concerns'
- Seeing fetal development as 'miraculous'
- Wanting the fetus to be safe (concerns re. US safety)
- Wanting to see the baby (to bond)
- Seeking good quality care during pregnancy
- Concerned with well-being and health of fetus
- Will do whatever is necessary to ensure safety of fetus

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Semantic relations between words (synonym, hyponym, meronymy, antonymy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>Synonyms:<br/> Fetus = baby<br/> Uterus = womb<br/> Seeing = believing<br/> Seeing the baby = getting to know the baby etc<br/> Bonding = 'relating to the baby in a personal way', seeing the baby<br/> Pregnant woman = mother = mum-to-be</p> <p>Hyponyms:<br/> Hyponyms of 'bonding': 'relate to the baby in such a personal way', caring about the baby, getting to know / meet the baby, seeing the baby ?</p> <p>Hyponyms of 'competence' / 'good care/service': professional, skilled/trained, professional accreditation, latest equipment etc.</p>                                                                                                                                                                                                   |
| Repetition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Most notable repetition: 'baby', 'baby's', and 'babies'; also 'premier', words like 'medical', 'care', 'medical', 'medicine', 'imaging', 'health', 'examinations', 'NHS', '3D scans', 'sonographer', 'ultrasound', 'know', 'fetus', 'seeing', 'time', '4D scans'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>6. Semantic relations between clauses &amp; sentences</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| What are the predominant semantic relations between sentences and clauses (causal, conditional, temporal, additive, elaborative, contrastive/concessive)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Mostly additive and elaborative; some variation depending on which webpage, e.g. pages on '3D scans' and '4D scans' have more causal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Are there higher-level semantic relations over larger stretches of text?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>Problem-solution relations:<br/> Problem: pregnant women and partners need to bond with unborn baby, but can't because they don't know it / can't see it, 2D scans not clear enough and there are not enough scans on the NHS or are at wrong time; solution: private 3D scans<br/> Problem: clinic needs customers!; solution: 'sell' 3/4D scans to pregnant women/partners/families (goal – achievement?)</p>                                                                                                                                                                                                                                                                                                                                                |
| Are particular significant relations of equivalence and difference set up?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>Relations of equivalence</p> <ul style="list-style-type: none"> <li>• all pregnant women have same needs/experiences? (or does this relate to 'difference'?)</li> <li>• seeing = believing = bonding</li> <li>• scan = bonding</li> <li>• scan = reassurance</li> <li>• bonding = loving child? (implicit?)</li> <li>• scan image = what fetus really looks like?</li> <li>• BabyPremier = 'serious' health service provider - attempts to set up relation of equivalence with NHS – refers to relationship with NHS, similarities in logo (colour); keen to give 'credentials' and convince readers of professionalism, skill, latest equipment etc</li> <li>• hyponyms: professional, skilled etc = professional accreditation = latest equipment</li> </ul> |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• ‘pregnancy surveillance’ = making pregnancy safe</li> </ul> <p>Relations of difference:</p> <ul style="list-style-type: none"> <li>• Better than other clinics?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>7. Clauses (types of exchange, speech function, mood)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| What are the predominant speech functions (statement, question, demand, offer)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| No dialogue<br>Mostly realis statements; some irrealis statements (e.g. hypothetical – if problems are found; predictions – what will happen at scan); questions only in headings; some demands (at scan, please...; contact ...)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| What is the predominant grammatical mood (declarative, interrogative, imperative)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The grammatical mood is predominantly declarative. Exceptions are some ‘Wh’ interrogative in headings and imperative with regard to contacting Baby Premier for further details. On the ‘3D scans’ and ‘4D scans’ pages there are also some imperatives regarding what to do before/during a scan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>8. Modalities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Are modalities categorical (assertion, denial, etc)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Most are categorical (mostly assertion, but some are weakly modalised)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Level of commitment in modalised modalities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Varies – quite strong in some cases (mostly what clinic/scans can do), but less strong when unpredictable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>9. Evaluation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| To what values (what is desirable or undesirable) do authors commit themselves?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Strong commitment, based mostly on assumed values (no need for justification) – pregnancy desirable; bonding with fetus desirable; involving family and friends desirable; technology (scans) desirable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| How are values realised – as evaluative statements, statements with deontic modalities, statements with affective mental processes, or assumed values?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mostly evaluative statements, also value assumptions (assumed values), some statements with deontic modalities (good to / should bond; good to want to see the baby).<br>Evaluative statements: <ul style="list-style-type: none"> <li>• Quality of service provided (‘premier’, ‘different’, full range of scans, convenient, accredited, links, extras etc)</li> <li>• Quality of equipment and staff</li> <li>• Pregnancy = difficult (frustrations, anxieties, concerns)</li> <li>• Pregnancy = special</li> <li>• Bonding / relating to the baby = good</li> <li>• Seeing the baby (immediately) = good</li> <li>• Believing (that baby on the way) = good / ‘hard to believe’ = not good</li> <li>• Good not to have to imagine (baby)</li> <li>• Moving images = ‘precious moving images’, ‘thrilling’</li> <li>• Baby: may be in ‘awkward’ or ‘bad’ position</li> </ul> |

- Reassurance = good
- Scans = safe
- Scans = good (provide bonding & reassurance; 'unique opportunity')
- Scan = might cause concern, show problems, bad news
- Great opportunities to win ...
- Clinic = help to reduce NHS waiting times / provides advice
- 3D scan: can give 'additional information' about soft tissue anomalies
- Baby Premier 3D scans = 'different' (i.e. in this context better) = 'Premier Plus scan'
- Baby Premier 3D scans = 'exclusive', 'extras', offers

Deontic modality:

- Pregnant women (and partner) should want to bond and do what they can in order to bond

Value assumptions:

- Good to bond / relate to the baby
- Good if the clinic understands concerns etc of pregnant women
- Latest technology etc is good
- Monitoring safety of scans is good
- Good to believe that pregnant / 'baby on the way'
- Good to see the baby
- Good to check growth & health of the baby
- Good to be reassured / offer reassurance



## Appendix 2 Questionnaires

### Questionnaire for Timepoint 1

---

Thank you for agreeing to take part in this study. This is the first of three questionnaires. The questionnaire has several parts to it, and besides some information about you and the pregnancy, asks about your reasons for having a scan, what you expect of the scan, your views on your baby's health during pregnancy, your feelings towards your baby and how you are feeling.

When you have completed the questionnaire, please return it in the envelope provided. (You do not need a stamp as it is a Freepost address.) If you have any questions about the questionnaire or any other aspect of this research, please don't hesitate to contact me, either by phone (07775 276315) or email (F.Wadephul@2009.hull.ac.uk).

*Fran Wadephul*  
University of Hull

#### Part 1: Information about you & the pregnancy

##### **Age:**

**Relationship:** married  living with a partner  single   
divorced / separated  other: \_\_\_\_\_

**Ethnic group:**

- *White* – British  Other: \_\_\_\_\_
- *Asian/Asian British* – Indian  Pakistani  Bangladeshi   
Chinese  Other: \_\_\_\_\_
- *Black/African/Caribbean* – African  Caribbean   
Other: \_\_\_\_\_
- *Mixed/multiple ethnic group:* \_\_\_\_\_
- *Other ethnic group:* \_\_\_\_\_

**Highest educational achievement:** GCSE  A-level  NVQ or similar  HND   
Degree  Postgraduate degree  Professional qualification   
Other: \_\_\_\_\_

**Annual household income:** below £10,000  £10,000-14,000  £15,000-19,000   
£20,000 – 29,000  £30,000-39,000  above £40,000

***Do you already have children? If so, how many?***

***If this is not your first pregnancy, please tell me a little bit about your previous pregnancy/pregnancies.***

***How many weeks pregnant are you?***

***Have you had any problems in this pregnancy?***

***How many ultrasound scans have you had in this pregnancy so far?***

***Have you had any tests during this pregnancy?***

## **Part 2: Your feelings about this pregnancy**

***Was this pregnancy planned?***

***Here is a list of words that some women have used to describe their feelings about being pregnant. Please circle all of the words that describe how you feel about the pregnancy at the moment:***

|            |            |                 |
|------------|------------|-----------------|
| Excited    | Resentful  | Confident       |
| Happy      | Anxious    | Nothing Special |
| Fulfilled  | Depressed  | Protective      |
| Maternal   | Beautiful  | Angry           |
| Invaded    | Powerful   | Out of Control  |
| Ugly       | In Control | Stressed        |
| Vulnerable | Detached   | Serene          |

***Do you have any other feelings about being pregnant?***

**Part 3: Your reasons for having a 3D scan & your expectations of the scan**

***Who made the decision to have a private 3D scan?***

***What made you decide to have this scan?***

***Please number your reasons for choosing a 3D scan in order of priority:***

- To find out more about the baby
- To 'meet' the baby
- To give my partner a chance to 'meet' the baby
- To make sure the baby is ok
- Somebody bought it for us as a gift
- All my friends/family have had one of these scans
- Curiosity
- Friends/family have really recommended it
- Other, please specify:

***What are you expecting from the scan? What are you hoping to see at the scan?***

## Part 4: Your feelings about your baby's health

*These questions ask about your thoughts about the influences on your baby's health in pregnancy. Please circle the number that most reflects how you feel. Don't think about your answers for too long, your first thoughts will probably reflect your feelings more accurately.*

|                                                                                                                                               | Strongly<br>disagree |   | Slightly<br>disagree |   | Slightly<br>agree |   | Strongly<br>agree |   |   |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|----------------------|---|-------------------|---|-------------------|---|---|---|
| 1. By attending antenatal classes taught by competent health professionals, I can greatly increase the odds of having a healthy, normal baby. | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 2. Even if I take excellent care of myself when I am pregnant, fate will determine whether my child will be normal or abnormal.               | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 3. My baby will be born healthy only if I do everything health professionals tell me to do during pregnancy.                                  | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 4. If my baby is born unhealthy or abnormal, nature intended it to be that way.                                                               | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 5. The care I receive from health professionals is what is responsible for the health of my unborn baby.                                      | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 6. My unborn child's health can be seriously affected by my dietary intake during pregnancy.                                                  | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 7. Health professionals are responsible for the health of my unborn child.                                                                    | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |
| 8. If I get sick during pregnancy, consulting health professionals is the best thing I can do to protect the health of my unborn child.       | 0                    | 1 | 2                    | 3 | 4                 | 5 | 6                 | 7 | 8 | 9 |

(continued)

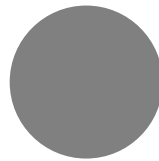
|                                                                                                                                                       | Strongly disagree |   | Slightly disagree |   |   | Slightly agree |   |   | Strongly agree |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---|-------------------|---|---|----------------|---|---|----------------|---|
| 9. No matter what I do when I am pregnant, the laws of nature will determine whether or not my child will be normal.                                  | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 10. Health professionals are the only ones who are competent to give me advice concerning my behaviour during pregnancy.                              | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 11. God will determine the health of my child.                                                                                                        | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 12. Learning how to care for myself before I become pregnant helps my child to be born healthy.                                                       | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 13. My baby's health is in the hands of health professionals.                                                                                         | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 14. Fate determines the health of my unborn child.                                                                                                    | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 15. What I do right up to the time that my baby is born can affect my baby's health.                                                                  | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 16. Having a miscarriage means to me that the baby was not destined to live.                                                                          | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 17. Before becoming pregnant, I would learn what specific things I should do and not do during the pregnancy in order to have a healthy, normal baby. | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |
| 18. Only qualified health professionals can tell me what I should and should not do when I am pregnant.                                               | 0                 | 1 | 2                 | 3 | 4 | 5              | 6 | 7 | 8              | 9 |

## Part 5: Your feelings towards your baby

*These questions look at how you feel about your baby. Just answer them spontaneously, there are no right or wrong answers!*

|                                                                          | Almost<br>always | Often | Sometimes | Almost<br>never |
|--------------------------------------------------------------------------|------------------|-------|-----------|-----------------|
| 1. I wonder what the baby looks like now.                                | 1                | 2     | 3         | 4               |
| 2. I imagine calling the baby by name.                                   | 1                | 2     | 3         | 4               |
| 3. I enjoy feeling the baby move.                                        | 1                | 2     | 3         | 4               |
| 4. I think that my baby already has a personality.                       | 1                | 2     | 3         | 4               |
| 5. I let other people put their hands on my tummy to feel the baby move. | 1                | 2     | 3         | 4               |
| 6. I know things I do make a difference to the baby.                     | 1                | 2     | 3         | 4               |
| 7. I plan the things I will do with my baby.                             | 1                | 2     | 3         | 4               |
| 8. I tell others what the baby does inside me.                           | 1                | 2     | 3         | 4               |
| 9. I imagine what part of the baby I'm touching.                         | 1                | 2     | 3         | 4               |
| 10. I know when the baby is asleep.                                      | 1                | 2     | 3         | 4               |
| 11. I can make my baby move.                                             | 1                | 2     | 3         | 4               |
| 12. I buy / make things for the baby.                                    | 1                | 2     | 3         | 4               |
| 13. I feel love for the baby.                                            | 1                | 2     | 3         | 4               |
| 14. I try to imagine what the baby is doing in there.                    | 1                | 2     | 3         | 4               |
| 15. I like to sit with my arms around my tummy.                          | 1                | 2     | 3         | 4               |
| 16. I dream about the baby.                                              | 1                | 2     | 3         | 4               |
| 17. I know why the baby is moving.                                       | 1                | 2     | 3         | 4               |
| 18. I stroke the baby through my tummy.                                  | 1                | 2     | 3         | 4               |
| 19. I share secrets with the baby.                                       | 1                | 2     | 3         | 4               |
| 20. I know the baby hears me.                                            | 1                | 2     | 3         | 4               |
| 21. I get very excited when I think about the baby.                      | 1                | 2     | 3         | 4               |

***The circle in the middle of this page represents your baby. Please imagine where you would put yourself, in relation to your baby, and use the sticker provided to indicate this position.***



## Part 6: Your feelings about yourself

*These questions refer to how you have been feeling over the last week.*

**I feel tense or 'wound up':**

- Most of the time
- A lot of the time
- From time to time, occasionally
- Not at all

**I feel as if I am slowed down:**

- Nearly all the time
- Very often
- Sometimes
- Not at all

**I still enjoy the things I used to enjoy:**

- Definitely as much
- Not quite so much
- Only a little
- Hardly at all

**I have lost interest in my appearance:**

- Definitely
- I don't take so much care as I should
- I may not take quite as much care
- I take just as much care as ever

**I get a sort of frightened feeling as if something awful is going to happen:**

- Very definitely and quite badly
- Yes, but not too badly
- A little, but it doesn't worry me
- Not at all

**I get a sort of frightened feeling like 'butterflies' in my stomach:**

- Not at all
- Occasionally
- Quite often
- Very often

**I can laugh and see the funny side of things:**

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

**I feel restless as if I have to be on the move:**

- Very much indeed
- Quite a lot
- Not very much
- Not at all

**Worrying thoughts go through my mind:**

- A great deal of the time
- A lot of the time
- From time to time but not too often
- Only occasionally

**I look forward with enjoyment to things:**

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

**I feel cheerful:**

- Not at all
- Not often
- Sometimes
- Most of the time

**I get sudden feelings of panic:**

- Very often indeed
- Quite often
- Not very often
- Not at all

**I can sit at ease and feel relaxed:**

- Definitely
- Usually
- Not often
- Not at all

**I can enjoy a good book or radio or TV programme:**

- Often
- Sometimes
- Not often
- Very seldom



The questionnaire for timepoint 1 will be included in full. As the second and third questionnaire use the same psychological instruments, only the sections which are different are included here.

### **Part 1: Information about you & the pregnancy**

*How many weeks pregnant are you now?*

*Have you had any problems with your pregnancy since you completed the last questionnaire?*

*When and where did you have the 3D scan?*

### **Part 3: Your experience of the 3D scan**

**To what extent have your expectations of the scan been met?**

*Expectations about the experience of the scan:*

|                                |    |    |             |    |    |                                |
|--------------------------------|----|----|-------------|----|----|--------------------------------|
| -3                             | -2 | -1 | 0           | +1 | +2 | +3                             |
| more negative<br>than expected |    |    | as expected |    |    | more positive<br>than expected |

*Expectations about what you could see of your baby:*

|                                |    |    |             |    |    |                                |
|--------------------------------|----|----|-------------|----|----|--------------------------------|
| -3                             | -2 | -1 | 0           | +1 | +2 | +3                             |
| more negative<br>than expected |    |    | as expected |    |    | more positive<br>than expected |

**Please tell me a little bit more about the extent to which your expectations of the scan have or have not been met.**

## **Appendix 3 Interview schedules**

### **Interview schedule for timepoint 1**

- Tell me a little about any previous pregnancies? (if applicable)
- Tell me about this pregnancy. Was it planned? How has it been so far? How do you feel about this pregnancy?
- Tell me about other scans you've had during this pregnancy.
- What made you decide to have a private scan?
- What are you hoping to gain from the scan? What do you expect?
- How well do you think you know the baby? What are the things that help you to know your baby?
- How close do you feel about the baby?
- Have you been feeling during the pregnancy so far? (Why?)
- How do you feel about issues of control? What does control mean to you? ?

### **Interview schedule for timepoint 2**

- How did the scan go?
- Has it met your expectations?
- Have you got a better idea of what the baby is like / looks like?
- Do you feel that the scan has affected how you feel about your baby and how you see the baby?
- Were you anxious before/during/after the scan?
- Do you think the scan has affected your feelings of control during pregnancy?

### **Interview schedule for timepoint 3:**

- Please tell me again about the scan, how did it go? Now that you've had some time to reflect on it, how do you feel about it?
- Did the scan meet your expectations? Was anything not how you expected?
- Tell me about your baby.
- How have you felt emotionally during the pregnancy?
- What about issues of control?
- How do you feel about the birth?

## Appendix 4 Ethics approval letter

Ms Franziska Wadephul  
Dearne building  
Faculty of Health and Social Care  
University of Hull

**FACULTY OF  
HEALTH AND  
SOCIAL CARE**  
T: 01482 464530  
E: [j.kelly@hull.ac.uk](mailto:j.kelly@hull.ac.uk)

07 June 2011

Dear Fran

### **Re: – The psychological impact of 4D ultrasound in pregnancy on expectant parents**

Thank you for submitting the above proposal to the Faculty of Health and Social Care Research Ethics Committee that was considered at the meeting on 7 June 2011. The Committee would like to commend you on the exceptional high quality of the proposal. Overall, the proposal is sound; however, before granting approval they wish the following minor points to be addressed;

1. The proposer should include who has approved the study (local committee).
2. Include whom the participant should contact if they are not satisfied with the conduct of the researcher.
3. Recruitment through NCT/websites may provide a biased perspective. Please clarify why not go through a recognised recruitment route like local maternity services, or private clinics undertaking 4D scanning?
4. If recruiting nationally, how will that be managed when volunteers for focus group may be from a wide geographical area as parents may not wish to travel?
5. Information sheet/questionnaires use both terms 3D/4D scans interchangeably – it would be helpful to have a working definition of both.
6. Study design (Figure 2) - why 2 different strands? Confirm if use of qualitative/quantitative on flow chart is correct.
7. Concern that the questionnaire might take longer than 20 minutes to complete.
8. On the questionnaire the 'Feelings' box should include an 'other – please state' option.

I hope you do not find these points too onerous to address. As per the Committee's Terms of Reference, I will take 'Chair's action' to formally approve the proposal, upon your satisfactory response.

Kind regards

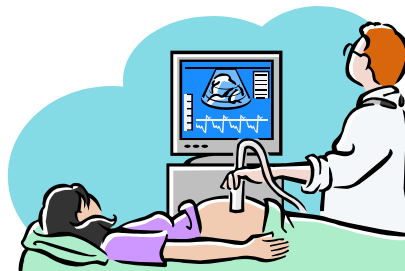
Janet Kelly  
Chair, Faculty Research Ethics Committee  
cc; file

## Appendix 5 Information leaflet



*An invitation to take part in research:*

# The impact of three-dimensional ultrasound scans in pregnancy



*If you are planning to have a three-dimensional ultrasound scan at a private clinic, you might be interested in taking part in this research.*

I would like to invite you to take part in my research study. Before you decide, I would like you to understand why the research is being done and what it will involve for you. This leaflet explains what the research is about. If you would like further information, please contact me.

### ***What is the purpose of the study?***

This study explores the emotional impact of three- and four-dimensional ultrasounds scans during pregnancy. Three-dimensional scans are a relatively recent development which show the baby in the womb in three dimensions. Four-dimensional scans add the dimension of time: you are able to watch a video of the baby in the womb. Over the last few years, private clinics have increasingly offered these kinds of scans to expectant parents.

There has been a lot of research into the psychological effect of conventional ultrasound scans on pregnant women and their partners, particularly with respect to anxiety and bonding with the baby. However, up to now there has been no research into the effect of private three- and four-dimensional scans. I am interested in finding out how these scans affect parents' feelings about their baby and what influence they might have on anxiety and parents' sense of control.

### ***Who is doing the research?***

This study is carried out as part of a PhD study in the Faculty of Health and Social Care at the University of Hull.

***Who can take part in this study?***

For this study, I am looking for pregnant women and expectant fathers (not necessarily couples!) who are planning to have a three-dimensional scan at a private clinic. Involvement in this study would begin after the 'anomaly scan' (usually around 20 weeks) but before the 3D scan.

***What does the study involve?***

There are several different parts to this study: questionnaires, interviews and focus groups. If you decide to join this study, you do not need to agree to do all three.

The *questionnaires* will be sent to you at three different times: (1) after the 'anomaly scan' but before the private scan, (2) just after the private scan and (3) several weeks later, but before the birth of your baby. Each questionnaire will take about 20 to 30 minutes to complete.

I am also looking for people to take part in *interviews*. The first interview would take place before the private scan, one just after the scan, and another a few weeks later. The interview just after the scan would be a brief telephone interview, the other two interviews would be more in-depth and last about an hour or so. They will be informal and friendly. There are no right or wrong answers! The interviews would be recorded to allow for all your valuable information to be processed and analysed thoroughly after the interview.

After the birth of your baby you can also take part in a *focus group*. This would take place at least 6 weeks after the birth and would involve taking part in a group discussion with other new parents. I am planning to hold two separate focus groups, one for men and one for women. Like the interviews, the focus group would be informal and friendly. The discussions would also be recorded.

If you decide to take part in this research you do not need to agree to complete the questionnaires *and* do the interviews *and* focus groups. You could do all three, or you could choose to do either the questionnaires or the interviews, and then possibly take part in the focus group if you want to. This is entirely up to you.

***What happens with the information I provide?***

All of the information you provide in the questionnaires, interviews and focus groups will remain confidential. The information will be used in the PhD thesis and possibly other publications. I might use some quotes from questionnaires and interviews, but all published information will remain anonymous and it will not be possible to identify you. Recordings of the interviews will be destroyed once they have been transcribed into a written format. When the interviews have been transcribed, they will be returned to you to check that the information accurately reflects your views.

***What happens if I change my mind about taking part in the research?***

You can decide to withdraw from this study at any point during the research. This is entirely your decision and you will not be asked to give a reason. In this case, none of the information provided by you will be used in the research.

***How do I get involved?***

There are a number of ways you can let me know that you are interested in taking part in this research. You can:

1. complete the reply slip below and return it to the address provided,
2. phone me,
3. email me or
4. contact me through the website: 3Dscanresearch.com.

Once you have contacted me, I can give you more information about this study. I am also happy to answer any questions you have before you decide to take part.

By participating in this research you will help to contribute to our understanding of the emotional impact of 3D scans. Thank you for taking the time to read this information sheet.

***My contact details:***

Franziska Wadephul  
Faculty of Health & Social Care  
Dearne Building  
University of Hull  
FREEPOST HU5 88  
Hull HU6 7BR  
Telephone: 07775 276315  
Email: F.Wadephul@2009.hull.ac.uk  
Website: www.3Dscanresearch.com

If you are dissatisfied with your participation in this study or would like to make a complaint about any aspect of it, please contact the Dean, Faculty of Health and Social Care, University of Hull, 01482 464581.

Name:

I am interested in this study. Please contact me by:

Telephone:

Email:

Would you prefer me to contact you by phone or email?

When would be a good time to contact you by phone?

## Appendix 6 Consent forms



### The psychological impact of 3/4D scans

#### Consent Form

This research explores the psychological impact of private 3/4D ultrasound scans on pregnant women and expectant fathers. Questionnaires, interviews and focus groups will be used as part of the research. This consent form specifically refers to participation in [questionnaires/interviews].

I understand that all the information gathered for this study will be treated confidentially and will remain anonymous.

I confirm that I have read the Information Leaflet and have had opportunities to ask further questions about the study and my participation in it.

I understand that participation in this study is voluntary and that I can withdraw at any point during the research.

I consent to interviews being audio recorded and quotes being used (anonymously) in the final report.

I agree for the information to be shared with other researchers based at Hull University who are involved in the project.

**I agree to take part in this study.**

\_\_\_\_\_

Name

\_\_\_\_\_

Signature

\_\_\_\_\_

Date

***If you any further questions, please contact me:***

Fran Wadephul

Phone: 07775 276315

Email: F.Wadephul@2009.hull.ac.uk

## Appendix 7 Sources of support

### Sources of support

If you feel at all upset or distressed by any issues that might have been raised during this research study, there are a number of sources of support available. Your first port of call may well be your midwife, health visitor or general practitioner. In addition, there are several organisations which you might find helpful.

#### **Antenatal Results and Choices**

This is a charity providing non-directive support and information regarding antenatal screening and testing.

[www.arc-uk.org](http://www.arc-uk.org)  
Helpline: 020 7631 0285 (Mon-Fri, 10am-5.30pm)

#### **Association for Post-Natal Illness**

This is a charity providing support for mothers with postnatal illness.

[www.pni.org.uk/](http://www.pni.org.uk/)  
Helpline: **0207 386 0868**

#### **Contact a family**

This charity provides support for parents with disabled children, including support during pregnancy if an anomaly has been diagnosed or is suspected.

[www.cfamily.org.uk](http://www.cfamily.org.uk)  
Helpline: 0808 8083555

#### **Depression Alliance**

This organisation provides support for people suffering from depression. It runs a helpline (DAPeND) specifically for anyone affected by postnatal depression.

[www.depressionalliance.org](http://www.depressionalliance.org)  
DAPeND helpline: 0845 120 3746

#### **MIND**

MIND is a leading mental health charity providing information and support to anybody affected by mental health issues.

[www.mind.org.uk](http://www.mind.org.uk)  
Infoline: 0300 1233393

#### **National Childbirth Trust**

The NCT is the UK's leading charity for parents, offering support during every stage of pregnancy, birth and early parenting.

[www.nctpregnancyandbabycare.com](http://www.nctpregnancyandbabycare.com)  
Enquiries line: 0300 3300770

#### **Positively Pregnant**

This website provides information and support for anybody affected by stress, depression and anxiety during pregnancy.

[www.positivelypregnant.org](http://www.positivelypregnant.org)

#### **Relate**

Relate is a national charity providing support for couples who are experiencing difficulties in their relationship

[www.relate.org.uk](http://www.relate.org.uk)  
Information line: 0300 1001234



## Appendix 8 Analysis of interview extract

Initial notes: Descriptive comments  
Linguistic comments  
Conceptual comments

| Emergent themes                                                                                                                       | 'turn' | speaker | Transcript                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Initial notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                       |        | F       | Can you tell me a little bit more about the 13 week scan?                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Amazement at detail of scan and fetal development</b>                                                                              | 24     | N       | I was quite shocked that you could see as much as you could. I thought it would look like a little butterbean or a little peanut or something, but you could, it was just a baby. So it was really kind of surprising and the fact that she kind of, she kind of, we do actually have an ultrasound photo of her facing the screen with her hand up as if she is waving. To have that at 13 weeks, you think, oh my God, you know, you don't actually think that will be as developed. | <p><span style="color: blue;">13 week scan: shocked at what could be seen, photo; amazed at level of development</span></p> <p><span style="color: green;">Not full sentences, 'kind of', 'actually', 'oh my God' (emotional?)</span></p> <p><span style="color: red;">She is clearly amazed by the detail of the scan as well as how far developed the baby is at this stage (13 weeks). But there is little (anything?) here about the scan showing that everything is ok, especially considering the worries she had due to sickness.</span></p> |
|                                                                                                                                       |        | F       | Yes, it's quite amazing.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Amazement at scan</b><br><br><b>Scan: realisation that she is 'carrying that being'</b><br><br><b>Seeing baby at scan: strange</b> | 25     | N       | I guess when you see it, it's like whoa! And to feel, you know, you are actually carrying that being, it's, umm, quite shocked. But happy. <i>Laughs</i> . You have that shocked and then you have that happy and, it's sort of, umm, strange.                                                                                                                                                                                                                                         | <p><span style="color: blue;">13 week scan: amazed, shocked, happy, strange</span></p> <p><span style="color: green;">'whoa', 'you' rather than I (distance?), 'you know', 'actually', 'umm', confused sentences – confused/mixed feelings?</span></p> <p><span style="color: red;">Again mixed feelings, but mostly positive ('shocked' in a good way?). She uses 'you' quite a often when describing her reactions to the scans – why is that? Is it creating some distance or</span></p>                                                         |

|                                                                                                                            |    |   |                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------|----|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                            |    |   |                                                                                                                                                                                                              | just a more conversational tone?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                            |    | F | How did you feel before the 13 week scan?                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>Worried about baby because of HG</b></p> <p><b>Anxiety before first scan</b></p> <p><b>Reassurance from scan</b></p> | 26 | N | Umm, worried. Because I had been so ill and I was actually still ill at that point. I was worried that, umm, something would be wrong, umm, but that kind of, what's the word, made me less anxious I guess. | <p>Worried about 13 week scan (because of HG)</p> <p>Less anxious after 13 week scan</p> <p>'umm', 'actually', 'kind of', 'what's the word', 'I guess' – not quite sure of feelings?</p> <p>Difficult to talk about?</p> <p>Some hesitation, reflecting anxiety? She does find it difficult to put her feelings into words. First mention of anxiety/reassurance with regards to the first scan. But she doesn't actually talk about how the scan showed that the baby is developing normally etc, that is more implied in the fact that she felt less anxious afterwards. It sounds like what impressed her most was how much detail could be seen and how developed the baby was already, and how amazing/shocking it is to realise that she is 'actually carrying that being'. However, bearing in mind her anxiety about the baby's health due to her severe sickness, it might have been expected that the fact that the baby was healthy and developing well stood out more for her?</p> |