



Parents' Experiences of Conceptualising and Relating to their

Unborn Child: A Constructivist Grounded Theory

being a thesis submitted in fulfilment of the

requirements for the degree of

Doctor of

Philosophy

in the University of Hull

by

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August 2020

Dedication

To my parents, who have played a large role in shaping my worldview, and whose ever-present encouragement and support have given me the confidence to pursue further studies.

Acknowledgements

Firstly, I would like to thank my research supervisors, Prof Julie Jomeen, Prof Rita Borg Xuereb and Dr Angela Poat. Your expertise and guidance have been invaluable in the completion of this thesis, and your dedication, kindness and encouragement has spurred me on every step of the way.

Heartfelt gratitude also goes to the expectant mothers and fathers who took time out of their busy lives to participate in the research. Thank you for welcoming me into your worlds. It was a privilege to share in your experiences, and I wish you the very best with your growing families. You unknowingly taught me so much about life during our time together.

An extra special thanks goes to my family, of course, who have always been my biggest source of support and motivation. To my father, for proofreading my work, as he has done for as long as I remember. To my mother, for inspiring my fascination about the workings of relationships, and for always showing interest in my work. To my sister, Chrissy, for her good humour and cheer, which reminds me that life isn't to be taken too seriously, and whose curiosity about the world has spurred on my own. To my partner, Daniel, for always being there by my side, with patience and unconditional love, providing the stability I need to get things done. To my menagerie of pets, Sushi, Piper and Chili, who deserve a special mention, I thank you for keeping me company during the long and sometimes arduous process of writing up this thesis.

Last, but not least, I would like to thank my colleagues in the Midwifery department for being a source of strength and inspiration, acting as sounding boards for my questions and issues, and lightening my load as I completed this process.

Publications and Conferences

- Borg Cunen, N., Jomeen, J., Borg Xuereb, R. & Poat, A. (2017) A narrative review of interventions addressing the parental–fetal relationship. *Women and Birth*, 30 (4), e141-e151.
- Borg Cunen, N., Jomeen, J., Poat, A., & Borg Xuereb, R. (2020) ‘A small person that we made’ - Parental conceptualisation of the unborn child: A constructivist grounded theory. Manuscript submitted for publication.
- Borg Cunen, N., Jomeen, J., Borg Xuereb, R. & Poat, A. (2016) *A review of interventions addressing the parental-fetal relationship*. [Poster]. Society for Reproductive and Infant Psychology 36th Annual Conference, 13 – 14 September, Leeds.

Abstract

Antenatal thoughts and feelings about the fetus are thought to be somewhat predictive of the later parent-child relationship. The parental-fetal tie is, however, poorly understood. The field is plagued by disagreement in existing conceptualisations, conflicting results in efforts to identify predictors, correlates and consequences of the tie, and a dearth of research looking into the phenomenon from a paternal perspective. In response to these issues, the purpose of the current study was to construct a substantive theory of expectant parents' fetal conceptual and relational experiences.

Following the receipt of ethical approval, constructivist grounded theory was used to explore data generated through semi-structured individual interviews conducted with a purposive and theoretical sample of nine first-time expectant mothers and their male partners, in early, middle and late pregnancy. Data analysis, involving techniques of coding, constant comparison and memo-writing, resulted in the development of a theoretical model.

The parental-fetal tie is characterised as an evolving phenomenon which takes a convoluted and individualised path to reach maturation. Coming to think of the fetus as a known other and as part of the intimate family unit are vital in achieving a sense of relatedness. An increasingly tangible fetus facilitates such an outlook. Nevertheless, the development of the tie is limited by restricted access to the unborn child, as well as by difficulties in perceiving fetal reciprocity.

The results suggest that expectant mothers and fathers conceptualise and connect to the unborn child in comparable ways, despite physical disparities in the pregnancy experience. Given the nature of the tie, it is thought that assessing it through self-report instruments may not be feasible. Providing inclusive care to the parental dyad will encourage engagement with the fetus. Further longitudinal research spanning the transition to parenthood is needed to understand the postpartum sequelae of the processes observed antenatally.

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Abbreviations

2D	2 Dimensional
3D	3 Dimensional
4D	4 Dimensional
CBT	Cognitive Behavioural Therapy
CG	Control Group
CI	Confidence Interval
CGT	Constructivist Grounded Theory
EG	Experimental Group
GATE	Graphical Appraisal Tool for Epidemiological Studies
GT	Grounded Theory
ICM	International Confederation of Midwives
MAAS	Maternal Antenatal Attachment Scale
MFA	Maternal-Fetal Attachment
MFAS	Maternal-Fetal Attachment Scale
MFT	Maternal-Fetal Tie
NICE	The National Institute for Health and Care Excellence

PAAS	Paternal Antenatal Attachment Scale
PAI	Prenatal Attachment Inventory
PFA	Parental-Fetal Attachment
PFAS	Paternal-Fetal Attachment Scale
PFT	Parental-Fetal Tie
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
RCT	Randomised Controlled Trial

Notes:

- The terms ‘fetus’ and ‘unborn child’ are used interchangeably throughout the thesis. It was not the intention of the researcher to attribute any connotative meaning to these terms.
- It may appear that the terms ‘parental-fetal attachment’ and ‘parental-fetal tie’ are also used interchangeably. However, the former term is only used to preserve the original language of the literature being referenced. The latter term is that which the researcher feels best befits the phenomenon’s true nature.

Chapter 1 Background

1.1 Introduction

Over the past 50 years, there has been increasing awareness that the relationship between parents and their infants begins to form before birth, during the gestational period (Rubin, 1967b; Alhusen, 2008). Expectant mothers adjust to pregnancy, and their impending role of motherhood, in diverse ways, and the degree of connectedness, or emotional affiliation, they develop to their unborn child is thought to vary (Doan and Zimmerman, 2003; Lawson and Turriff-Jonasson, 2006). For each expectant parent, the quality of their fetal attachment is believed to be determined by a unique combination of risk and protective factors (Bouchard, 2011).

Studying parental-fetal attachment (PFA) has been hypothesised to offer a unique opportunity to understand how each parent envisions the child, in a way which is uncomplicated by infant temperament and early parenting experiences (Condon, 1993; Sandbrook and Adamson-Macedo, 2004). The value of acquiring information about the PFA lies in its surmised link to later parental-infant attachment. Through this pathway, antenatal attachment is thought to play a key role in the child's wellbeing and emotional and cognitive development (Siddiqui and Hagglof, 2000; Huth-Bocks et al., 2004a; Mercer, 2004). Maternal-fetal attachment (MFA) is thought to also be linked to mothers' self-care and health behaviours over the gestational period (Van den Bergh and Simons, 2009).

The next section (1.2) outlines how the researcher came to develop an interest in PFA, or the parental-fetal tie (PFT) as it will be referred to in the current research, and discusses ways in which the research design evolved during an initial period of

exploration in the field. A background of contextual issues follows, led by a brief look into the experience of pregnancy, the period during which the PFT is formed (1.3). Following this, the attachment theory (Bowlby, 1969), on which previous conceptualisations of PFA have been based (Cranley, 1981; Condon, 1993; Müller, 1993), is considered (1.4). An account of the caregiving behavioural system, which some researchers have suggested could be used to better explain the true nature of parental antenatal conceptions of their child (Laxton-Kane and Slade, 2002; Brandon et al., 2009; Walsh, 2010), is then given (1.5). This is followed by an overview of previous research studying PFA, together with a brief exploration of a related concept, concerning internal representations of the unborn child (1.6).

1.2 Development of the research area

The choice of topic, and research design, within this study was far from effortless. There were significant changes along the way, as made necessary by quandaries encountered when conducting an initial exploration of existing literature. The initial research proposal was for a study of quantitative longitudinal design, aiming to assess parental adjustment over the transition to parenthood, with a plan to measure PFA as one of several variables. Being that the researcher had very little prior knowledge about PFA, an initial exploratory review of literature related to the phenomenon was commenced. It was while drawing up this review that issues and uncertainties within the field began to be uncovered.

Amongst these difficulties, which will be expanded on later in this chapter and in the second chapter of the thesis, are the highly inconsistent and conflicting results in research that has attempted to determine the predictors and correlates of the PFA

(Doan and Zimmerman, 2003; Yarcheski et al., 2009). This issue is exacerbated by discord within existing conceptualisations of the tie (Shieh et al., 2001; Laxton-Kane and Slade, 2002; Redshaw and Martin, 2013; Walsh et al., 2013; Birtwell et al., 2015), which has resulted in a plethora of tools measuring different aspects of the construct. The use of the attachment theory (Bowlby, 1958) as a guiding principle in existing conceptualisations has been questioned (Laxton-Kane and Slade, 2002; Brandon et al., 2009; Walsh, 2010). Furthermore, a paucity of studies looking into the paternal aspect of the antenatal tie was observed, despite the knowledge that fathers', as well as mothers', develop conceptualisations of, and express feelings of closeness towards, their children in the antenatal period.

Thus, taken together, these issues led to a reconsideration of the initial research plan. It was felt that it would not be prudent to measure PFA using existing tools, with the knowledge that they may not be able to measure the variable of interest accurately. The researcher became increasingly aware that there might be room for a study that reconsiders the conceptual underpinnings of the phenomenon concerning antenatal parental conceptualisations of the unborn child. A significant change in research direction was thus considered. To determine if such research was indeed required, a more detailed look at related literature was required.

However, given that this would be a process of 'theory generation' (Glaser and Strauss, 1967), it was thought that use of grounded theory (GT) methodology might prove to be the most appropriate approach to adopt. This created hesitance about the appropriateness of delving further into the literature, because a principle of GT, particularly in the initial vision of the methodology, is that the researcher should enter the field relatively 'tabula rasa', to avoid the risk of preconceived ideas influencing the

emerging theory (Glaser and Strauss, 1967; Glaser, 1978). Nonetheless, more recently, others have argued that it is unlikely that researchers will be able to conduct a GT study without gaining familiarity with the literature in the field, attaining a critical understanding of the central concepts and allowing for theoretical sensitivity (Strauss and Corbin, 1998; Clarke, 2005; Walls et al., 2010; Charmaz, 2014).

Following in-depth reading regarding the function of the literature review in GT research, and based on the arguments outlined above, it was decided that a limited, focused review of the literature would be undertaken for this research. This approach would allow for the acquisition of background knowledge, giving insight into how the phenomenon has been studied in the past (Denzin, 2002), which would help to orient the researcher (Urquhart, 2007) and provide a context for the study (McCann and Clark, 2004). Thus, in the background to the research that follows, and in the narrative literature review in Chapter 2, in-depth exploration of previous work that has looked directly into the phenomenon of the PFT was deliberately omitted.

Instead, an exploration of issues surrounding the PFT supported the determination that research looking at the conceptual understanding of the phenomenon was truly necessary. It also confirmed the appropriateness of using GT to achieve this insight. This approach to reviewing the literature was not felt to unduly undermine the researcher's ability to derive theory from the generated data (McCallin, 2003; McGhee et al., 2007). The journey taken to reach the final research question is illustrated in Appendix K.

1.3 Expectant parents' experiences of pregnancy

1.3.1 Introduction

Pregnancy is a major life transition that significantly affects the physical, psychological and social realms of life, for both women and men (Finnbogadóttir et al., 2003). Pregnancy has been described by mothers as a process of getting to know the unborn child, by gradually deepening the tie felt towards the person within them (Hilfinger Messias and DeJoseph, 2007). Thus, exploring expectant parents' experiences during the gestational period serves to give a contextual background for issues of potential importance to the developing PFT.

There is growing awareness of the importance of looking into paternal, as well as maternal, development towards parenthood (Finnbogadóttir et al., 2003). Expectant fathers are becoming increasingly involved in their partner's pregnancy, and this allows the couple to navigate the transition to parenthood as a team (Draper, 2002b; Ekelin et al., 2004). Qualitative narratives suggest that the expectant father's experience of the pregnancy mirrors that of the mother, although there also appear to be some important differences.

Before conducting the present research, it had not been established whether the tie built between the father and the unborn child could be accurately described within the same conceptual and theoretical framework as the maternal-fetal tie (MFT). It was thought that significant differences could exist which would necessitate separate explanatory schema.

The meaning that each expectant parent ascribes to the experience of pregnancy differs, and this affects their adaptation to their impending parenthood role (Lawson and Turriff-Jonasson, 2006). The transition may be facilitated or inhibited by various factors, including cultural beliefs and life philosophy, support network availability, health and socioeconomic status, and the individuals' personal expectations (Meleis et al., 2000; Schneider, 2002; Brennan et al., 2007; Shaho, 2010).

Given their importance in pregnancy, such factors are also likely to influence the PFT. However, some of these variables have received insufficient consideration in this respect. One neglected factor is the potential influence of cultural norms and beliefs on the PFT. This is regarded to be a significant limitation in the field (Alhusen, 2008), given that the PFT is considered to be a culturally-embedded phenomenon (Mercer et al., 1986). Cultural differences may affect the way the tie is expressed, and determine whether existing tools retain their validity across different societies (Wilson et al., 2000). The limited research that has assessed the MFA cross-culturally indicates that there may be important dissimilarities in how women of different cultures regard pregnancy and build a tie to the unborn child (Ahern and Ruland, 2003; Bielawska-Batorowicz and Siddiqui, 2008).

Questions regarding the influence of culture on the formation of PFT are particularly relevant to the present study because data generation will occur within a Maltese context, albeit with a mix of Maltese and foreign participants. Malta, an archipelago of five islands, is located in the Central Mediterranean Sea. In 2018 it had a population of approximately 493,559, of which over 83,000 were foreigners (National Statistics Office (NSO), 2019). There are approximately 4,555 births yearly, with approximately 24.6% of

these being to mothers of non-Maltese nationality (Gatt and Cardona, 2019). To the researcher's knowledge, no study regarding the PFT has ever been conducted in Malta.

Understanding the cultural particularities within a social group is vital to gaining a deep comprehension of the way people think and behave. Maltese society is characterised by a complex intertwining of enduring traditional values and increasing uptake of contemporary lifestyles (Abela et al., 2012). Distinct values within the society are likely to influence the PFT in ways that are currently unknown.

1.3.2 Transformation in self-concept

Reflection during pregnancy often results in a new conception of self for expectant mothers and fathers, a reorganisation into a more responsible self, who can better identify with the parental role (Draper, 2003b; Finnbogadóttir et al., 2003; Hilfinger Messias and DeJoseph, 2007; Darvill et al., 2010; Fenwick et al., 2012). In seminal research, Rubin (1967a; 1967b; 1976; 1984), identified that, during the gestational period, women commonly pursue expert models, role-play, and fantasise about themselves as mothers, thus building a mental image of their ideal maternal self. As the expectant parent attempts to integrate the unborn child into self and family systems, they go through a complex, integrated process, encompassing physical, emotional, social and spiritual work. This process is achieved through a restructuring of previously-held values, principles, goals and behaviours (Finnbogadóttir et al., 2003; Kao and Long, 2004; Hilfinger Messias and DeJoseph, 2007; Shaho, 2010; Modh et al., 2011).

Reactivation and reorganisation of mothers' representations of self and others during pregnancy have started to be explored in relation to the formation of new representations about the unborn child, and the self as a caregiver (Ammaniti, 1991;

George and Solomon, 1996; George and Solomon, 2008). However, these complex relationships are still little understood, and the way they relate to existing conceptualisations of PFA has yet to be explored.

1.3.3 A period of change and uncertainty

The transformation of the self occurs against a background of powerful emotions that often characterise the experience of pregnancy (Birtwell et al., 2015). Cohen and Slade (2000:33) regard pregnancy to be “inherently destabilizing and emotionally tumultuous”. This instability may be particularly relevant to the early stages of gestation, when some expectant parents struggle with accepting the reality of the pregnancy. Expectant mothers and fathers are not always sure about the desirability of becoming parents (Finnbogadóttir et al., 2003), with common concerns relating to the profound implications for change in their lives, the associated disruption of plans and aspirations, and the loss of their freedom, particularly if the pregnancy was unplanned (Finnbogadóttir et al., 2003; Fenwick et al., 2012).

An initial difficulty in coming to terms with the reality of the pregnancy may interfere with early formation of the PFT, especially in cases where the pregnancy was unexpected. However, a meta-analytic study of predictors of MFA found that the planning of pregnancy had a negligible effect on the tie’s strength (Yarcheski et al., 2009). A tendency to measure the PFA late in pregnancy may mean that many expectant parents, who have struggled with acceptance early in the gestational period, have ‘caught up’ with others in terms of embracing the impending arrival of the unborn child. Alternatively, the small effect size could be due to measurement issues in existing tools assessing PFA. These issues may include the use of disparate tools (Yarcheski et al., 2009;

Walsh, 2010) that are unable to accurately assess the depth and breadth of the tie (Van den Bergh and Simons, 2009), and that may be overwhelmingly influenced by social desirability bias (Hjelmstedt et al., 2007; van Bussel et al., 2010).

Some women express difficulty in adapting to the somewhat unpredictable pregnancy state (Schneider, 2002; Modh et al., 2011). An altered body shape, diminished physical mobility, and further physical changes may affect a woman's sense of bodily control, at times leaving her feeling that she has little influence over her own body (Schneider, 2002; Warren and Brewis, 2004; Hilfinger Messias and DeJoseph, 2007; Birtwell et al., 2015). Women's experiences of such changes may be complex and ambivalent, and vary not only between women, but also at different stages of pregnancy (Johnson et al., 2004). Body image dissatisfaction has been linked to less optimal MFA (Lai et al., 2005).

Chang et al. (2010) have suggested that the reshaping of body image in pregnancy is related to the woman's identity reconceptualisation. Some women take pleasure in the intimacy that carrying the developing baby provides, while others encounter difficulty in coming to terms with the blurring of boundaries between the self and the fetus (Draper, 2002a). Whether the mother can reconcile herself to the interdependent and yet separate state of the fetus may influence her conceptualisation of the unborn child. Several researchers have noted the importance of mother's recognition of the unborn child as a person, and being able to differentiate self from the fetus in the successful building of MFA (Cranley, 1981; Müller and Ferketich, 1992; Shieh et al., 2001).

Men, too, have been shown to experience a wide range of somewhat ambivalent thoughts and feelings during a partner's pregnancy, ranging from joy and excitement to inadequacy and uncertainty (Draper, 2002b; Finnbogadóttir et al., 2003; Kao and Long,

2004; Brennan et al., 2007; Fenwick et al., 2012). In particular, men often feel somewhat excluded and distant from the pregnancy, resulting in a sense of redundancy and frustration (Draper, 2002a; Draper, 2003a; Finnbogadóttir et al., 2003). These feelings may be related to bodily changes and sensations experienced by the woman, which are mostly imperceptible to him (Draper, 2002a; Finnbogadóttir et al., 2003; Widarsson et al., 2015). For men, biological encounters with the fetus are largely reliant on vicarious accounts from their partners (Draper, 2002a).

Although men often express a desire to engage with the fetus, some feel that they cannot connect to, or communicate with, the unborn child to the same extent as their female partners do (Draper, 2003b; Alhusen, 2008). Thus, women and men may have slightly different related foci in relation to the fetus, with the male partner prioritising conceptualisation of the future baby after birth. At the same time, the expectant mother may be more concerned with caring for, and making contact with, the unborn child at the current stage of pregnancy (Seimyr et al., 2009). A minority of fathers feel that paternal-infant interaction will only really begin following the birth, when the child can be genuinely conceived as a person (Kao and Long, 2004).

However, and perhaps unexpectedly, gender differences in PFT are not consistently observed in the literature (Wilson et al., 2000; Armstrong, 2002; Kunkel and Doan, 2003; Ustunsoz et al., 2010; Abasi et al., 2012). Again, this may be influenced by measurement of the PFA at the latter stages of pregnancy; by when fathers may be feeling less isolated from the experience, or, alternatively, by the use of measures that are unable to evaluate the tie accurately.

For both expectant parents acceptance of the pregnancy often leads to more positive and profound emotions, such as awe, pride, happiness and a sense of fulfilment (Finnbogadóttir et al., 2003; Hilfinger Messias and DeJoseph, 2007). For men, this sense of acceptance is often aided by the more obvious physical transformation of the woman as the pregnancy progresses, the observation of fetal movements, and visualisation of the child through ultrasound scans (Draper, 2002a; Finnbogadóttir et al., 2003; Kao and Long, 2004; Brennan et al., 2007; Fenwick et al., 2012). Positive anticipation and yearning for the onset of fatherhood create a sense of meaning in men's lives (Brennan et al., 2007).

1.3.4 Interpersonal relationships

During pregnancy, intimate partner relationships evolve, undergoing an 'internal shift', as roles and expectations in relation to the significant other are re-negotiated (Kao and Long, 2004; Hilfinger Messias and DeJoseph, 2007). Patterns of communication are modified, and domestic responsibilities are redistributed, in a process that is described as challenging, dynamic and complex (Hilfinger Messias and DeJoseph, 2007). The pregnancy often gives couples a renewed sense of purpose in each other's lives, being characterised by more attentiveness and tenderness, encouraging a 'team spirit', and solidifying the relationship (Schneider, 2002; Finnbogadóttir et al., 2003; Birtwell et al., 2015; Widarsson et al., 2015).

The importance of the intimate partner relationship has been highlighted in PFA research. Healthy couple adjustment (Barone et al., 2014), greater mutuality within the intimate partner relationship (Wilson et al., 2000), and higher satisfaction in the marital relationship (Hjelmstedt et al., 2006; Abasi et al., 2012) have been found to be related

to more optimal PFA. Wilson et al. (2000) theorise that a sense of intimacy in healthy families may extend to their tie to the fetus.

Conversely, there are initial indications that women who have experienced domestic violence during pregnancy are significantly more likely to have disengaged or distorted antenatal representations of their unborn children, and themselves as mothers, in the third trimester of pregnancy (Huth-Bocks et al., 2004b). Huth-Bocks et al. (2004b) suggest that domestic violence leads to psychological compromise, predisposing to a decreased ability to tolerate or relate to the infant in a sensitive and accepting manner (Lieberman and Van Horn, 1998). On the other hand, in a more recent study, de Almeida et al. (2013) failed to establish a link between domestic violence and PFA. The contrasting results of these two studies may be influenced by the measurement of somewhat different concepts, assessed by different methods. The use of a self-report questionnaire in the latter study may not allow for adequate exploration of the complex construct of the PFT. It may also be liable to social desirability bias.

Women value the ability to share their pregnancy experiences with their family of origin, and, in particular, the pregnancy often allows the development of a deeper connection with their mother, who, in many cases, acts as a vital source of support (Modh et al., 2011). With reference to the Maltese context, in particular, the extended family often play a significant and valued supportive function in the upbringing of children (Borg Xuereb, 2008). It is hypothesised that this is likely to play a role in the way that parents feel about the unborn child.

1.3.5 Summary

The transition to parenthood requires expectant parents to simultaneously carry out several challenging tasks, such as shifting their life focus and re-evaluating life circumstances and future projections (Finnbogadóttir et al., 2003; Martin and Redshaw, 2010). Given the complex and multi-dimensional changes that occur during this period, and the likely substantial effects of such changes on the way that parents feel about their unborn child, it is as yet unclear whether this developing fetal tie can be fully captured through the use of cross-sectional research (Laxton-Kane and Slade, 2002; Van den Bergh and Simons, 2009). Furthermore, a gap in the literature exists concerning how certain factors, such as cultural context, influence the PFT. Researchers have suggested that qualitative research and the development of a coherent theory are needed to further knowledge in this area (Shieh et al., 2001; Laxton-Kane and Slade, 2002; Walsh et al., 2013; Birtwell et al., 2015). Such research would allow for a deeper understanding of this complex phenomenon.

Existing conceptualisations of the tie that parents develop with the fetus have been based on attachment theory (Cranley, 1981; Condon, 1993; Müller, 1993). Therefore, an outline of this theory, in the way it relates to the antenatal tie, will follow in the next section of this review, together with an overview of questions that have been raised with regards to the suitability of applying the theory in this context.

1.4 Attachment theory

1.4.1 Introduction

The unique tie that develops between expectant parents and their unborn child, as it relates to how the fetus is conceptualised, is often referred to pre/ante-natal, or parental–fetal ‘attachment’, and indeed, it has its origins in the attachment theory (Laxton-Kane and Slade, 2002; Walsh, 2010). Adult attachment principles have been applied to the PFT to explain how expectant mothers and fathers attempt to get acquainted with, maintain proximity to, protect, and fulfil the needs of the fetus (Condon, 1993; Laxton-Kane and Slade, 2002). To allow for analysis of the applicability of attachment theory to the PFT, an outline of the theory will follow, highlighting issues concerning the use of the theory in explaining antenatal ties.

Attachment theory is based on the premise that human beings depend on others to help regulate their emotions, particularly in infancy and childhood, but also later in life (Mikulincer and Shaver, 2008). Initially developed by John Bowlby in the 1950s, the theory suggests that, across cultures, secure, robust early attachment relationships with sensitive primary caregivers are of critical importance for the healthy development of the individual and their later functioning, particularly in terms of emotion regulation, social functioning, and cognitive growth (Cassidy, 2008; van Ijzendoorn and Sagi-Schwartz, 2008).

The theory, as proposed by Bowlby (1969) and Ainsworth (1989), suggests that the attachment bond can be distinguished from other ‘affectional bonds’, by the existence of a specific criterion; that the individual seeks comfort, protection, and security in the attachment relationship. Thus, Bowlby (1969) suggested that use of the term

'attachment' should only be used to describe the child-to-parent aspect of familial relationships, and not the reverse (Cassidy, 2008). This is because, under normal circumstances, parents do not seek security from their young children (Bowlby, 1969). As Walsh (2010) emphasises, attachment concerns care-seeking, as opposed to caregiving.

This argument is also applicable to the antenatal period, where expectant mothers and fathers are not expected to appeal to the fetus for comfort when faced with threats. This has been one of the main objections to describing a parent's conceptions of their unborn child as an attachment bond (Van den Bergh and Simons, 2009; Walsh, 2010; Walsh et al., 2014). The dissimilarity between the MFT and post-birth attachment is highlighted in empirical research by Della Vedova et al. (2008), which concluded that the affectionate tie that a mother develops towards the unborn child is unique. The risk is that using an inappropriate theoretical framework as a basis for related research may compromise the reliability of conclusions, and lead to recommendations which are not effective in supporting parents and their offspring (Walsh, 2010; Walsh et al., 2013; Walsh et al., 2014).

1.4.2 Measurement of attachment and issues of reciprocity

Infants are thought to have an inherent drive to maintain physical and psychological proximity to a primary caregiver (Bowlby, 1958). Predictable attachment behaviours, such as crying, and clinging, are displayed in response to a perceived threat, such as pain, hunger or the presence of a stranger, to generate comfort and protection from the caregiver (Shaver and Fraley, 2008).

The quality of the infant-caregiver attachment bond is commonly assessed through the use of a procedure known as the Strange Situation, developed by Ainsworth and Wittig (1969). The procedure aims to reveal individual differences in the patterns of attachment relationships, as influenced by expectations regarding the availability of a particular caregiver in stressful situations, resulting from patterns of interaction that have developed over time (Weinfield et al., 2008).

A further concern with applying Bowlby's (1969) theory to the PFT is related to reliable evaluation. Although the theory is based on the supposition of reciprocal elements in the attachment system, it must be recognised that it is impossible to explore the fetal side of the tie during the gestational period, even if an intrauterine fetal phenomenon that promotes attachment to the mother and father does exist (Wilson et al., 2000; Brandon et al., 2009; Van den Bergh and Simons, 2009). While access to the infant allows for observation of attachment behaviour; no equivalent is available before the birth (Laxton-Kane and Slade, 2002).

Thus, what researchers exploring the PFT are truly studying are unidirectional parental cognitive, emotional and affective processes concerning the unborn child (Doan and Zimmerman, 2003; Redshaw and Martin, 2013). The individual characteristics of the child, and actual interaction between the fetus and the parent probably have little effect on the development of this type of tie. However, Brandon et al. (2009) argue that technological advances, such as fetal imaging, allow parents to individualise the unborn child and conceivably provide context for reciprocity assignment.

Such concerns have led to uncertainty about the validity of inventories that have been developed to measure antenatal attachment (Cranley, 1981; Condon, 1993; Müller,

1993), given their basis in attachment theory. It has been suggested that such tools may simply act as attitude measures, being heavily influenced by adjustment issues and social desirability bias (Brandon et al., 2009). These observations may go some way to explaining the inconsistent results gained when measuring PFA, and attempting to determine antecedents and correlates of the tie using existing measures (Yarcheski et al., 2009).

It may be that what existing tools are measuring does not accurately represent parental understandings of their tie to the fetus, or that the PFT does not lend itself to accurate measurement through self-report measures, given its complexity, and the variability between individuals (Van den Bergh and Simons, 2009). Further exploratory research and a theoretical framework could serve to clarify the true nature of the tie (Shieh et al., 2001; Laxton-Kane and Slade, 2002; Walsh et al., 2013; Birtwell et al., 2015).

1.4.3 Differences between maternal and paternal attachment

Bowlby (1969) suggested that most infants form an attachment to multiple caregivers. In traditional families, both the mother and father are likely attachment figures (Ainsworth, 1967; Cassidy, 2008), even though in many cultural contexts men spend less time caring for their infant than do women (Grossman et al., 2008; van Ijzendoorn and Sagi-Schwartz, 2008; Lamb and Lewis, 2010). Both parents have been identified as playing an important role in the longitudinal developmental achievement of attachment security, or insecurity, in their children (Grossman et al., 2008).

However, there is a supposition that an 'attachment hierarchy' is often present within family contexts, as influenced by factors such as the amount, consistency and quality of time spent with the caregiver, and the caregiver's emotional investment in the

relationship (Colin, 1996; Cassidy, 2008). According to Bowlby (1969) and Ainsworth (1964), a primary attachment figure, often the mother, is preferentially sought for comfort in times of distress.

Observational research has identified that, in traditional families, fathers typically play a role that is different, but complementary, to that of the mothers (Grossmann et al., 2002). The main contribution of mothers in the attachment relationship may be to console and alleviate distress through caregiving sensitivity (Grossman et al., 2008). The father, on the other hand, is thought to mainly provide 'play sensitivity', acting as a dependable and trusted partner who encourages the exploratory facet of attachment development, while also providing the necessary security (Grossmann et al., 2002; Grossman et al., 2008).

Although differences in mothers' and fathers' post-birth attachments with the child are starting to be acknowledged in the literature, they are not well accounted for when extrapolating to the antenatal tie. There seems to be an assumption in previous conceptualisations that MFA and paternal-fetal attachment are virtually identical (Weaver and Cranley, 1983; Condon, 1993; Armstrong, 2000), a supposition that does not appear to have been well substantiated by inductive research. The tools used to measure the relationship in mothers and fathers are, in fact, very similar. They differ only in the wording, which is rewritten according to gender perspective, and the omission, in the paternal version, of items related to the physical sensations associated with the pregnancy (Weaver and Cranley, 1983; Condon, 1993; Armstrong, 2000). As already mentioned, before conducting the current research, it was unknown whether maternal- and paternal-fetal ties demanded somewhat different conceptual frameworks and measurement tools. Given that it is only the mother that can genuinely

speak of physical contact with the unborn child, it was thought that the father's antenatal tie might primarily exist on a conceptual level (de Cock et al., 2015).

1.4.4 Internal working models regarding attachment

A major assumption of Bowlby's theory (1969), is that early attachment relationships are carried forward through representational models. These models consist of conceptions regarding the environment and significant individuals within it, that impact on future social experiences and the stability of later relationships (Bowlby, 1973; Cassidy, 2008).

These accumulated representations, of the self, of the environment, and of attachment figure(s), act to guide interactions with caregivers, becoming increasingly complex as the child develops (Bretherton and Munholland, 2008). The internalisation of these representations, derived from experiences with several attachment figures over time, become relatively stable (McCormick and Kennedy, 1994), and eventually influence the individual's social experiences in adulthood (Colin, 1996; Simmons et al., 2009), including romantic relationships (Crowell et al., 2002; Treboux et al., 2004) and those developed with their offspring (Slade and Cohen, 1996; Slade et al., 1999; Krause, 2013). Attachment in adulthood is presumed to be influenced by early attachment experiences, current relationships, and recent losses (Jones et al., 2015).

Adult attachment representations have often been linked to the caregiving system. The assimilation model of caregiving asserts that the foundation of the caregiving system is primarily determined by the individual's attachment history (George and Solomon, 2008; Jones et al., 2015), although it is emphasised that caregiving has its own developmental trajectory (Solomon and George, 1996).

Research has shown that mothers with more secure attachment representations are inclined to have more positive perceptions of themselves, and to be more coherent and flexible in portrayals of themselves as mothers. On the other hand, those with insecure attachment tend to have more cynical, incoherent, and distorted representations of themselves in the maternal role (Ammaniti, 1991; Ammaniti et al., 1992; George and Solomon, 1996; Slade and Cohen, 1996).

The assimilation model has been extended further to theorise that a parent's attachment security is typically also related to the attachment bond that any offspring then develop with that parent, as influenced by how the parent interacts with, and relates to, the child (Fonagy and Target, 2005; Madigan et al., 2006; Jones et al., 2015). This link is referred to as the 'intergenerational transmission model' (Belsky, 2005) and it has been substantiated by meta-analytical evidence showing a substantial amount of concordance between parent and child attachment classifications in Western societies (van Ijzendoorn, 1995). A later meta-analysis confirmed that maternal and paternal sensitivity mediates, to a certain extent, the link between parental and infant attachment security (DeWolff and Van Ijzendoorn, 1997).

The points outlined above illustrate the importance of the attachment system in the development of the 'caregiving behavioural system' (Laxton-Kane and Slade, 2002). Maternal adult attachment styles, and memories of childhood experiences in the family of origin, have also been found to be associated with MFA (Priel and Besser, 2000; Siddiqui et al., 2000; Priel and Besser, 2001; Alhusen et al., 2013; Chrzan-Dętkoś and Łockiewicz, 2015). However, this association does not negate the arguments regarding the unsuitability of using the term 'attachment' to describe the PFT. Instead, it supports the likelihood that this kind of link may be partially explained through the assimilation

model of caregiving. A single study, by Walsh et al. (2014), has found a relationship between responsive caregiving to the partner and more optimal MFA. The authors suggest that this area of research requires further exploration and clarification.

1.4.5 Summary

Attachment theory has been used as a basis on which to build concepts regarding the PFT. However, fundamental to attachment is the bi-directional psychological and social interaction of a child with their caregiver to elicit comforting and protective behaviour. The antenatal relationship is, conversely, mainly unidirectional, and concerns parental cognitive and emotional reactions to the unborn child (Redshaw and Martin, 2013). Thus, given this and other challenges outlined in the above sections, we may conclude that attachment theory may not be the most appropriate framework to explain the true nature of the parental tie with the unborn child. The tie built between parents and their unborn child is likely to be a multi-faceted construct, which needs to be conceptualised differently to post-birth attachment, and that may be more closely related to the caregiving system (Laxton-Kane and Slade, 2002; Brandon et al., 2009; Walsh, 2010; Redshaw and Martin, 2013).

1.5 The ‘caregiving behavioural system’

1.5.1 Introduction

The caregiving system is a behavioural system that is reciprocal to attachment (Bowlby, 1969), and which functions to organise parenting cognitions, emotions, and behaviours that relate to protecting one’s offspring from danger (Jones et al., 2015). Researchers such as Laxton-Kane and Slade (2002) and Walsh (2010) have suggested that greater

integration with theory based on the caregiving system may allow for a better explanation of the origins of the PFT.

During pregnancy, mothers often feel obliged to make responsible, informed choices that promote and safeguard the wellbeing of the unborn child (Jomeen, 2010). The centrality of the sense of maternal protectiveness as a prominent feature of the antenatal tie has been brought to light through qualitative research exploring the meaning of MFA (Sandbrook and Adamson-Macedo, 2004). Furthermore, a literature review by Shieh et al. (2001) identified altruistic attachment, defined as an inclination to protect the fetus, as one of the critical attributes of MFA. These findings lend credence to the possibility that elements of the caregiving behavioural system are instrumental in the formation of the PFT. However, Walsh (2010) cautions that the relationship is likely to be more complicated than can be explained by one behavioural system alone.

The caregiving behavioural system has not been explained in any depth in relation to the gestational period. However, if it does play a predominant role in the development of the PFT, several potential implications need to be considered.

1.5.2 Development of the caregiving system

The development of parenting behaviour is thought to be influenced by multiple interacting factors, such as individual characteristics of the parent and the infant, as well as contextual circumstances in the caregiving environment (Belsky, 1984). In his limited writings about caregiving, Bowlby proposed that the behavioural system is partially biologically-based, but is primarily shaped through a learning process (Bowlby, 1984). Although it has functional and developmental links to attachment, caregiving is

regarded to be a distinct behavioural system in its own right (Solomon and George, 1996).

The most significant development in the caregiving system is thought to occur during the transition to parenthood, commencing during pregnancy, and influenced by an interplay of biological, psychological, and social changes (George and Solomon, 2008). The accomplishment of this transition results in a mindset of protecting their child, in contrast to previous mental organisations of self as the child who seeks safety (Solomon and George, 1996).

1.5.3 Activation of the caregiving system

A parent's ability to regulate his/her child's fear and distress is critical to the sense of security that the child develops over time (Lyons-Ruth and Spielman, 2004). The caregiving system is thought to be activated and deactivated through a complex interplay of factors, governed by internal and external cues (Cassidy, 2000), such as attachment behaviours exhibited by the infant, hormonal changes, state of wellbeing of the infant, and appraisal of the level of threat in the environment (Dozier, 2000; Corter and Fleming, 2002; Krpan et al., 2005; Cassidy, 2008; Strathearn et al., 2009).

Threat appraisal and the parental desire for proximity as integral elements of the caregiving system require a different interpretation if they are to be applied in the context of the PFT. They could have implications for parental reactions to complications and threatened loss of pregnancy. Research assessing the effect of a high-risk pregnancy on the strength of MFA, using existing self-report tools, are mixed (Laxton-Kane and Slade, 2002). Some studies have found no association between maternal risk status and MFA (Lindgren, 2001; Brandon et al., 2008; Ustunsoz et al., 2010), while others have

found that a lower risk status may be associated with more optimal MFA (White et al., 2008; Eswi and Khalil, 2012). Diagnosis of a non-lethal fetal abnormality has not been found to impact MFA negatively, and in fact may stimulate the mother's protective inclination and result in a stronger antenatal fetal tie (Hedrick, 2005; Ruschel et al., 2014).

The caregiving system works within other motivational and parental systems (Stevenson-Hinde, 1994). The caregiver must sometimes cope with several simultaneous demands, such as fulfilling the attachment needs of several children and managing multiple roles, such as that of a mother, a spouse and an employee (Solomon and George, 1996; Cassidy, 2008). Parents must find a balance with regards to the investment that they put into the provision of protection and nurturance of the child, alongside the meeting of other demands and desires (Solomon and George, 1996).

The extent to which parents prioritise caregiving tasks over other competing behavioural pressures is likely to be influenced by a variety of socio-contextual variables, including the support available to, and additional demands placed on, the caregiver, their caregiving experiences thus far, as well as their childhood and adulthood attachment experiences (Solomon and George, 1996). Furthermore, the parent's psychological wellbeing, economic stability, cultural mores and co-parenting relationship also exert a powerful influence on the developing behavioural system, either supporting it or interfering with it (George and Solomon, 1999; Coyl et al., 2002; Huth-Bocks et al., 2004a; Cowan et al., 2005; Solmeyer and Feinberg, 2011).

It is likely that such socio-contextual variables would also affect the PFT formed in pregnancy if this is truly predominantly influenced by the caregiving system. This

potential link gives rise to questions such as whether expectant parents who do not have sufficient social support, for instance, would be less able to focus on building a tie with the fetus. These suppositions are partially supported by existing research. Social support, for example, emerged as the most powerful psychosocial predictor of MFA in a meta-analysis by Yarcheski et al. (2009), with a moderate effect size.

1.5.4 Variance in caregiving behaviour

Caregiving exists on a continuum of approaches and strategies, ranging from those parents who prioritise their own needs over those of their offspring to those who emphasise the child's needs over their own (Solomon and George, 1996). This variation may also apply in pregnancy with, for example, some research having linked more optimal MFA to the adoption of positive health practices (Lindgren, 2001; Lindgren, 2003; Alhusen et al., 2012b).

The ideal caregiving system is characterised by behaviour that is stable, flexible, and integrated. Many studies have linked these parental qualities to secure attachment in children (George and Solomon, 1996; Oppenheim and Koren-Karie, 2002; Bernier and Dozier, 2003; Slade et al., 2005). Adults who struggle to balance their own emotions may find difficulty coping with the trials and pressures associated with child-rearing, and be unable to respond to their children with sufficient compassion and empathy (Jones et al., 2015).

This link could suggest that expectant parents with psychological health issues may develop a less optimal fetal tie. This possibility is all the more likely given that, in the postpartum period, maternal depression has been linked to impairments in the mother-child relationship, with such children being more likely to be insecurely attached than

those of non-depressed mothers (Murray et al., 2014). However, associations between PFA and antenatal depression, anxiety, and stress have been inconsistent, with small effect sizes found in the meta-analysis by Yarcheski et al. (2009). Researchers have suggested that such variance could be attributed to the use of disparate measurement tools and complex relationships which are not easily detected through cross-sectional research (Kunkel and Doan, 2003).

1.5.5 Maternal and paternal caregiving

Existing literature provides little information regarding the distinction between maternal and paternal caregiving systems. It is clear that fathers can, and often do, act as sensitive, responsive and engaged caregivers to their children (Parke, 2000; Belsky et al., 2005). However, it is as yet unknown whether, within a family unit, it is best to conceptualise caregiving as a single parental system, or whether the mother's and father's caregiving should be considered separately, while acknowledging substantial overlap (Cassidy, 2008). Hormonal, genetic and cultural influences likely have a considerable impact on distinct features that characterise caregiving across genders (Cassidy, 2008; George and Solomon, 2008).

Both caregiving system related research and PFA research have focused predominantly on mothers, leaving significant gaps in our knowledge about the father. With respect to the PFT, as already discussed, before the conduct of the current research, it was similarly unclear how maternal and paternal ties with the unborn child compared, although initial indications suggested that aspects of the antenatal tie possibly differed by parental gender (Ustunsoz et al., 2010; Abasi et al., 2012).

1.5.6 Summary

The research highlighted in the above sections suggests that there is at least a partial link between the caregiving system and the tie that develops between parents and their unborn children. The connection between these two concepts has not been explored in any detail in existing literature, and the extent to which the behavioural system can explain the development of antenatal tie, as well as its limitations in this respect, are still largely undetermined.

The next section of the background chapter will provide a brief outline of research related to the PFT, including sections regarding existing conceptualisations of PFA, tools developed to measure the relationship, and predictors and correlates of the tie.

1.6 Current thinking regarding the parental-fetal tie

1.6.1 Existing conceptualisations of the parental-fetal tie

Cranley (1981) is credited with the development of the first construct of MFA, defining the concept as, “the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child” (Cranley, 1981:282). However, this conceptualisation, and the associated scale, the Maternal-Fetal Attachment Scale (MFAS) (Cranley, 1981), have been criticised for focusing too much on the behavioural aspect of the tie, which is also thought to include emotional and cognitive aspects (Doan and Zimmerman, 2003). This focus may not accurately reveal the extent of parental conceptions, particularly as related practices may be primarily determined by cultural background (Müller, 1993).

In addition to maternal behaviours, Müller (1993) emphasised the importance of women's fantasies and thoughts about the fetus. She defined MFA as "the unique, affectionate relationship that develops between a mother and her fetus" (Müller, 1990:11). It was suggested that PFA gradually develops over the pregnancy, beginning as curiosity, and gradually evolving into affection (Müller and Ferketich, 1992). Müller (1993) highlighted the significance of early childhood influences, particularly the mother's attachment to her own mother, on her ability to form relationships with others, including the unborn child. She created an additional tool, the Prenatal Attachment Inventory (PAI) (Müller, 1993), intended to be used in conjunction with the MFAS, that aims to assess the affiliative component of the developing tie between a mother and her fetus, including attributes such as fantasies, preparedness, affection, and interaction (Pallant et al., 2014).

Condon and Corkindale (1997:359) defined antenatal attachment as, "the emotional tie or bond which normally develops between the pregnant parent and her unborn infant". Condon (1993:170-171) suggested that antenatal attachment could be explained as an evolving relationship where the mother aims, "to know", "to be with", "to avoid separation or loss", "to protect" and "to identify and gratify the needs of her fetus". The researcher also suggested that the emotional tie develops in concert with increasingly elaborate internalised representations of the unborn child (Condon, 1993). This conceptualisation resulted in the development of the Maternal Antenatal Attachment Scale (MAAS) (Condon, 1993), which exclusively measures thoughts and feelings about the fetus, with the rationale that previous tools did not sufficiently differentiate between maternal attitude towards the fetus, and her reaction to the pregnancy and motherhood (Alhusen, 2008).

While Condon (1993) proposed that the core of antenatal attachment is 'love', other qualitative research has disputed this view. Sandbrook and Adamson-Macedo (2004) suggested that the overwhelming maternal feeling related to the fetus is protective, with participant narratives suggesting that genuine emotions of love would only occur following the birth. The phenomenological study further identified that while MFA is characterised by ambivalence and fear of fetal loss in the early gestational period, it progresses rapidly as fetal viability becomes more likely. The study's findings suggest that MFA is influenced by the extent of support received from partners and other family members and that the maternal instinct to protect provides motivation for changes in behaviour that encourage fetal wellbeing (Sandbrook and Adamson-Macedo, 2004).

Doan and Zimmerman (2003), in noting that the diverse interpretations of PFA may compromise our understanding of the true nature of the underlying phenomenon, attempted to integrate the existing conceptualisations of PFA into one definition, incorporating emotional, behavioural, and cognitive elements:

An abstract concept, representing the affiliative relationship between a parent and fetus, which is potentially present before pregnancy, is related to cognitive and emotional abilities to conceptualize another human being, and develops within an ecological system.

(Doan and Zimmerman, 2002:185)

They stress that the individual's identity and experiences before the pregnancy are likely, through ongoing developmental patterns, to influence expectant parents' ability to form an attachment to the unborn child (Doan and Zimmerman, 2003). They propose qualities that may aid the development of antenatal attachment, such as secure

attachment to one's parents, the cognitive capability to develop an internal representation of the unborn child as separate from self, and a sense of sensitivity and reciprocity in fetal conceptualisations (Doan and Zimmerman, 2003).

In a concept analysis, Shieh et al. (2001) suggested that there are three critical contributing attributes of MFA:

- Cognitive attachment, the desire to know and understand the baby. This comprises visualisation of the unborn child through fantasy and conceptualisation, as well as the assignment of characteristics to the fetus.
- Affective attachment describes the pleasure related to thoughts about, and interactions with, the fetus, such as the gratifying experience of fetal movement sensation.
- The desire to protect the fetus, along with physical preparation for the infant's arrival, is included under the heading of altruistic attachment. This attribute includes maternal behaviour that shows concern for the baby's health.

1.6.2 Link to the concept of internal representations

The capacity to conceptualise, and fantasise about, the unborn child is thought to be governed by cognitive skills (Condon, 1993; Shieh et al., 2001; Doan and Zimmerman, 2003). Initial research has explored the link between parental representations of the unborn child and PFA (Vreeswijk et al., 2014). Representations, or internal working models, can be described as mental constructions of reality emerging from expectations, memories, and perceptions, that regulate both one's interpersonal behaviour and sense of self (Larney et al., 1997). Maternal representations are thought

to play an important mediating role between a mother's personal history and her interactive behaviour with her children (Flykt et al., 2012).

A mother's representations of the infant in the antenatal period are believed to originate from reactivation of representations of the woman's own childhood experiences and relationships with early carers, along with existing representations of the self-as-woman, and of the child's father (Vizziello et al., 1993). However, these influences are mainly speculative (Benoit and Parker, 1994). During this period, previously existing representations are believed to undergo considerable dynamic adaptations (Flykt et al., 2012). Ideally, this process results in the mother visualising the infant as an individual, with an identity separate from her own, who requires both care and autonomy (Malone et al., 2010).

The concept of maternal representations is broader than that of the PFT and focuses on the exploration of the mother's mental world (Ammaniti et al., 2013). However, it similarly includes the mother distinguishing the unborn child as a unique individual with stable temperamental characteristics (Ammaniti et al., 1992). This similarity may signify that antenatal representations and attachment research reflect different underlying conceptualisation of a homogeneous construct, using dissimilar terminology (Walsh, 2010). However, work looking into maternal representations of the unborn child arguably cannot capture the totality of the PFT, given that it is limited to addressing the cognitive aspect of the tie, and cannot fully attend to behavioural and emotional components (Doan and Zimmerman, 2003).

1.6.3 Measuring the relationship

The abstract nature of the concept of the PFT has not deterred researchers from developing instruments aiming to assess and measure it. The underlying assumption behind self-report MFA scales is that the attachment to the fetus is evident in parental thoughts and feelings, behaviours, and attitudes that show commitment and care to the unborn child (Van den Bergh and Simons, 2009). It is also presumed that a woman is conscious of the measured factors, acknowledges them, and can rate them on a Likert-scale (Van den Bergh and Simons, 2009).

A review by Van den Bergh and Simons (2009) described the most frequently used scales that measure the MFA. These are the MFAS (Cranley, 1981), the MAAS (Condon, 1993), and the PAI (Müller, 1993). Many of the available tools have also been adapted for use in expectant fathers.

Each instrument available for quantifying antenatal relationships appears to measure diverse aspects of the phenomenon and have a different underlying factor structure (Yarcheski et al., 2009), with the individual scales not necessarily incorporating all the critical characteristics (Müller, 1993; Shieh et al., 2001). Studies have revealed a tendency for answers on questionnaires measuring PFA to be affected by social desirability bias (Hjelmstedt et al., 2007). Furthermore, Van den Bergh and Simons (2009) suggest that the scales, which assess overt behaviour, may not be able to elicit the full meaning of the concept they are constructed to assess.

These issues are likely to have contributed to the highly inconsistent results of research that has attempted to determine the predictors and correlates of PFA. It has been suggested that problems in quantification can interfere with our understanding of PFA

(Yarcheski et al., 2009; Walsh, 2010), and that measurement issues may reflect problems in the underlying theoretical base (Condon, 1993). These concerns underpin the need for further endeavours to elucidate the true meaning of this construct.

1.6.4 Predictors and correlates of the parental-fetal tie

Development of the parental-fetal tie during pregnancy

It is widely acknowledged that PFA increases throughout the gestational period (Lumley, 1982; Sandbrook and Adamson-Macedo, 2004; Sjögren et al., 2004; Hjelmstedt et al., 2006; Hjelmstedt et al., 2007; Rowe et al., 2009; Habib and Lancaster, 2010; Barone et al., 2014). In fact, an increasing gestational age was identified as the most reliable predictor of the strength of MFA in the meta-analytic study by Yarcheski et al. (2009), with a moderate to substantial effect size. MFA is also thought to be enhanced by quickening, the sensation of fetal movements (Damato, 2000; Damato, 2004a), which may encourage a maternal perception of the fetus as more 'real' (Laxton-Kane and Slade, 2002).

Links between the maternal-fetal tie and health practices during pregnancy

As previously discussed, MFA is thought to be related to mothers' health behaviours and self-care during pregnancy (Van den Bergh and Simons, 2009). A correlation between more optimal MFA and engagement in health practices has been established in inner-city women (Lindgren, 2001; Lindgren, 2003), and in a low-income urban sample (Alhusen et al., 2012b). Furthermore, in smokers, less optimal MFA has been linked to a higher number of cigarettes smoked every day (Magee et al., 2014). Given the cross-sectional nature of these studies, it is not possible to determine causality. However,

qualitative research by Ross (2012) suggests that this link can function in both directions. Participant narratives suggested that while the tie that women felt towards the unborn child influenced engagement with health advice, adherence to health practices also promoted heightened awareness of the fetus (Ross, 2012). Links to maternal health behaviour suggest that defining the PFT construct more accurately through in-depth research, and using this knowledge to develop potential interventions to support such behaviours, could be a valuable endeavour.

Associations between psychological factors and the parental-fetal tie

Feelings of worthlessness and guilt, and disturbances in social functioning, typical attributes of depression, may negatively influence expectant mothers' conceptualisation of, and confidence in, their abilities in their prospective role, which could, in turn, affect MFA (McFarland et al., 2011).

Results in the literature regarding the association between PFA and antenatal psychological compromise have been highly inconsistent. While some research has suggested that psychological ill health may be associated with less optimal antenatal attachment (Lindgren, 2001; Figueiredo and Costa, 2009; McFarland et al., 2011; Abasi et al., 2012; Alhusen et al., 2012a; Goecke et al., 2012; Ossa et al., 2012; Maas et al., 2014), others have not discovered such a relationship (Honjo et al., 2003; Haedt and Keel, 2007), or within-study results have been mixed (Hart and McMahon, 2006; White et al., 2008; Seimyr et al., 2009; Zachariah, 2009; Barone et al., 2014; Diniz et al., 2014; Vreeswijk et al., 2014; Walsh et al., 2014; Diniz et al., 2015)

Kunkel and Doan (2003) have shown that inconsistencies found in the relationship between PFA and depression can again, to a degree, be attributed to the use of disparate measurement tools.

Influence of social support on the parental-fetal tie

Social support has been identified as an important psychosocial factor for parental wellbeing in pregnancy and over the transition to parenthood (Belsky, 1984; Balaji et al., 2007). However, results concerning the link between social support and PFA have been somewhat conflicting, possibly due to the use of differing data collection tools and other methodological factors.

Nevertheless, tentative conjectures can be made. It appears that in vulnerable populations, such as socio-economically disadvantaged individuals (Zachariah, 2004; Alhusen et al., 2012a) or adolescent mothers (Feldman, 2007; Diniz et al., 2014; Diniz et al., 2015), the presence of emotional support may promote a stronger MFA, possibly by attenuating the influence of psychological factors (McKee et al., 2001; Jesse et al., 2005; Alhusen et al., 2012a).

The relationship is less clear in non-vulnerable populations (Damato, 2004a; White et al., 2008; Lewis, 2009; Ossa et al., 2012; Maas et al., 2014). This may be due, as Damato (2004a) and White et al. (2008) suggest, to less variability in the level of social support in middle-class families. There may be a 'ceiling effect' in the influence of social support on MFA, above which the influence of this variable decreases. The focus on different facets of social support, such as that from the family of origin, that from the intimate partner, or non-specific social support, complicates attempts to compare results across studies and reach a meaningful conclusion.

Longitudinal outcomes of the parental-fetal tie

The MFA that is built during pregnancy is thought to be a precursor to the maternal-infant attachment that develops after birth (Hjelmstedt and Collins, 2008), and through this avenue, is believed to play a vital role in the child's physical wellbeing and cognitive and emotional development (Siddiqui and Hagglof, 2000). Such an interrelationship would offer an early opportunity to identify, and potentially treat, those at risk of developing impaired relations with their child. In fact, PFA has been identified as a predictor of later postnatal bonding in both men (Hjelmstedt and Collins, 2008; Condon et al., 2013) and women (Damato, 2004b; Edhborg et al., 2011; Alhusen et al., 2013; Dubber et al., 2014).

Condon et al. (2013) suggest that the predominant contribution to a parent's attachment to their infant may not result from interaction with the infant, but instead be rooted in an individual's intrinsic ability to form such bonds, thus allowing activation through imagination even before the birth. The findings are further supported by research that has found a high degree of stability in the quality of representations of the infant across the antenatal and postnatal periods (Theran et al., 2005).

Positive correlations have linked the strength of MFA and later observed behaviour such as maternal sensitivity (Alvarenga et al., 2013), her involvement with and stimulation of the infant (Siddiqui and Hagglof, 2000), and self-reported maternal concern (Lai and Tang, 2008) in the infant's first year of life. Foley and Hughes (2018), in a meta-analytic review, identified that parental antenatal thoughts and feelings about the fetus were modestly but significantly associated with observed ratings of parent-child interaction

quality in the postpartum period, with the strength of this relationship being stronger for women than for men.

From results such as these, researchers have inferred that a lack of commitment to the unborn child may have negative implications for subsequent parenting behaviour (Alvarenga et al., 2013). However, these results have not been consistent, with other research finding that MFA was not related to observed maternal behaviour (Diniz et al., 2015), or aspects of this, such as responsive behaviour (Siddiqui and Hagglof, 2000). Links between MFA and mind-mindedness, a parental ability to regard their child as an individual with a mind of their own, have been mixed (Arnott and Meins, 2008; McMahon et al., 2016).

Thus, although the strength of PFA in the gestational period does appear to have some influence on the bond to the infant following the birth, influences on parenting behaviour are less certain, albeit likely.

1.6.5 Summary

PFA has attracted considerable interest. Researchers have attempted to define the term, measure the phenomenon, and determine its predictors and correlates, both in the antenatal and postpartum periods (Doan and Zimmerman, 2003). Despite this, no consistent model is yet available to guide clinical practice, and researchers have suggested that the development of a theoretical framework, formulated through in-depth qualitative research, is critically needed to enhance understanding of the construct (Shieh et al., 2001; Laxton-Kane and Slade, 2002; Walsh et al., 2013; Birtwell et al., 2015). The lack of such a theoretical framework may go some way to explaining the largely inconsistent results found in related correlational research. This concern and

other weaknesses in the field of knowledge that relates to PFA are summarised in section 2.4, where the need for the research detailed in this thesis is justified.

Exploring contextual background issues has served to give the researcher a clear understanding of concepts that may prove relevant to understanding the development of the PFT. Nevertheless, the researcher is committed to maintaining reflexivity to ensure that the resultant theory is derived from the generated data, using existing knowledge only for the theoretical sensitivity necessary to conduct the research rigorously.

Chapter 2 comprises a review of interventions addressing PFA. The chapter will commence by discussing the rationale for focusing on this particular aspect of PFA literature.

Chapter 2 Narrative Literature Review

2.1 Introduction

The purpose of this narrative review was to collate and describe the effects of interventions that have addressed the parental tie to the unborn child. The decision to focus on intervention research was taken after careful consideration, bearing in mind the GT principle that review of pertinent literature should be kept to a minimum, allowing the researcher to enter a field relatively free of preconceived ideas about the phenomenon (Glaser, 1978; Strauss and Corbin, 1998). Thus, following an approach suggested by Charmaz (2014), the researcher sought to complete a sharply focused review, which served to inquire further into the need for research reconsidering the conceptual underpinnings of the PFT and to confirm the appropriateness of the research design being considered.

Prioritising studies that sought to address the PFT allowed insight into the overall efficacy of such interventions. This was important to establish given concerns about the understanding of the inherent nature of the construct, as influenced by incomplete or ineffective theoretical frameworks. While acknowledging the importance of taking action to support the tie that expectant parents develop with their unborn child, it may be too early to develop interventions that address it before gaining a more thorough grasp of its inner workings. Attempting to influence the PFT before the attainment of such an understanding risks resulting in a waste of resources and, possibly, adverse effects. Focusing on intervention research also allowed for a demonstration that the tools currently being used to

measure PFA may not be able to fully capture the breadth and depth of the phenomenon being investigated.

2.2 Literature review methodology

2.2.1 Search strategy

A systematic search strategy was formulated to identify published primary research relating to interventions addressing the PFT.

Electronic searches of major social and health science databases were conducted to retrieve English language publications. A total of five databases were searched: Cumulative Index of Nursing (CINAHL) (2005 – 8th November 2015), Cochrane Library of Controlled Trials (2005 - 8th November 2015), MEDLINE (2005 – 8th November 2015), PsycINFO (2005 – 8th November 2015), and Web of Science (2000 – 8th November 2015).

A predefined combination of pertinent search terms was used in the search, as shown in Table 2.1. An example of how the search terms were combined is presented in Table 2.2, which shows the search used in the Web of Science database.

To bring the narrative review up to date and to ensure that it incorporated the recent literature on the topic, the database searches were repeated on the 28th February 2020.

Criterion A	Criterion B	Criterion C	AND	Criterion D	
Prenatal	F*etal	Attachment			Clinical Trial
OR Antenatal	OR F*etus	OR Relationship			OR Experimental Study
OR Maternal		OR Representation			OR Controlled Trial
OR Paternal		OR Bond*			OR Controlled Study
OR Parental					OR Intervention*
OR Mother					OR Random Assignment
OR Father					OR Random Allocation
OR Parent					OR Experimental Group
					OR Time point
					OR Randomi*ed

Table 2.1 - Search terms

(‘prenatal attachment’ OR ‘prenatal relationship’ OR ‘prenatal representation’ OR ‘prenatal bond*’ OR ‘antenatal attachment’ OR ‘antenatal relationship’ OR ‘antenatal bond*’ OR ‘antenatal representation’ OR ‘maternal f*tal attachment’ OR ‘maternal f*tal relationship’ OR ‘maternal f*tal representation’ OR ‘maternal f*tal bond*’ OR ‘paternal f*tal attachment’ OR ‘paternal f*tal relationship’ OR ‘paternal f*tal representation’ OR ‘paternal f*tal bond*’ OR ‘parental f*tal attachment’ OR ‘parental f*tal relationship’ OR ‘parental f*tal representation’ OR ‘parental f*tal bond*’ OR ‘mother f*tus attachment’ OR ‘mother f*tus relationship’ OR ‘mother f*tus representation’ OR ‘mother f*tus bond*’ OR ‘father f*tus attachment’ OR ‘father f*tus relationship’ OR ‘father f*tus representation’ OR ‘father f*tus bond*’ OR ‘parent f*tus attachment’ OR ‘parent f*tus relationship’ OR ‘parent f*tus representation’ OR ‘parent f*tus bond*’) AND (‘clinical trial’ OR ‘experimental study’ OR ‘controlled trial’ OR ‘controlled study’ OR ‘intervention*’ OR ‘random assignment’ OR ‘random allocation’ OR ‘experimental group’ OR ‘control group’ OR ‘randomised’ OR ‘randomized’)

Table 2.2 - Search term combination used in the Web of Science database

In the initial stage of the search, the titles and abstracts of retrieved papers were checked for relevance to the PFT. Where it was determined that a paper was potentially eligible, the full text was acquired for further scrutiny from the relevant electronic journal, webpage or through the inter-library loan service offered by the University of Hull. The identified papers were then read through to establish the papers that met the eligibility criteria for inclusion in the review. The reference lists of articles which qualified for inclusion were searched to locate further eligible publications, and search alerts were created in the databases to enable notification of new results on saved searches.

The researcher conducted this process, with uncertainties about eligibility being resolved through discussion with the supervisory team.

2.2.2 Eligibility criteria

Papers eligible for inclusion were those which:

- Focused on an intervention that addressed PFA;
- Were published up to 10 years before the initial literature search (from 2005);
- Were published in the English Language;
- Consisted of quantitative or mixed-method research.

Papers that were excluded were:

- Editorials, commentaries, conference proceedings, features and research protocols;

- Research that did not have a relevant outcome measured in the antenatal period.

To allow for a comprehensive outlook, randomised and non-randomised controlled trials, before and after studies, as well as non-comparative, observational and case studies were included.

2.2.3 Quality appraisal of included research

The included papers were assessed to determine the risk of bias within the research and to ascertain the extent to which their findings could be generalised to the source population. This allowed for establishment of the level of confidence that should be placed on the paper's conclusions. It was thought prudent to include a quality appraisal element within the review because issues related to methodological quality are believed to have contributed to the widespread inconsistencies within the field of the PFT (Cannella, 2005; Alhusen, 2008). These issues of quality can be linked to a lack of robustness in existing constructs concerning the PFT, an argument that the researcher sought to highlight through this review.

The 'Quality Appraisal Checklist for Intervention Studies' was used to assign a quality level to each eligible study. This checklist is a component of the revised 'Graphical Appraisal Tool for Epidemiological Studies (GATE)', developed by Jackson et al. (2006), and revised by the National Institute for Health and Care Excellence (NICE) (2012). It allows for the assignment of hierarchical scores to individually demonstrate the study's internal and external validity. The scores

range from ‘++’ through to ‘-’, depending on whether key criteria are fulfilled (see Table 2.3 for quality rating criteria). Important features of study design are appraised, including population criteria, methods of allocation to intervention and control groups (where applicable) and analysis methods.

Within the checklist, the reviewer is required to justify decisions made with regards to quality determination in relation to both the individual items and the final study ratings. An electronic version of the tool was used to facilitate the storage and sharing of data. The tool was selected as it caters for all intervention studies, rather than only experimental ones. NICE (2012) also provides a detailed explanation about the classification of studies, and guidance as to the use of the tool and the criteria that should be used to score each individual item, which promoted consistency over the review process. An acknowledged limitation of the tool is that less direction is provided about the assignment of overall study ratings, which means that there remains some subjectivity in the review process. An example of the completed tool is included in appendix A.

++	All or most of the checklist criteria have been fulfilled, where they have not been fulfilled the conclusions are very unlikely to alter
+	Some of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter
-	Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter

Table 2.3 - Quality rating assignment criteria (revised GATE) as developed by NICE (2012)

2.3 Interventions addressing the parental-fetal tie

2.3.1 Summary of results

A total of 1,777 papers were identified in the initial systematic literature search. Following removal of duplicates, 1,557 papers remained. Irrelevant records (n = 1,038) were excluded after screening the titles. The abstracts of the remaining 519 records were then reviewed, and 296 were withdrawn after having been deemed not to be directly relevant to the primary aim of the review, leaving 223 papers.

Search alerts and reference list checks led to the identification of 20 further potentially eligible papers. The full text of 243 papers was acquired for further investigation. A total of 27 papers, describing interventions addressing the PFT, met the eligibility criteria.

In updating the narrative review in February 2020, a further 20 relevant papers, published over the preceding five years, were identified through search alerts and a repeat database search. These were incorporated in the review, giving a final total of 47 papers.

The research flow chart, specifying the number of papers considered at each stage and rationale for omissions, can be found in Figure 2.1.

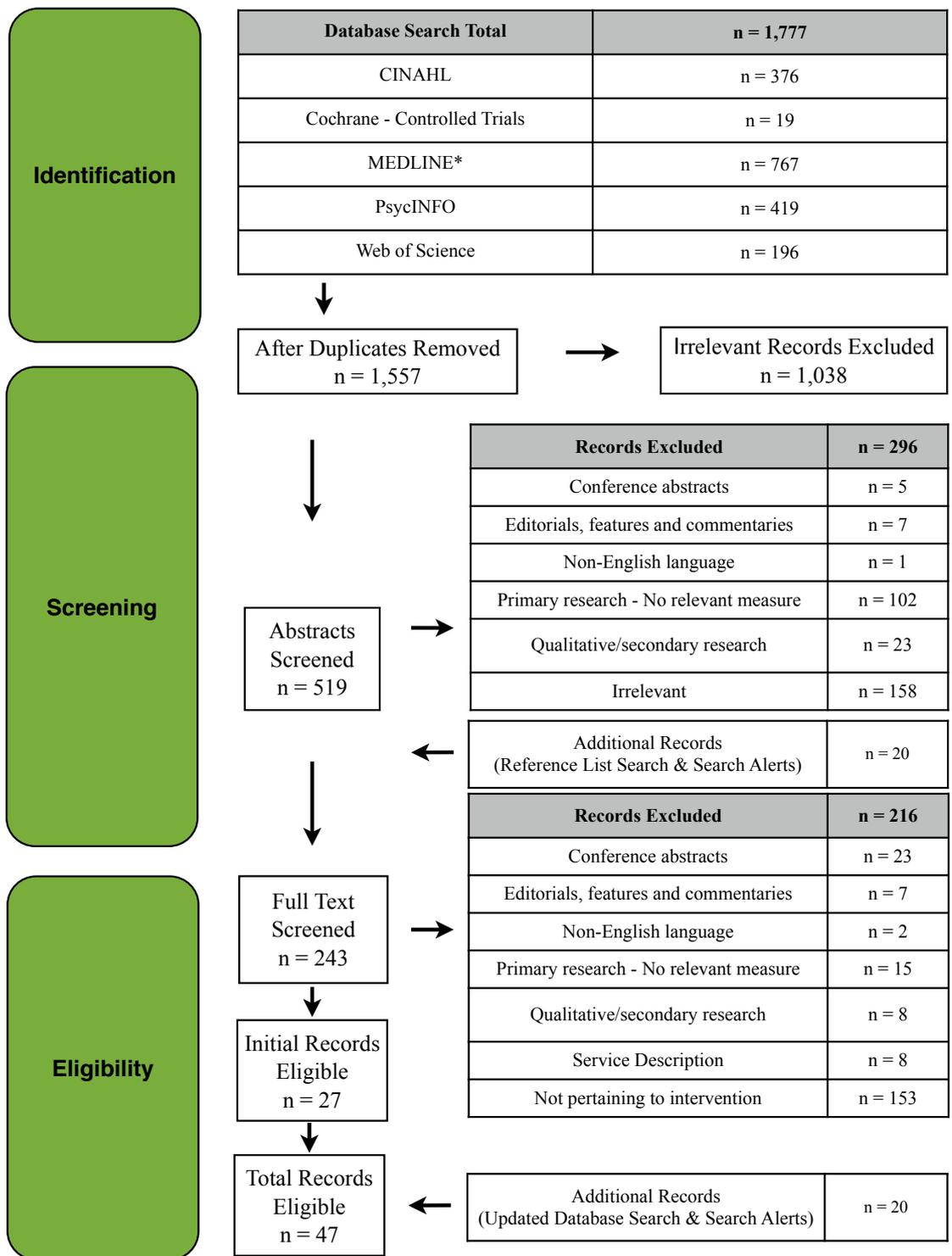


Figure 2.1 - Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow chart for the narrative literature review - Adapted from Moher et al. (2009)

2.3.2 Overview of eligible studies

The designs of the eligible studies, classified according to NICE (2012) guidelines, varied. The research comprised randomised controlled trials (RCT) (n = 30), non-RCTs (n = 4), observational studies (n = 3), before and after studies (n = 4), non-comparative research (n = 5), and a case study (n = 1). They originated in diverse locations, including papers from Europe (n = 12), the USA (n = 11), Asia (n = 21) and Australia (n = 3). Interestingly, 25.5% of the studies (n = 12) were conducted in Iran. The studies assessed the effects of various intervention strategies, including ultrasound and screening procedures (n = 11), fetal awareness interventions (n = 10), social or psychological support techniques (n = 10), educational programmes (n = 10) and relaxation strategies (n = 6).

Sample sizes ranged from 1 (Scherer et al., 2014) to 2986 participants (Kleinveld et al., 2007). The studies all used self-report tools to measure PFA, with 22 of the studies employing the original or modified versions of MFAS (Cranley, 1981) or the Paternal-Fetal Attachment Scale (PFAS) (Weaver and Cranley, 1983), 11 making use of the MAAS or the Paternal Antenatal Attachment Scale (PAAS) (Condon, 1993), a further 10 using the PAI (Müller, 1993), and five using lesser-known, merged, or self-developed tools. The study samples mainly comprised female participants (n = 40), with a few including both women and men (n = 3) or men alone (n = 4). Various personnel, including midwives, nurses, ultrasonographers, radiographers, yoga instructors, trained mentors, psychologists, psychotherapists or other mental health professionals, facilitated the interventions. Antenatal attachment was assessed between one and four times over the course of the

research, with the most of studies measuring it twice (n = 32). The majority of the studies had no follow-up after the intervention ended (n = 35), with six weeks (Persico et al., 2017) representing the longest follow-up period for the measurement of PFA.

The papers were assigned a variety of quality ratings, but none were awarded a ‘++’ rating for either external or internal validity. Instead, ratings ranged from ‘+’ to ‘-’, indicating that validity was either mixed or poor. Thirty-one of the studies received a ‘+’ rating for internal validity, while the other 16 were awarded a ‘-’ rating, signalling that conclusions would be likely, or very likely to alter. In relation to external validity, 28 papers were assigned a ‘+’ rating, while 19 received a ‘-’ rating. Scores assigned for internal validity were not directly related to those awarded for external validity.

Each study is described briefly in a narrative format in the following sections. A supplementary table of all the included studies with details including authors, publication year, research location, research design and sample, pertinent scales used, intervention, relevant results, strengths and limitations, and quality ratings can be found in Appendix B.

2.3.3 Ultrasound imaging and screening procedures

Screening tests

It has been suggested that undergoing antenatal screening for genetic abnormalities may encourage expectant parents to focus on possible problems with the pregnancy, leading to increased levels of anxiety (Kleinveld et al., 2006).

'Tentative pregnancy' (Rothman, 1986) is a term used to describe delayed emotional attachment to the fetus. It is thought that merely undergoing screening tests may interfere with the trajectory of the tie a woman is developing with her fetus, until the test result is known, and fetal wellbeing is confirmed (Lawson et al., 2004). This is thought to be an emotional defence mechanism, protection in case of a diagnosis of fetal abnormality (Lawson et al., 2004).

Nevertheless, in a RCT conducted in the Netherlands to investigate whether offering prenatal screening influences MFA, Kleinveld et al. (2007) found that, amongst groups of women who were offered either nuchal translucency measurement (NTM) (n = 686), a maternal serum test (MST) (n = 648), or no screening (n = 512), effect sizes in results relating to the MFA were small. The researchers concluded that MFA is not greatly impacted by antenatal testing at any stage in the pregnancy, at least in the case of a reassuring result.

The use of a self-developed, non-validated tool for measurement of MFA in this multicentre study is a cause for concern. The tool developed for the study included items relating to pregnancy involvement, and this is likely to impair its ability to focus on MFA per se. Information regarding translation and validation of the PAI, which was used solely at the final of four data collection points, and correlated only reasonably with the developed tool ($r(1369) = 0.62, p < 0.001$), is omitted in the research report. These measurement issues call into question the validity of the study conclusions.

Ultrasound imaging

There is an increasing amount of evidence in the literature which suggests that viewing antenatal ultrasounds increases the maternal tie to the fetus in the early stages of pregnancy (Ji et al., 2005; Rustico et al., 2005). Besides providing parents with reassurance of the fetus' health (Pretorius et al., 2006), and allowing for early diagnosis of certain abnormalities (Atluru et al., 2012), ultrasonography also increases awareness of the unborn child, contributing to 'personification' of the fetus (Baillie et al., 1999; Zechmeister, 2001; Ekelin et al., 2004). Draper (2003b), suggests that ultrasound technology may function to elevate the social identity of the fetus ahead of the biological birth.

Pretorius et al. (2006), carried out a non-comparative study with 124 expectant mothers and 65 of their partners. The researcher aimed to determine whether, following three-dimensional (3D) or four-dimensional (4D) ultrasonography lasting approximately 30 minutes, there would be a change in the PFA, and attitudes toward the unborn child. They found that there was a significant increase in the total MFAS scores for both women and men between the pre- and post-examination data collection points.

However, the absence of a control group (CG) makes it impossible to establish whether short-term maturation effects, possibly influenced by completion of the tool twice within a short period, affected results. The paternal version of the MFAS used in this study was not validated, and it is unclear why the validated PFAS was not used. Finally, when considering that many of the 3D/4D ultrasounds were done immediately after a routine two-dimensional (2D) scan, it is unclear whether,

and how, the results were influenced by the initial ultrasound examination. These concerns cast doubts on the plausibility of the study's conclusions.

In a small RCT with 52 participants, in the USA, Boukydis et al. (2006), aimed to determine whether ultrasound consultation, including an explanation of the findings on the screen and debriefing after the session, increased MFA and reduced maternal anxiety, in comparison to a routine obstetric ultrasound examination. There was a significant increase in MFAS scores from before to after the ultrasound examination in the ultrasound consultation group, while the scores for the standard care group did not change significantly.

The authors hypothesise that supplementing routine obstetric ultrasound examinations with a consultation intended to increase maternal interaction with the fetus is advantageous, and that the examination length and the communication with the ultrasonographer during consultation are important factors to consider. These findings should be interpreted with caution as the participants were likely to have undergone previous ultrasounds during their pregnancy, which may mean that conceptualisation of the fetus which was liable to influence through visualisation alone had already occurred. A single sonographer carried out the consultations, giving some confidence in intervention consistency. However, the paper is limited by a lack of detail in the intervention description, preventing replication.

A larger RCT by Ohman and Waldenstrom (2010), with 2026 participants, carried out in Sweden, investigated how ultrasound screening for Down Syndrome in the first trimester of pregnancy affected MFA at 24 weeks gestation, in comparison

with a routine ultrasound examination in the second trimester. The researchers were interested in finding out whether the focus and timing of the scan made a difference to MFA.

In the second trimester of their pregnancy, women having had the earlier, risk-focused ultrasound had significantly higher total mean scores on the MFAS than women assigned to the later, routine ultrasound. The researchers suggest that visualisation of the fetus earlier in the pregnancy may encourage internalisation of the reality of pregnancy and provide reassurance to parents if no abnormalities are found. These factors may encourage the beginnings of a fetal tie from an early point in pregnancy, allowing it more time to flourish by the second trimester. Alternatively, screening for Down's syndrome may have caused emotional upheaval for the women, with worry initially, and then relief following reassuring results. This may have triggered the formation of a closer tie with the unborn child.

The authors concede that the observed differences in MFA were modest, and suggest that the results need replication. The study is limited by a failure to measure the MFA at baseline, pre-intervention, which does not allow reassurance that the groups were initially equivalent in this respect, nor does it allow for assessment of change in the outcome over time.

In a further study assessing the influence of a undergoing a first-trimester combined antenatal screening test on PFA, Udry-Jørgensen et al. (2015), in Switzerland, used a before-and-after research design to evaluate changes in the emotional status of parents-to-be. They included 103 couples and divided the sample into two groups; 52 couples having conceived naturally and 51 couples

having conceived with the help of in vitro fertilisation or intracytoplasmic sperm injection treatment.

As hypothesised, PFA-related scores increased significantly over the two weeks from before testing to after receiving reassuring test results, for both groups. There were no significant differences in MAAS/PAAS scores between groups at either time point. The authors suggest that these results indicate that receiving reassuring test results encourages stronger feelings about the fetus to develop. However, the increase in PFA scores over time, a phenomenon observed in the majority of the longitudinal studies reviewed, could also be attributed to the natural evolution of the PFT. The lack of a CG means that it is impossible to be confident of the causal relationship.

Poor description of the intervention, including a failure to specify what the combined test for Down Syndrome consisted of, and inadequate details about the source population, limits our ability to assess its quality. However, the inclusion of expectant fathers, as well as mothers, makes headway into increasing men's visibility in the phenomenon of the PFT.

Much of the research that has investigated ultrasound examination in relation to PFA has compared the influence of 2D versus 3D or 4D ultrasound imaging modalities. Three-dimensional ultrasonography allows for more detailed images that parents can better recognise, and relate to more easily than traditional ultrasound imaging technology (Pretorius et al., 2006). Four-dimensional ultrasonography allows expectant parents to observe fetal movement in real-time (Righetti et al., 2005).

In Italy, Righetti et al. (2005) investigated the role of 4D ultrasound scanning, as opposed to 2D scanning, on PFA development in a study using a controlled pre–post-test design. This was another of the few studies to include both women and men, with a final sample of 44 expectant couples (N = 88). The mean level of MFA, as measured by the MAAS, increased significantly between the pre-test and post-test assessment two weeks later, for the female participants in both groups, in terms of global score and quality, but not intensity, of attachment. This suggests that undergoing any kind of ultrasound scan does improve MFA, or alternatively supports the progressive increase in the strength of antenatal tie throughout gestation. For men, there was no significant pre-post main effect on paternal-fetal attachment in either group. No significant differences in the outcome of interest were found between the 2D and 4D ultrasound scanning groups in either the female or male participants.

Given the lack of a documented power analysis, it is not clear whether the study's findings can be generalised. The intervention is poorly described, making replication difficult, and it is unclear whether the tool was translated and validated for the purposes of the study.

However, a study carried out in Australia by Sedgmen et al. (2006), supported the findings of Righetti et al. (2005). The study, utilising a controlled pre-, post-test design, explored the influence of timing and type of ultrasound examination on MFA and maternal health behaviour during pregnancy, with a sample of 68 first-time expectant mothers. CG participants received standard 2D ultrasound procedures, while experimental group (EG) participants received both the 2D scan

and an additional 3D scan of the unborn child. The sample consisted of participants at two distinct stages of pregnancy, 12–14 gestational weeks (n = 24) and 18–22 gestational weeks (n = 44).

There was a significant change the MAAS global score between Time 1 and Time 2 for both groups. Many of the participants had undergone prior ultrasounds (n = 34), a fact which the researchers acknowledged and attempted to account for. Participants who underwent their first ultrasound at approximately 12 weeks gestation experienced a significantly greater increase in their MAAS global score after the ultrasound, when compared to those who had a repeat ultrasound at 18 weeks gestation. Thus, prior ultrasound exposure and gestational age moderated the observed increase in MFA following ultrasound exposure.

No significant differences were found in the change in MFA scores between the EG and the CG. The authors conclude that the clarity of ultrasound images may not be critical for MFA. Study limitations include high attrition over the course of the research, and demographic differences between those who remained in the research and those who left.

Another similar RCT with 100 participants, conducted in Italy, aimed to determine whether adding a 4D ultrasound to a routine 2D scan in the second or third trimester of pregnancy facilitated MFA (Rustico et al., 2005). The post-intervention MAAS scores were comparable between the two groups, although there was some suggestion that women in the EG tended to have higher scores relating to the MFA. The authors concede that this may be partially attributed to the longer

duration of the ultrasound procedure rather than to the influence of the different imaging techniques.

A considerable weakness of the study is that only a subgroup of 46 participants completed the measure of antenatal attachment, and the research paper furthermore lacks detail regarding the procedure for randomisation into groups. The omission of pre-test data collection does not allow for evaluation of initial equivalence of groups, or for tracking of changes in attachment levels before and following the examination. Once again, it is unclear whether a translated version of the MAAS was used and whether this was validated.

Another related randomised pilot study, carried out in Germany, assessed the impact of 3D versus 2D ultrasound on PFA, with a sample of 60 women (Lapaire et al., 2007). Both groups received a 2D and 3D ultrasound, but in different orders. PFA was measured after each examination using a questionnaire designed for the purposes of the study. No reliability data is provided for the instrument.

The dimensionality of the scan was not found to have a significant effect on MFA. However, results should be interpreted with caution as the study did not control for pre-existent MFA. Furthermore, the lack of a washout period between the different modality scans may have meant that the effects of the initial ultrasound were still in effect at the time of the second ultrasound. Further weaknesses include the inclusion of participants with widely varying gestational ages, which may have obscured gestational age-dependent effects. Although male partners were said to be included, no results are given regarding paternal outcomes.

In a before and after, third-trimester study with a sample of 160 expectant mothers, de Jong-Pleij et al. (2013) compared the effect 2D versus 3D/4D ultrasound of the fetal face on MFA. The research was carried out in the Netherlands, and data measuring MFA was collected using the MAAS, at 1-2 weeks before, and 1-2 weeks following the ultrasound examination.

Results indicate that MFA was significantly stronger in both groups when measured following the ultrasound examinations. This may be attributed to the scans themselves, or be influenced by the increase in gestational age between data collection points. There was no significant difference in MFA-related scores between the group of women receiving a 3D/4D ultrasound, versus those receiving a 2D ultrasound.

A limitation of the study is the non-concurrent collection of data between the two groups, introducing the risk of bias as influenced by potential temporal trends. There were also significant differences between groups in terms of educational levels and parity, factors that have been independently related to the MFT in prior research, and which therefore may have had an important influence on results.

Thus, as seen in the studies described above, research findings indicate that undergoing an ultrasound examination can seemingly have a positive influence on MFA (Pretorius et al., 2006). However, it is as yet unclear whether the effect is simply due to viewing the fetus on a screen, or further influenced by information received from the sonographer regarding the unborn child (Boukydis et al., 2006). Different ultrasound imaging modalities do not seem to affect MFA to differing degrees (Righetti et al., 2005; Rustico et al., 2005; Sedgmen et al., 2006; Lapaire

et al., 2007; de Jong-Pleij et al., 2013). Significant methodological limitations in individual papers restrict the generalisation of their results. However, when looked at as a whole, the study results are overall homogeneous, lending some confidence to their conclusions.

Much of the research was done in the second and third trimester of pregnancy. A common limitation in these studies is the exposure of participants to previous ultrasound scans. Given that exposure to an initial scan, allowing parents to view their fetus for the first time, may have the most substantial effect on the PFT (Sedgmen et al., 2006), it is probable that this factor had a significant impact on results.

The lack of difference in the association between MFA and 2D versus 3D and 4D ultrasound procedures may be due to a 'ceiling effect' (Sedgmen et al., 2006). That is, an ultrasound, irrespective of the quality and detail, can only improve MFA to a certain extent (Atluru et al., 2012), and other influencing factors, such as social support variation, may limit the maximal effect that visualisation of the fetus can have. Little is known about how seeing their unborn child via an ultrasound affects the paternal tie with the fetus, with the included studies that have included expectant fathers finding opposing results (Righetti et al., 2005; Pretorius et al., 2006; Udry-Jørgensen et al., 2015).

A recent study by Coté et al. (2020) assessed the effects of a somewhat different intervention on MFA. In a well-described and unique RCT, the researchers aimed to determine whether providing mothers with a 3D-printed model based on a 3D ultrasound image improves MFA in healthy pregnancies more than viewing a 3D

ultrasound alone. One week after undergoing a 3D ultrasound, the 48 participants in the EG received a small shadow box containing the 3D-printed model of the fetal face.

Global MAAS scores increased for both groups between the pre-intervention time point and two weeks post-ultrasound. However, the 3D-printed model group experienced a significantly higher change from baseline when compared to ultrasonography only group (95% Confidence Interval (CI) [1.40, 6.10], $p = .002$, $d = 0.65$). Thus, the researchers conclude that the addition of a 3D-printed model was more effective than ultrasonography alone in improving MFA.

Although the internal validity of the study is generally good, the researchers admit that a lack of blinding, together with between-group differences in parity, may have affected results. These factors, along with a very low recruitment rate and a short follow-up period, limit confidence in the study results. While this type of intervention warrants further research, the financial implications of printing 3D models would also have to be considered if such an intervention were to become widespread.

2.3.4 Fetal awareness interventions

Becoming more aware of the fetus, by way of experiences such as quickening, may reinforce the image of the fetus as an individual, and this is thought to allow parents to develop a more robust tie to their unborn child (Damato, 2000; Laxton-Kane and Slade, 2002). Researchers have hypothesised that enhancing awareness of the fetus through programmes of fetal movement counting (Saastad et al.,

2011; Rincy and Nalini, 2014; Delaram et al., 2018; Güney and Uçar, 2019), abdominal palpation (Nishikawa and Sakakibara, 2013; Celik and Ergin, 2019), lullaby singing (Persico et al., 2017), mindfulness (Shreffler et al., 2019) or guided imagery (Kordi et al., 2016) may serve to further enhance MFA.

In one such RCT, conducted in India, Rincy and Nalini (2014), examined the effects of maternal monitoring of fetal movement, and maintaining a kick chart for two weeks, on MFA, in a sample of 100 participants. They found that PAI scores increased significantly over the intervention period for the EG, but not for the CG. At the post-test measurement point, there was a significant between-group difference in mean PAI scores.

The researchers concluded that fetal movement counting could be used as a measure to improve MFA. However, results should be interpreted with caution, as restriction of the purposive sample to those who could speak both English and Tamil limits generalisability.

A second RCT, conducted in Turkey, similarly aimed to determine the influence of fetal movement counting on MFA. Güney and Uçar (2019) trained 79 expectant mothers to count and record 10 fetal movements over two hours daily for four weeks. They compared the group's pre- and post-intervention MAAS scores to those of a second group of expectant mothers who received standard antenatal care.

There were no significant group differences in the pre-test MAAS mean scores in the pre-intervention period. However, at the post-test measure, the EG had

significantly higher scores than the CG with regards to the total MAAS mean score ($p < 0.001$), as well as in both the 'time spent in attachment' subscale ($p < 0.001$) and in the 'quality of attachment' subscale ($p < 0.002$). Like Rincy and Nalini (2014), Güney and Uçar (2019) concluded that the counting of fetal movements by pregnant women has a positive influence on MFA.

While seemingly an overall robust study, one must interpret its results with caution, primarily due to the lack of blinding and the lack of follow-up. It is possible that while such an intervention may encourage expectant mothers to engage with their unborn child in the short term, the strength of the fetal tie may level off when they are not compelled to spend considerable amounts of time concentrating on fetal movement.

Salehi et al. (2017) carried out a further RCT evaluating the effect of fetal movement counting on MFA. A non-probability sample of 52 expectant Iranian mothers was included in the analysis, with 23 of them receiving in-person training on fetal movement counting and recording. These women were instructed to monitor fetal movements between the 24th and the 28th weeks of their pregnancies for 30 minutes each day.

While pre-intervention scores were comparable between groups, the mean MFAS post-intervention score in the EG was significantly higher than that in the CG ($p < 0.001$), suggesting that the intervention was successful in encouraging the PFT.

Like the study by Güney and Uçar (2019) described above, Salehi et al. (2017) did not follow-up MFA beyond the intervention conclusion, casting doubts about the

longevity of the effects. For this study, however, the person carrying out analysis was reportedly blind to group allocation, which gives some additional confidence in the validity of results.

A larger study by Saastad et al. (2011), also a RCT, this time in Norwegian sample, and again with a similar aim, found contrasting results. When comparing post-intervention PAI scores between a group of expectant mothers allocated to a systematic fetal movement counting group from the 28th gestation week (n = 478) and a CG receiving standard antenatal care (n = 473), significant group differences in PAI scores were not identified.

Strengths of the study include random allocation to groups and a large sample size that met requirements specified in the power analysis. This increases confidence in the study's internal validity. However, a failure measure PFA pre-intervention leads to doubts regarding the initial equivalence of the groups in this respect.

However, a final RCT assessing the effect of fetal movement counting on MFA supports their findings. Delaram et al. (2018) compared a group of 104 expectant mothers who were asked to monitor and record fetal movement daily between the 28th and the 37th week of their pregnancy, to a group of 104 expectant mothers who received routine care not involving fetal movement counting.

At baseline, the mean PAI scores of the intervention and the CG were similar. Nine weeks later, at the post-intervention time-point, the mean PAI scores remained similar between the two groups. The intervention did not appear to have a significant effect on MFA. The study has mixed internal and external validity with

some concerns relating to a lack of blinding, the absence of a documented power analysis and a limited description of the intervention. The latter limitation means that it is more challenging to compare it with other similar research.

The conflicting results regarding the influence of fetal movement counting on the PFT in the five studies that assessed this kind of intervention may have been influenced by several factors, such as disparate timing, length, and particularities of the intervention. The study populations also differed, with Saastad et al. (2011), for instance, utilising a sample of predominantly Caucasian, married or cohabiting women, being primi- or multiparous. Meanwhile, the samples used by Rincy and Nalini (2014) and Delaram et al. (2018) were all married primigravidae. Primigravidae are thought to often have more optimal MFA than multigravidae (Lorensen et al., 2004; Haedt and Keel, 2007; Nichols et al., 2007; Ustunsoz et al., 2010; Maas et al., 2014). Differing cultural backgrounds, perhaps influencing the connotations ascribed to the act of fetal movement quantification (Saastad et al., 2011), may also have influenced the findings. Finally, the larger sample size, and extended intervention period in the studies by Saastad et al. (2011) and Delaram et al. (2018) may have lent to their ability to accurately recognise the (lack of) significant difference between groups.

Nishikawa and Sakakibara (2013) took a different approach to increasing maternal awareness of the unborn child. In an observational study conducted in Japan, they investigated whether a programme of abdominal palpation would improve MFA. The women who chose to take part in the programme attended three sessions

that each consisted of an individual demonstration of the fetal position, followed by a group discussion. A comparison group received routine care.

At the 32nd, 34th, and 36th weeks' gestation time points, PAI scores increased significantly compared to those at the 30th-week baseline, for both groups. However, while between-group PAI scores were similar at baseline, there were significant group differences at 34 and 36 weeks gestation, with the EG scoring significantly higher than the CG.

The researchers concluded that the intervention using abdominal palpation enhanced maternal awareness of the fetal position and positively affected MFA. However, attrition bias may have played a role in the result. There was a high dropout rate over the study (52.4%), and those who left the study conceivably differed in significant ways from those who remained. Furthermore, non-random assignment to groups raises the possibility that self-selection bias may also have been in play (Vogt and Johnson, 2005). Characteristics that motivated participants to attend the programme may also have influenced the MFT, thus calling into question the basis for the observed differences between the groups.

A second study investigated the effect of demonstration and practice of Leopold's manoeuvres on the MFA. In a RCT conducted in Turkey with a sample of 106 women, Celik and Ergin (2019) tested the efficacy of teaching women in the EG how to assess the fetal position and how to listen to the fetal heartbeat during three small-group sessions held at 28, 32 and 36 weeks. The women completed a Turkish version of the PAI pre-intervention and after the latter two intervention sessions.

At the 28th week of pregnancy there were no statically significant between-group differences in mean PAI scores. However, in the 32nd and 36th weeks of pregnancy the EG's mean PAI scores were significantly higher than those of the CG ($p = .001$ and $p < .01$).

Thus, like that of Nishikawa and Sakakibara (2013), the intervention tested by Celik and Ergin (2019) appears to have been effective in promoting the development of MFA. Being that the latter study was a RCT, the results give further confidence in the validity of the findings. However, the lack of blinding and the absence of a documented power analysis means that further research of more robust design is still needed to confirm the efficacy of such interventions. Furthermore, the administration of the questionnaires in a face-to-face interview prevents the possibility of retaining participant anonymity and may have lead to an increased risk of social desirability bias.

Shreffler et al. (2019) conducted a pilot RCT in the USA to assess the effect of a two-week mindfulness intervention on MFA. The sample of 34 expectant mothers was divided into 4 groups – one group received a fetal heart rate Doppler monitor with instructions to use it daily, and a second group received four text messages per week advising them to carry out a mindfulness exercise. The exercises varied from deep breathing to reading a story to the baby, with many of them seemingly designed to enhance awareness of, and familiarity with the unborn child. The third group received both the intervention branches described above, and the fourth group was the control.

The EGs did not differ significantly from one another at the pre-intervention time point. While all the EGs had higher MFA levels post-intervention relative to the CG, the between-group differences were not statistically significant. However, when considering pre-post intervention change, results showed a significant increase in MFAS scores over the study period for the Doppler and Mindfulness group. Following adjustment for in baseline mean MFAS scores, expectant mothers in the Doppler + Mindfulness group had significantly higher levels of MFA than the CG ($p < 0.05$).

Based on these results, the researchers suggest that mindfulness skill-building can enhance MFA when combined with the at-home use of fetal Doppler monitors. However, given the small sample size which was not based on a documented power analysis, a very low recruitment rate of 19.2%, a lack of follow-up and a lack of blinding, these results should be interpreted with caution.

Rather than focusing on enhancing fetal awareness per se, Kordi et al. (2016) used a guided imagery intervention encouraging expectant mothers experiencing an unplanned pregnancy to reflect on the maternal role, and imagine themselves in that context. In the Iranian non-RCT, the 35 women in the EG, who were in their last trimester of pregnancy, were trained in a single, small group session to carry out a 20-minute guided imagery procedure. They were instructed to continue doing this at home, led by a CD recording, twice a week for two weeks. The content of the guided imagery is not detailed.

The mean MFAS score was similar in the two groups before training ($p = 0.966$), and the score increased significantly for both groups over the study period.

However, at the post-intervention time point, the score was significantly higher for the EG (94.26 ± 6.7) than for the CG (90.22 ± 9.5).

Thus, the guided imagery intervention appeared to have successfully promoted MFA. However, the study's internal and external validity are mixed. Like in many of the other studies described within this review, there was no follow-up after the intervention ended, leading to doubts about the longevity of results. Furthermore, a lack of blinding leads to concerns about the possibility of bias. Although it would not have been feasible to blind participants in many of the assessed studies, the blinding of outcome assessors was often possible and appropriate. Failure to do this can lead to the Pygmalion effect, where investigators are prone to interpret results in a way that conforms with their expectations (Wartolowska et al., 2018).

In another longitudinal non-RCT, where data collection spanned the antenatal and postpartum periods, Persico et al. (2017) explored the influence of maternal lullaby-singing during pregnancy and in the postpartum period on the development of the relationship between the mother and baby. Italian mothers were designated either to attend antenatal classes which were preceded by the learning and practising of lullabies ($n = 97$) or to attend standard antenatal classes ($n = 99$). Those in the EG were invited to continue to sing at home, around their own schedule, taking notice of their own emotional reactions and their babies' behaviour. Those in the CG were left free to sing (or not) according to their personal preferences.

While 90.6% of the EG women detailed positive feelings associated with the singing, such as relaxation, serenity or a feeling of being on the same wavelength

as their baby, the PAI total mean score at 24 and 36 weeks gestational age were not significantly different between the groups ($p = 0.692$). This result suggests that the intervention was not effective in promoting MFA. A limitation the study was the use of pseudo-randomisation, with intervention and control conditions being decided by the antenatal class the women happened to join by chance. This, together with the lack of blinding of the intervention facilitator, could mean that the class content was adapted in unknown, and perhaps unintentional, ways to encourage MFA. Given the face-to-face interview format of questionnaire administration, there was also an increased risk of social desirability bias.

Many strategies have thus been tested in attempts to enhance maternal awareness of the fetus, and thereby encourage her to engage with the unborn child. However, due to the mixed results of the studies, the limitations that restrict confidence in their validity and the heterogeneity of the interventions, it is impossible to reach definitive conclusions about their overall efficacy.

2.3.5 Relaxation strategies

The transition to parenthood, and assumption of the parental role, is often accompanied by emotional upheaval and can have potentially disruptive psychological consequences (Van den Bergh et al., 2005). Studies have assessed the effect of a variety of relaxation techniques that aim to enhance emotional wellbeing during pregnancy, and, through this avenue, enhance PFA. Approaches to inducing relaxation have included music therapy (Shin and Kim, 2011; Chang et al., 2015), massage or relaxation techniques (Latifses et al., 2005; Toosi et al., 2017), and yoga (Muzik et al., 2012; Akarsu and Rathfisch, 2018). It is recognised

that such research is not based on well-established links within the literature, given that the relationship between psychological compromise and less than optimal PFA has not been confirmed.

Chang et al. (2015), in a Taiwanese RCT with a sample of 320 pregnant women, examined the effects of listening to music on psychosocial stress and MFA. In the EG, music listening was encouraged through the provision of a CD containing relaxing music, for 30 minutes per day over a two week period.

Although the intervention appeared to have a stress-reducing effect, no statistically significant differences were found between the post-test results of the two groups in terms of MFA, as measured on a merged version of the PAI and the MFAS, translated and validated by Hsu and Chen (2001). However, the validity of these results is uncertain because routine music listening habits for either group were not recorded or controlled for.

Shin and Kim (2011), in Korean research which also used a music listening technique, took a somewhat different approach, in that they applied the intervention during a potentially stress-inducing event. In the study, which used a before and after, controlled, non-synchronised design, women in the EG (n = 117) were played 30 minutes of music with nature sounds during a transvaginal ultrasound. Those in the CG (n = 116) received routine care. No significant differences between the two groups were found with regards to MFA. Nor were any stress-relieving effects of music listening detected. However, there was a statistically significant decrease in anxiety in the music therapy group when compared to the CG.

Although the results of this study support those of Chang et al. (2015), regarding the inefficacy of music therapy on improving the MFA, results should be interpreted with caution as non-concurrent outcome measurement between groups may have confounded results. It is perhaps unsurprising that such a limited and short intervention was not found to influence MFA, the development of which is thought to be governed by multiple, complex, interrelated factors.

In non-comparative research assessing a more targeted intervention, Muzik et al. (2012) explored the feasibility, acceptability, and efficacy of a mindfulness-yoga programme with a duration of 10 weeks, in improving MFA and reducing symptoms of depression. The sample was made up of 22 expectant mothers with current and lifetime psychiatric diagnoses.

Between the pre- and post-intervention measurements, MFA-related scores increased significantly on all five subscales of the MFAS, and overall. The results also suggest a link between MFA and depression, as post-intervention depression scores were significantly and inversely related to MFAS scores.

However, the absence of a CG makes it impossible to ascertain causation. Results were plausibly influenced by a maturation threat, with the changes in MFA likely to be at least partially attributable to normal developmental processes, particularly as it has been well established that the MFT is cumulative over the pregnancy (Sjögren et al., 2004; Hjelmstedt et al., 2006; Hjelmstedt et al., 2007; Rowe et al., 2009; Habib and Lancaster, 2010; Barone et al., 2014). The fact that almost half (41%) of the sample was engaged in external psychotherapy during the trial raises further questions about causality.

Another study to examine the effects of yoga on antenatal attachment, this time in primiparous women with low-risk pregnancies, was conducted in Turkey by Akarsu and Rathfisch (2018). The RCT compared a group of 35 expectant mothers who participated in an eight-week programme of twice-weekly supervised yoga sessions, to a group of 35 expectant mothers who received routine antenatal care. The PAI was completed by both groups immediately before and following the intervention period.

At baseline, both demographic characteristics and the PAI mean scores were similar between groups ($p > 0.05$), and PAI scores increased significantly for both groups over the study period ($p < 0.001$). However, the EG 's mean PAI scores were significantly higher at the end of the intervention than those of the CG ($p = 0.05$), suggesting that the intervention was successful in promoting MFA.

Although the paper describing the research benefits from a documented power analysis and a detailed description of the intervention, the study's validity and reliability are called into question by insufficient reporting in other areas, such as the information provided about the source population and the possible translation of the tool.

A further RCT conducted by Toosi et al. (2017), in Iran, sought to examine the effects of relaxation on mothers' anxiety and MFA in nulliparous women who used in-vitro fertilisation to achieve pregnancy. The research compared a group of 40 expectant mothers who were randomly allocated to take part in four, 90-minute relaxation classes to a group of 40 expectant mothers who received routine

pregnancy care. The MFAS was used to measure antenatal attachment before the intervention and post-intervention, one month later.

There was no significant difference in mean MFAS scores between the two groups prior to the intervention ($p = 0.918$). The EG, however, had significantly higher MFAS scores post-intervention than the CG ($p < 0.01$). While MFAS scores had increased significantly in the EG over the study period ($p < 0.001$), the CG ($p = 0.374$) did not experience a similar change.

The intervention comprised two components; educative sessions and relaxation techniques which women were expected to also carry out daily at home. The authors concede that it is not possible to determine whether it was one or both of the components that facilitated MFA. Weaknesses in the research report limit assessment of the study's quality, with a paucity of information about recruitment and completion rates, possible translation of the MFAS tool, adherence to the intervention and the contents of standard care.

In a final study exploring relaxation strategies, Latifses et al. (2005) investigated the impact of expectant fathers massaging their pregnant wives or doing relaxation exercises with them, on the man's attachment to the fetus, his perception of marital adjustment and his anxiety levels. The RCT comprised a massage therapy group, a relaxation-training group and a CG, and had an overall sample size of 175. The men in the former two groups were expected to practice the skills they were taught on or with with their wives twice a week for 20-minute periods. Results indicated that PFAS scores increased significantly over the 5-week

study period. However, no significant pairwise comparisons in PFAS mean scores were observed between groups, over time .

Several limitations undermine the validity of the study, including a failure to specify the number of participants in each group, non-fulfilment of power analysis requirements at the time of study completion, and failure to account for compliance with the intervention.

It would appear that no definitive conclusions can be made regarding the effect of techniques designed to promote relaxation on the PFT. Two strategies of music therapy failed to show an effect on mother's feelings towards the unborn child (Shin and Kim, 2011; Chang et al., 2015), and techniques of massage and relaxation similarly had a non-significant influence on fathers' antenatal tie to the fetus (Latifses et al., 2005). For expectant mothers, on the other hand, yoga (Muzik et al., 2012; Akarsu and Rathfisch, 2018) and relaxation techniques taught through group classes (Toosi et al., 2017) may be effective in facilitating the antenatal tie. However, further research is required to replicate results before confidence is placed in the efficacy of such interventions. Our ability to draw reliable inferences is limited by methodological and reporting constraints, widely varying approaches, and the use of diverse self-report measures.

2.3.6 Educational programmes

Antenatal education for expectant mothers has long been known to have beneficial effects on their knowledge, anxiety levels and self-confidence (Hillier and Slade, 1989). Some research has explored the influence of such education on

PFA. Eight studies have used specifically designed programmes centred on attachment training (Bellieni et al., 2007; Burke, 2007; Abasi et al., 2013; Akbarzade et al., 2014; Akbarzadeh et al., 2017; Setodeh et al., 2017; Yuan et al., 2018; Nosrati et al., 2019), while others incorporated tuition about psychological and social wellbeing (Thomas et al., 2014; Baghdari et al., 2016).

In the first of these studies, an Iranian cluster RCT with 83 participants, Abasi et al. (2013) explored the effect of MFA behaviour education on expectant mothers' mental health and their feelings toward the unborn child. The EG received four, weekly group sessions that focused on antenatal attachment, and suggested strategies to increase fetal awareness and interaction.

While there were no significant differences in MFAS mean scores in the CG over the study, scores in the EG increased significantly. There was a significant difference in MFAS mean scores before and after treatment which was attributed to group division. Unfortunately, the research is poorly described, with the omission of many pertinent details that would allow accurate assessment of validity. These include the number of women in each group, the sampling method, the session facilitator, recruitment and attrition rates, method of randomisation of health care centres, and adherence to the programme.

In an Italian observational study which similarly investigated whether antenatal education courses could enhance MFA, Bellieni et al. (2007) studied 77 expectant mothers in their second trimester of pregnancy. Five group sessions aimed to encourage maternal-fetal interaction and raise awareness of fetal development.

At the post-intervention data collection point, women in the EG had significantly higher scores than the CG on the PAI.

This study had two major limitations that are likely to have influenced results. First, the women self-selected whether they wished to participate in the intervention or to be part of the comparison group. There are likely to have been underlying differences between the two groups that motivated their choice. These dissimilarities may have also been related to their conceptualisation of the unborn child. Secondly, the omission of a pre-intervention measurement of PFA, particularly in a non-randomised study, leaves open the possibility that the observed difference between the two groups existed even before the intervention, casting doubts on the validity of results.

In a third study, this being of non-comparative design and conducted in the USA, Burke (2007) examined the effects of the 'Prenatal Attachment and Healthy Development Intervention' programme on maternal attachment to the fetus. Twelve expectant mothers attended the three-day, eighteen-hour group educational programme, which incorporated the teaching of maternal bonding techniques, cognitive/behavioural skills and communication techniques. There was a significant mean difference between pre-test and post-test PAI composite scores, suggesting that MFA increased significantly over the intervention. The main limitation of the study was the absence of a CG, with the possibility that a maturation threat was in play. The lack of specification of intervention adherence is also a concern.

Another non-comparative study, by Thomas et al. (2014), targeted 48 expectant mothers with current or emerging depression and anxiety, evaluated the efficacy of a well-described antenatal group educational programme which aimed to decrease the severity of their symptoms and enhance maternal attachment. The six fortnightly sessions, two of which the women's partners also attended, aimed to teach self-care strategies and had a psycho-educational component. The programme also included an interpersonal therapy element addressing social support and couple relations over the transition to parenthood, and, finally, a PFA portion that addressed the attachment needs of the infant, constructive parental responsiveness and infant bonding.

There was a significant improvement in MFA, measured via the MAAS, at the end, compared to the start of the programme. However, due to the lack of a CG, it remains uncertain whether the change was due to a natural progression of MFA, or whether it was genuinely influenced by the intervention. Separate and concurrent individual mental health treatment, which the majority of the participants (98%) were engaged in, may have confounded results. The low recruitment rate is a further limitation of the study.

Another study targeted at a particular group of expectant mothers, this time with women with a history of baby loss, was conducted in Iran by Baghdari et al. (2016). Using a non-RCT design, the researchers aimed to determine the effects of a pregnancy adaptation training package on MFA. In addition to the standard eight antenatal education classes attended by the CG (n = 30), the EG participated in an additional four classes covering various subjects, ranging from tuition about fetal

development to group discussions about feelings in pregnancy and concerns about fetal health.

Before the intervention, there were no statistically significant differences between the EG and CG in terms of mean MFAS scores ($p = 0.280$). However, following the intervention, the mean score on the MFAS was significantly higher in the EG, when compared with the CG ($p = 0.001$). The results suggest that the programme of pregnancy adaptation training improved MFA. However, the division into groups was quasi-randomised, being that it depended on the health centre where the participant was scheduled to attend antenatal classes. This, together with the lack of blinding, increased the risk of bias affecting the research results.

In another non-RCT, Akbarzadeh et al. (2017) evaluated the effect of the beliefs, attitudes, subjective norms, and enabling factors (BASNEF) model on MFA in 100 expectant primigravidae living in Iran. In the second or third trimester of their pregnancy, the EG attended six, weekly training sessions lasting 90 minutes each, with the well-described content primarily concerning antenatal attachment and breastfeeding. It is unclear what the care the CG received. The MFAS was used to measure MFA before the intervention and during the final session.

Although the two groups had similar MFAS mean scores before the intervention ($p = 0.74$), the EG had a significantly higher MFA mean scores than the CG after the intervention ($p < 0.001$). While this result suggests that the intervention was successful in improving the quality of MFA, the study description omits pertinent details that makes an assessment of its internal and external validity challenging. These limitations include a failure to report recruitment or completion rates and

a lack of clarity about both the number of participants in each group and the translation and validation of the MFAS measure.

Yuan et al. (2018) took a different approach in attempting to strengthen MFA. In a pilot RCT, conducted in China and focusing on women at risk of mental health issues, the researchers examined the effects of an attachment educational programme with expectant fathers on maternal mental health and her attachment to unborn child. The male partners of the 15 women in the EG took part in three weekly sessions concerning antenatal attachment, fetal development, and the wellbeing of expectant mothers in pregnancy.

Mean scores relating to antenatal attachment were comparable between groups in the pre-intervention period. However, while the scores increased for the EG over the study period, they remained relatively stable for the CG. This led the researchers to conclude that the intervention was effective in encouraging the development of MFA. However, it is not clear whether the post-intervention between-group differences were statistically significant.

Like much of the reviewed research, the study has significant limitations that restrict its validity. Primarily, these relate to the small sample, which is not based on a documented power analysis. Furthermore, it is unclear why expectant mothers completed the paternal version of the measure. Nor is it clear whether this measure had been translated and validated for use with women.

A similar study was carried out by Akbarzade et al. (2014). In the larger RCT, conducted in Iran with a sample of 150, the researchers examined the impact of

educating expectant fathers, on MFA in the men's wives. The husbands of the women in the EG participated in four, weekly sessions of attachment training. They were asked to discuss the acquired information with their wives.

There was a significant difference between the EG's mean scores on the MFAS, prior to and following the intervention, while no such difference was found in the CG. Furthermore, one month after the intervention, significant differences were found in between-group mean scores in all five dimensions of the MFAS.

The researchers thus concluded that training expectant fathers in attachment skills, and asking them to transfer the acquired expertise to their wives, could enhance MFA. They propose that addressing the male partner in an intimate relationship may help to reinforce his sense of responsibility and drive his participation in the pregnancy process.

It is not clear why the paternal aspect of fetal attachment was not measured, although these results may be presented in a separate paper (see below). It would have been interesting to observe whether maternal- and paternal-fetal attachment correlated within couples. Further limitations relate to the omission of details regarding session facilitator, and of records of adherence to the programme.

Although this is not acknowledged in the text, given methodological parallelisms, the paper published by Setodeh et al. (2017) is likely to represent a distinct aspect of the study by Akbarzade et al. (2014) described above. Setodeh et al. (2017) report on a RCT, carried out in Iran, comparing a group of 75 expectant fathers

who received attachment training to a group of 75 men who received routine antenatal care. The training consisted of four, weekly, 60-90 minute sessions on MFA in classes of 15 participants.

The total mean scores on an adapted MFAS were equivalent between the two groups before the intervention ($p = 0.523$). Attachment scores increased significantly over the research period for both groups ($p < 0.001$). However, there was a significant between-group difference in the post-intervention assessment, with the EG having significantly higher mean scores on the attachment measure than the CG ($p < 0.001$).

While the results suggest a causative effect, numerous limitations restrict confidence in the results. The description of the intervention is minimal, as is the information provided concerning the tool and the process for its adaption. It is not clear why the version of the tool created for men, the PFAS, was not used. Furthermore, the questionnaires were completed within the group setting rather than individually, which opens up the results to social influence and persuasion bias.

In the last of the identified studies to use an educational intervention, Nosrati et al. (2019) also assessed an intervention that sought to foster the paternal aspect of the fetal tie. In a RCT conducted in Iran, the 30 expectant fathers in the EG participated in three, weekly, 120-minute sessions of attachment training.

Mean scores of antenatal attachment, as measured on the PFAS, were similar between the CG and EG before training ($p = 0.527$). Nor were any significant

between-group differences noted at the data collection point immediately following the intervention period. However, findings show that at follow-up, 3 weeks after the end of the intervention, the mean scores of paternal-fetal attachment in the EG were significantly higher than those in the CG ($p = 0.006$).

The researchers suggest that the attachment training was effective at increasing paternal-fetal attachment and that the methods of fetal communication taught during the sessions had a prolonged effect on the antenatal tie. However, like other studies, the research is marred by some significant methodological and reporting limitations. These include a lack of detail about randomisation procedures, a failure to specify recruitment and completion rates, and a lack of blinding.

Thus, the research that has tested the effect of educational programmes on the PFA has methodological weaknesses which make it difficult to arrive at definitive conclusions. Although all the included educational interventions identified an intensification in PFA over time, two of the studies were of non-comparative design (Burke, 2007; Thomas et al., 2014) and allocation into the EGs and the CGs was non-randomised (Baghdari et al., 2016; Akbarzadeh et al., 2017), or self-selected (Bellieni et al., 2007) in a further three studies. The use of these research designs contributes to confusion regarding causality. The five RCTs (Abasi et al., 2013; Akbarzade et al., 2014; Setodeh et al., 2017; Yuan et al., 2018; Nosrati et al., 2019) gave more persuasive evidence of intervention efficacy. Nevertheless, these too are marred by methodological issues that constrain their validity.

2.3.7 Social and psychological support techniques

Caring-based support interventions

Access to a supportive network is known to facilitate adaptation to pregnancy, through the promotion of psychological wellbeing (Dunkel-Schetter et al., 2001; Elsenbruch et al., 2007; Westdahl et al., 2007). The availability of adequate social support has also been linked to the ability of women to develop feelings of closeness towards their unborn child (Yarcheski et al., 2009). Three studies have evaluated the influence of caring-based social support interventions, namely mentorship (Weis and Ryan, 2012), online community support (Wu and Hung, 2019) and home visitation (Cote-Arsenault et al., 2014) on MFA, in the general population or in specific vulnerable subgroups.

In a RCT, Weis and Ryan (2012) assessed the efficacy of a mentorship program with 65 expectant military wives whose husband was deployed with the American Armed Forces for at least one month during their pregnancy. The programme comprised eight, fortnightly support group sessions spread over the length of the pregnancy, which were facilitated by mentors. The mentors were mothers with varied military backgrounds.

No significant differences in MAAS scores were observed between the EG and CG when assessing the main effects of the programme. The authors conclude that a lack of intensity and focus in the programme may have contributed to the lack of statistically significant results. The study is limited by a very low recruitment rate

of 14%, and lack of information about sampling methods and participants' adherence to the programme.

A second study, conducted by Cote-Arsenault et al. (2014), evaluated the acceptability and feasibility of a home visit programme with 24 women who were expecting a baby after a prior perinatal loss. The mixed-methods research, also carried out in the USA, consisted of a small RCT with a qualitative element. The multi-component intervention, facilitated by a maternity advanced practice nurse, incorporated six home visits, the maintenance of a pregnancy journal, and the teaching of anxiety-reduction skills such as problem-solving, relaxation, daily fetal movement records and 'I' message training.

No statistically significant differences were found in terms of MFA, as measured with the MAAS, between the post-test results of the EG and the CG. From the qualitative analysis, however, it was determined that half of the women thought that the intervention lowered their propensity to resist attachment to their fetus during their current pregnancy, as influenced by worry about another loss. Most felt this to be a positive outcome. The study is limited by small sample size, a lack of specification of sampling method and a lack of cultural diversity within the sample, restricting generalisability.

A further study, this one targeted at the general population of expectant mothers, investigated the effects of a virtual community on pregnant women's well-being. Wu and Hung (2019), in Taiwan, used a before and after design with non-concurrent groups to compare a group of 66 expectant mothers who participated in an unmediated, closed Facebook community for peer-to-peer interaction, to a

group of 55 expectant mothers who received routine antenatal care. A Chinese version of the MFAS was used to measure MFA at baseline (before 12 gestational weeks), between 22-24 gestational weeks, and between 36-38 gestational weeks.

Mean scores on the MFAS increased significantly over the study period for both groups ($p < 0.001$). However, there were no significant differences found in the interaction effects of group and time for this or any other outcome in the research.

The use of non-concurrent groups is a cause of concern in this research. Non-concurrent designs are unable to control for the influence of history threat, where an unanticipated event affects the outcome of interest (Drew et al., 2008). Furthermore, it is possible that CG participants also used online communities for support, thus confounding the results.

Based on the statistical findings of the three studies reported in this review, caring-based social support interventions do not appear to significantly improve MFA. Nevertheless, the qualitative aspect in the study by Cote-Arsenault et al. (2014) suggested that the intervention allowed some of the participants to decrease evasion of attachment to the unborn child. This indicates that the programme may have had intricate effects on MFA that the quantitative measures were not able to explore effectively.

Psychological support interventions

Seven intervention studies that have aimed to improve perinatal psychological wellbeing through psychological therapies have been included in this review. Specific therapies used include psychotherapy (Spinelli et al., 2013; Lavi et al.,

2015), psychodynamic group therapy (Flykt et al., 2012), group and/or individual counselling (Jangjoo et al., 2019; Ekrami et al., 2020) and online cognitive-behavioural programmes (Scherer et al., 2014; Loughnan et al., 2019). These studies included a measure of MFA with the rationale that better mental health may be linked to more positive maternal depictions of the fetus. This link, however, is not well supported in the literature. Yarcheski et al. (2009), in a meta-analytic study, found that both anxiety and depression had low effect sizes on MFA.

In the first of these seven studies, Spinelli et al. (2013) investigated the efficacy of interpersonal psychotherapy for antenatal depression, as compared to a regular parenting education programme in an RCT with a sample of 142 women who met DSM-IV criteria for major depressive disorder. Trained psychotherapists facilitated the intervention, but the research paper fails to describe its structure and content.

MFA, as measured through the MFAS at baseline and at three further time points along the course of the intervention, is only demonstrated through a graph with error bars indicating standard deviation, and is not described in the text. Visually, it does not appear that MFAS scores differed notably between groups at any point during the treatment. Nor were there any significant difference in changes over time between treatment groups in terms of clinician-rated depression scores. However, for both groups, less depression was found to be associated with higher levels of MFA.

The researchers propose that, in terms of promoting MFA and enhancing psychological well-being, the parenting education program may have had

comparable benefits to the psychotherapy intervention. A fairly high attrition rate (37.3 %) restricts confidence in the research results, raising questions about the study's external validity.

Scherer et al. (2014), in another psychologically-based study, used case study methodology to analyse the applicability of an online, self-help programme which was supervised by a psychologist. The programme was designed in Switzerland to be used by pregnant women experiencing preterm labour, as a way to manage anxiety and stress. It is illustrated by the case of an expectant mother who had been hospitalised with premature rupture of membranes.

The MFA, as measured via the Prenatal Bonding Questionnaire (Reading et al., 1984), improved over the programme. The researchers suggest that the intervention may serve to reduce the psychological burden caused by preterm labour, thus facilitating the development of a more optimal fetal tie. However, given the case-study approach and the absence of untreated control patients, any causal inferences about the observed changes are premature. Moreover, the use of a little known and not fully validated tool to measure the antenatal tie further limits confidence in results.

In Australia, Loughnan et al. (2019) also assessed the efficacy of an online programme rooted in Cognitive Behavioural Therapy (CBT). The RCT targeted 87 expectant mothers who met clinical thresholds on validated self-report measures of generalised depression and/or anxiety. The unguided intervention, referred to as the MUMentum Pregnancy Programme, consisted of three, weekly online

lessons teaching participants to self-manage their symptoms through the practice of CBT skills .

The MAAS scores were similar between groups at baseline, and no significant between-group differences in MFA were noted post-assessment or at a follow-up four weeks later. Thus, the intervention did not seem to significantly influence MFA.

The study is overall well-described and of robust methodology. However, the low recruitment rate (21%) and moderate attrition rate (41.4%) are causes of concern, particularly as more women in the EG than in the CG left the study. Depending on the reasons behind the attrition, differential dropout can be a cause of bias (Moher D. et al., 2010).

Lavi et al. (2015), in a non-comparative study spanning the transition to parenthood, assessed the influence of a Child-Parent Psychotherapy programme for traumatised mother-child dyads, on maternal functioning 6 months after the birth. The 94 participants had a history of complex trauma, as well as current intimate partner abuse. During pregnancy, weekly sessions focused on women's experience of their pregnancy, and her fantasies, worries and hopes for her child. In the postpartum period the sessions focused on promoting attunement to the child.

Maternal depression and post-traumatic stress symptoms decreased over the programme, possibly indicating the efficacy of the treatment in promoting psychological wellbeing within such a population. MFA was measured during

pregnancy, before commencement of the programme, via the MFAS. Women who had initially had low MFA scores were found to experience the greatest improvement in depression, posttraumatic stress symptoms, and child-rearing attitudes over the study. The researchers speculate that those with a lower MFA may be most at high-risk of maladaptive parenting behaviours, and thus stand to benefit most from such an intervention. Unfortunately, failure to administer a repeat measure of MFA does not allow assessment of the efficacy of the intervention in this regard. The absence of a CG also prevents the conjecture of causality for psychological outcomes.

A further targeted study, conducted by Ekrami et al. (2020) in Iran, aimed to assess the influence of a counselling intervention on MFA in women experiencing an unplanned pregnancy. The RCT compared a group of 40 expectant mothers who attended six, weekly group counselling sessions and 1-3 individual counselling sessions, to a group of 40 expectant mothers who received routine care. The participants completed a Persian version of the MFAS pre-intervention and four weeks post-intervention. Only women with low-medium initial antenatal attachment scores were eligible to participate.

While the mean attachment scores increased significantly over the study period for the EG, those for the CG did not. After the intervention, the counselling group had significantly higher MFAS mean scores than the CG ($p < 0.001$).

This result suggests that the intervention was effective in enhancing MFA in cases of unplanned pregnancy, and where such feelings are initially not optimal. While the study is overall well-described and conducted with a well thought out

methodology, limitations restrict confidence in the results. For instance, while it is specified that one of the researchers facilitated the intervention, it is unclear what qualifications s/he had to carry out this counselling role. Furthermore, the intervention description does little to distinguish the programme from an educational course. Finally, there are some significant demographic between-group differences, such as the number of primigravidae versus multigravidae in each group. There were also significant pre-intervention, between-group differences in the mean scores of certain subscales of the MFAS. It is possible that such pre-existing differences affected the overall research results.

Another RCT, also carried out in Iran, similarly evaluated the effect of group counselling on MFA in women experiencing an unplanned pregnancy. Jangjoo et al. (2019), with a sample of 80 primiparous, married expectant mothers, evaluated the effect of four, weekly group counselling sessions, focusing on MFA and ways to promote it, facilitated by a researcher specialised in midwifery counselling. The participants completed a Persian translation of the MFAS pre-intervention and two weeks after the intervention ended.

While total mean MFAS scores were similar between groups at baseline ($p = 0.96$), after the intervention the EG scores were significantly higher than those of the CG ($p < 0.001$). Furthermore, the mean scores in all subscales of the MFAS were significantly higher for the EG than they were for the CG.

The study overall appears to have adequate internal and external validity, allowing a degree of confidence in the causative effect of the intervention. However, the

lack of blinding, the moderate recruitment rate (66.7%) and the possible influence of social desirability bias remain areas of concern.

In a final study assessing an intervention rooted in psychology, Flykt et al. (2012), examined the shift in maternal representations across the antenatal and postpartum periods among 51 drug-abusing mothers and their infants, and among 50 non-drug using comparative dyads. The women in the EGs either received psychosocial support (PSS) or participated in psychodynamic group therapy (PGT). The PGT group received an integrated parenting programme, as well as substance abuse and mental health treatment, during weekly sessions. The PSS group received an individually tailored intervention that did not include psychotherapy and did not have a regular participation schedule.

Maternal conceptualisation of the fetus/child was measured via the adjective scale of the Interview of Maternal Representations (IRMAG; Ammaniti et al., 1992). Among PSS mothers, representations of the infant first shifted in a more positive direction between pregnancy and four months postpartum, but then in a more negative direction by 12 months postpartum. In contrast, there was no shift in the representations held by the comparison mothers and a minimal, non-significant positive shift among the PGT mothers.

The researchers suggest that the PGT intervention helped this group of high-risk, vulnerable mothers build a sustained, positive view of the infant, avoiding infant idealisation and later disillusionment. The single assessment point during pregnancy prevents observation of how the interventions may have influenced maternal representations during this specific period. Furthermore, the use of the

adjective scale from the IRMAG, rather than the interview form of this tool, prevents an in-depth understanding of maternal representation of the (unborn) child. Given that the drug-abusing mothers were allowed to select the group in which they participated, it is possible that there may have been systemic between-group differences that may have affected representational shifts over time.

In summary, although several studies have investigated the influence of psychologically-based programmes on the MFA in vulnerable samples, no concrete conclusions can be made regarding the outcome of interest. In several of these studies, there seems to be a lack of emphasis on the antenatal tie, with MFA most frequently viewed as secondary to findings more specifically linked to psychological health. Two of the studies only report on MFA outcomes in terms of their correlation with psychological variables (Spinelli et al., 2013; Lavi et al., 2015), and child-rearing attitudes (Lavi et al., 2015). The findings of other studies are weakened by case-study methodology (Scherer et al., 2014), non-comparative design (Lavi et al., 2015), lack of repeat measurement during the antenatal period (Flykt et al., 2012; Lavi et al., 2015), and self-selection into groups (Flykt et al., 2012). The RCTs conducted by Jangjoo et al. (2019) and Ekrami et al. (2020) give some confidence in the efficacy of individual and/or group counselling in enhancing MFA in unplanned pregnancies. However, these studies too have weaknesses, and their results need to be confirmed by more robust research.

2.4 Conclusion and rationale for the thesis

The literature pertaining to PFA, in terms of intervention research, is primarily focused on management through ultrasound imaging and screening procedures, fetal awareness interventions, relaxation strategies, educational programmes, and social and psychological support techniques.

The detailed narrative review suggests there is insufficient evidence to arrive at definitive conclusions about the effectiveness of any of the interventions aiming to enhance PFA. Although some of the 47 primary studies reviewed found evidence of a positive effect, the significant variance in methodological quality and the conflicting results mean that these should be considered with caution. In addition, widely varying research designs meant that synthesising the findings as a coherent whole was not feasible.

The only tentative deductions that can be made are in respect to the effects of undergoing an ultrasound scan on MFA. While undergoing an ultrasound seemingly allows mothers to better visualise their unborn child, enhancing perceptions of emotional proximity, the modality of the ultrasound does not seem to make a major difference when it comes to encouraging the fetal tie (Righetti et al., 2005; Rustico et al., 2005; Sedgmen et al., 2006; Lapaire et al., 2007; de Jong-Pleij et al., 2013).

The reviewed studies share several methodological weaknesses that undermine the state of the evidence as a whole. The use of non-probability samples restricts evaluation of representativeness and impedes inferences from the sample to the

wider population, thereby limiting external validity (Davidson, 2006). A lack of follow-up, or a less than sufficient follow-up, as seen in much of the included research, prevents evaluation of the intervention's longer-term effects. In addition, the inability to blind participants and programme facilitators to group allocation, an issue across the included comparative research, has been found to be a source of marked bias, often being associated with amplified effect sizes (Hróbjartsson et al., 2014).

The involvement of men in only 7 of the 47 included studies (14.9%) reflects the general neglect of expectant fathers in research concerning the antenatal tie. While there are adapted methods for evaluating paternal-fetal attachment, the larger proportion of relevant work continues to concentrate on the expectant mother. This contrasts with the increasing awareness of the importance of involving fathers' in the lives of their children (Lamb, 2010).

The use of self-reporting methods to assess the PFA across the included research has to be considered a significant drawback. The use of questionnaires to collect data about PFA, a phenomenon which is likely influenced by complex interacting factors, including emotional, cognitive and behavioural elements, may be inadequate (Doan and Zimmerman, 2003). Questionnaires do not allow participants to explain the thoughts that influence their answers, and limit responses to those alternatives trust upon them by the researcher, rather than allowing them to discuss the elements that they themselves consider important (Popper, 2005). Furthermore, as posited by Saastad et al. (2011), administration of antenatal attachment measures on multiple occasions within a brief period can cause bias,

with possible subconscious changes in behaviour as influenced by the initial questionnaire. Moreover, in the PFA research field, and as discussed in section 1.4, the fact that existing measures have been based on frameworks that have questionably used Bowlby's and Ainsworth's attachment theory as a foundation raises further concerns (Walsh, 2010).

Fourteen of the experimental, repeat-measure design studies in this review concluded that the evaluated intervention was not more effective than the control condition in enhancing MFA. This is compared to 17 studies that fit the same criteria where the intervention was deemed to be effective. A high incidence of non-significant findings indicates that work in this field has not advanced to the degree needed to develop consistently effective and useful interventions. Much of the research applied interventions that were not substantiated by well-established associations within the literature relating to the antenatal tie, often seemingly implemented in a trial and error approach.

The general underlying premise of the studies appears to take for granted the vital importance of the bolstering of the PFT. However, this verdict regarding the criticality of the tie is perhaps premature, given that the evidence linking the tie to parental psychological wellbeing, maternal antenatal health behaviours, and postnatal parenting is fairly weak overall (section 1.6.4).

As discussed in section 1.6, further exploration of the social construct regarding the parental 'tie' with the fetus is needed, to enhance our understanding and allow for the building of an accurate theoretical framework (Shieh et al., 2001; Laxton-Kane and Slade, 2002; Walsh et al., 2013; Birtwell et al., 2015). Before such

an understanding is achieved, uninformed attempts to enhance the PFT risk wasting of time and resources, and chance the possibility of triggering harm.

As such, the undertaken review supports the need for in-depth, qualitative research to generate an inductively derived theory that can accurately explain how parental conceptions of the unborn child develop and how they relate to the emotional tie that is built with the fetus. Initial inclinations regarding the suitability for the use of GT methodology are supported, as this methodology allows for the generation of a framework that has both breadth and depth, and recognises the true meaning behind the phenomenon, from the parental point of view.

The overall aim of this thesis is, therefore, to construct substantive theory of expectant parents' fetal conceptual and relational experiences. The research aim has purposely been kept broad initially, in keeping with GT methodology, to allow "flexibility and freedom to explore the phenomenon in depth" (Strauss and Corbin, 1990, p.37). Gaining accurate, coherent, and comprehensive knowledge regarding the conceptual underpinnings of the PFT has important implications for allowing the shaping and development of effective programmes and services that promote the evolution of this tie. Such interventions may also be important in supporting woman's health-related behaviour in pregnancy, as well as the parental bond built with the child in the postpartum period.

Chapter 3 Methodology and Methods

3.1 Introduction

This chapter describes the research methodology and methods that form the basis of the study. Further to the identification of the research aim in the previous chapter, the research question and study objectives are detailed here. The rationale for the use of qualitative methodology and a GT approach is expanded on. An account of the philosophical underpinnings of the study follows. The decision to use a constructivist approach is justified through comparison with other possible strategies within GT, and the main principles underlying constructivist grounded theory (CGT) (Charmaz, 2014) are delineated. Although the Charmazian GT approach is used in the study, citations from other proponents of GT are used to illustrate shared elements of the methodology.

The research methods section (3.3) then details the research strategies that were applied in the study. This includes information about the sampling strategy, recruitment process, data generation and analysis. Ethical considerations and strategies used to enhance trustworthiness are also discussed.

3.2 Methodology

3.2.1 Research question and objectives

The primary question that the research sought to answer was:

How do expectant parents conceptualise and relate to the unborn child over a first pregnancy?

An answer to this question was acquired through the fulfilment of the research objectives. These were:

1. to explore how expectant parents conceptualise the unborn child during a first pregnancy;
2. to explore the evolution of these conceptualisations over the pregnancy;
3. to gain insight into how these conceptualisations affect the expectant parents' emotional tie to the unborn child;
4. to gain an in-depth understanding of the similarities and differences in how expectant parents of either gender construe the unborn child;
5. to develop substantive theory illustrating how expectant parents conceptualise and relate to the unborn child to inform policy and practice.

3.2.2 Justification for choice of qualitative methodology

Research methodology refers to the foundation of principles and theories on which the selected methods and techniques used in the study are based (Holloway and Wheeler, 2013). According to Teddie and Tashakkori (2009), the methodology should be guided by the research topic, and the particular research questions

being addressed. Qualitative and quantitative research paradigms often aim to address questions of a somewhat different nature, but Rees (2011) maintains that they are both pivotal in developing midwifery-related knowledge and practice.

Qualitative research involves a process of inductive inquiry that seeks to gain an understanding of, “how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences” (Merriam, 2009:5). Thus, qualitative research is concerned with the holistic understanding of the meaning that individuals attach to events in their lives, from their own frame of reference (Corbin and Strauss, 2008; Taylor et al., 2016). Quantitative methods, on the other hand, operate on the philosophical concept that there is an external, knowable world waiting to be discovered, quantified, measured, and reduced to theories and laws through deductive enquiry (Charmaz, 2014). Researchers using quantitative methodology often investigate the social world using techniques which follow the 'scientific method', emphasising hypothesis testing, generalisation and prediction (Snape and Spencer, 2003). In contrast, qualitative methods often reject the model of natural science and focus on facilitating understanding through rich description, resulting in emergent concepts and theories (Snape and Spencer, 2003).

Traditionally, quantitative research paradigms have been considered to be the most powerful method for creating knowledge and understanding (Charmaz, 2000). However, the ability of quantitative methods to effectively explore and explain complex human phenomena, which cannot easily be measured, such as relationships, culture, and values, is limited (Curry et al., 2009; Streubert and

Carpenter, 2011). This may partially explain the inconsistent, and sometimes contradictory, results gleaned from quantitative research that has attempted to study the PFT, and its determinants and correlates. A qualitative approach may prove more useful for exploration in an area where the phenomena of interest are considered complex, and the aim is theory generation (Morse and Field, 1995).

Thus, to discover what building a tie to their unborn child truly means to expectant mothers and fathers, a qualitative research methodology was used. This choice of methodology was largely pragmatic, being selected because it was regarded to best allow for the answering of the research question. Pragmatism is a philosophical perspective that holds that truth is relative to present circumstances, not to be regarded as an absolute, but rather, being seen as a flexible and functional construct in comprehending the nature of reality (McCaslin, 2008). Rather than accepting broad truths, the primary purpose of pragmatism is to discover practical and applicable solutions to the research problem (Vogt and Johnson, 2005).

The use of a qualitative approach will facilitate the understanding of the phenomenon from the perspective of the individual. This will ensure that the data generated is meaningful to the participants, being rooted in their own constructions, rather than filtered through researcher generated variables (Taylor et al., 2016). This is highly relevant for midwifery practice, as decisions made during care processes are often based on the perceived needs and preferences of clients and their families (Cooke, 2005). Midwives, therefore, need a detailed

understanding of how the families they care for experience the gestational period, to allow them to provide a responsive, relevant, and timely reaction.

Midwives also recognise childbearing as an experience which is assigned profound meanings, not only by the women but also by the wider family and the community (International Confederation of Midwives (ICM), 2005). The use of a qualitative approach in the current research validates this ascribed significance, ensuring that the phenomenon is studied in the context in which it occurs, and against the background on which it was built (Tracy, 2013). Furthermore, midwifery care aims to be holistic in nature, based on an understanding of the physical, psychological, emotional, social, cultural and spiritual experiences of women (ICM, 2005). Thus, gaining in-depth knowledge of the PFT will aid midwives in providing the comprehensive care that is so desired by their clients.

3.2.3 Philosophical underpinnings of the study

According to Guba and Lincoln (1994:107), research paradigms are “basic belief systems based on ontological, epistemological, and methodological assumptions”. They maintain that such paradigms embody an individual’s ‘worldview’, their beliefs about the nature of reality, and the way that they relate to the world (Guba and Lincoln, 1994). Ontology refers to philosophical perceptions regarding the nature of reality and existence (Birks and Mills, 2011), such as belief in singular or multiple realities (Holloway and Wheeler, 2013). Epistemology, on the other hand, pertains to the enquiry of what is considered valid knowledge and how it is represented. It examines the extent of possible knowledge, in contrast to that which is considered unknowable, and studies the relationship between objectivity

and subjectivity (Delanty and Strydom, 2003). Epistemology also questions the nature of the relationship between the one who has knowledge, and the one who is seeking that knowledge (Guba and Lincoln, 1994). In the natural science model phenomena are seen as occurring independently, and being unaffected by the researcher's behaviour, allowing for an objective, value-free approach (Snape and Spencer, 2003). Conversely, in most qualitative research, the interactive relationship between the researcher and the researched is regarded to result in findings that are subjective and negotiated between the two parties (Snape and Spencer, 2003).

Ontological positions exist on a continuum, ranging from realism to relativism (Guba and Lincoln, 1994). Considering the nature of reality, Guba and Lincoln (1994) describe naive realism, associated with the positivist paradigm, as the assumption that there is a real, objective and comprehensible reality apart from the human knower. Thus, in the midwifery field, for instance, quantitative research seeking to establish straightforward chains of circumstances in physiological processes related to childbearing often adopts a realist ontological stance. It was towards this stance that the researcher was initially drawn, attracted by the possibility of establishing direct, cause-and-effect, and generalisable relationships between several variables, including the PFT and infant temperament.

However, the experience of pregnancy, involving complex phenomena, and influenced by socio-contextual variables, cannot be easily reduced to systematically observed individual components. As the researcher looked deeper

into the variables she wished to relate to one another, she became increasingly uncomfortable with the ontological stance of realism. It seemed unrealistic that it would be possible to establish relationships representing a single reality, in a field with such complex and intertwining influences. Thus, the research approach was radically reconsidered and, as described in the background chapter (section 1.2), a new focus was established, supported by the findings of the narrative literature review.

The majority of contemporary researchers in the qualitative field maintain that the social world is governed by social norms and shared understandings, implying that the laws that constitute it are not fixed (Snape and Spencer, 2003). In keeping with this, the constructivist ontological position opposes the existence of an objective reality and maintains that reality is a construction of individuals and their social reference groups, formulated as they assign meaning to the world (Ghezeljeh and Emami, 2009; Charmaz, 2014). Thus, within the constructivist approach, individual interpretations of a particular phenomenon may differ, although many tend to be shared (Guba and Lincoln, 1989). Reality is further thought to go through a process of continual development, rather than being static (Charmaz, 2014). As previously discussed, it is believed that a theoretical framework describing the PFT will be individually and contextually, rather than widely applicable, given the likely influence of socio-cultural variables. Thus, this construct is anticipated to fit well within constructivist ontological thinking.

The epistemological starting point of a particular approach can range from positivist to interpretivist assumptions (Guba and Lincoln, 1994). Positivism

endorses deductive methods of empirical observation, or manipulation of phenomena, to achieve reliable knowledge, establish generalisations and allow predictions of patterns (Neuman, 2005; Charmaz, 2014). This framework maintains that the researcher should study phenomena without influencing them, using objective methods to achieve the closest possible approximation of reality (Ulin et al., 2005).

On the other hand, interpretivist epistemology challenges positivist scientific approaches as a means to gain and convey knowledge. Within this approach, the world is regarded to be experienced and interpreted by individuals in their interactions with one another and within broader social systems (Lincoln and Guba, 1985; Maxwell, 2006). The purpose of interpretivist inquiry is to gain a deep understanding of a particular phenomenon through methods that do not seek to manipulate or control (Tuli, 2011). The ability to generalise to the wider population is not an outcome that is aspired to (Farzanfar, 2005). Furthermore, the researcher is recognised to be inseparable from the social realities they are studying, playing an essential role in constructing the worlds they research (Ghezeljeh and Emami, 2009). The partnership built between the researcher and the researched is thought to allow for an insight into contextual influences on the phenomena under consideration, leading to depth and richness of the resultant data (Ulin et al., 2005). In studying the social world, qualitative researchers often subscribe to an inter-subjective theory of truth, holding that reality can only be measured in a consensual fashion, rather than being unequivocal (Snape and Spencer, 2003).

The interpretivist approach to knowledge acquisition sits relatively comfortably with the researcher, given her experience working within the field of midwifery. This is influenced by the extensive use of communication skills within midwifery practice, where an emphasis is placed on active listening, and flexibility, with respect for individuals' unique needs, thoughts, and emotions (Butler et al., 2008). While the researcher may personally have initially been drawn towards the positivist end of the epistemological spectrum, given her tendency to think logically and deductively, she welcomed the challenge of using an interpretivist approach, which better suited the research purpose. In the research process, the interpretivist researcher is required to embrace a multifocal outlook when seeking to understand participants' perceptions and meanings of the phenomena under consideration.

The research methods, which will be described in section 3.3, will reflect the use of constructivist ontology and interpretivist epistemology. Birks and Mills (2011) assert that the personal philosophical position of the researcher, the aim of the study and the methodological processes should be in consonance, with this allowing for methodological congruence.

3.2.4 Introduction to grounded theory

GT is a rigorous research method that involves the construction of substantive conceptual theories through inductive data analysis (Bryant and Charmaz, 2007). First developed in the 1960s by social scientists Glaser and Strauss (1967), the methodology seeks to understand and explain participants' experiences of the world (Dallos and Vetere, 2005). However, it aims to go beyond the representation

of participant views, with GT researchers striving to develop explanatory models that elucidate variation in human behaviour (Glaser and Strauss, 1967; Starks and Trinidad, 2007).

Using GT was considered the best approach for achieving the research aim because, as noted in the background and literature review chapters, although the topic has received research interest in the past, it is recognised that the construct of the PFT still lacks conceptual clarity (Brandon et al., 2009; Yarcheski et al., 2009; Walsh, 2010). Thus, “the generation of theory with explanatory power” (Birks and Mills, 2011:17), was a desired outcome. Use of this methodology allowed for a fresh and open-minded approach to understanding parental experiences of conceptualising and relating to their unborn child.

In GT, engagement with participants allows the researcher to understand how social processes are constructed, and how they are shaped by the physical and social environments in which they exist (Starks and Trinidad, 2007). Thus, the use of this method in understanding the process expectant parents undergo when building a tie to their unborn child is foreseen to facilitate the acquisition of knowledge situated in the context of the Maltese culture.

As previously described, an accurate understanding of the ways expectant parents build a tie to their unborn child is considered important because the PFT has been linked to maternal health behaviour in pregnancy (Lindgren, 2001; Lindgren, 2003; Alhusen et al., 2012b) and parent-infant postpartum attachment following the birth, for both mothers (Damato, 2004b; Edhborg et al., 2011; Alhusen et al., 2013; Dubber et al., 2014) and fathers (Hjelmstedt and Collins, 2008; Condon et al.,

2013). Thus, if reliable ways can be found to improve the PFT, this may have far-reaching consequences for the infant's physical and social wellbeing. However, as demonstrated in the narrative literature review, existing interventions addressing the PFT have had less than optimal results, which may be partially attributed to the lack of a framework that accurately captures parental experiences in this respect. The conceptual framework produced in a GT study is aimed at researchers and practitioners seeking explanatory models on which to base behaviour and intervention design (Starks and Trinidad, 2007). Therefore, use of this methodology in the current study is foreseen to allow for the development of more effective interventions that address the PFT, through the attainment of an accurate conceptual understanding of the significance of this tie.

GT also appealed to the researcher because of its prescriptive methods. Charmaz (2014) acknowledges that GT is often more transparent about the involved perspectives and strategies than other qualitative research methodologies, possibly as a result of the methodology's roots in positivistic assumptions. As such, adhering to well-defined methods when conducting the study helped to prevent the researcher from becoming disoriented when analysing the vast materials accumulated over the research.

3.2.5 Approaches to grounded theory

There is a range of approaches within GT, evidenced by varying interpretations and beliefs regarding the nature of, and the processes involved in, this methodology (Cutcliffe, 2000). Following its initial conceptualisation, documented in the seminal text, 'The Discovery of GT' (Glaser and Strauss, 1967), the pioneers

of the methodology took it in differing directions, which are described very briefly here.

Glaserian, or objectivist, GT (Glaser, 1978; 1992; 1998) often uses language which resembles that of positivist research. The approach seeks to maintain a dispassionate stance, emphasising the emergent nature of the theory, and favouring somewhat inflexible, systematic methods (Heath and Cowley, 2004; Charmaz, 2008).

On the other hand, Strauss (1987), who later collaborated with Corbin (Strauss and Corbin, 1990), moved away from the view of GT as a method of discovery, conceptualising it, instead, as a method of verification or interpretation (Charmaz, 2014), and undermining the original weight assigned to the emergence of codes and categories (Charmaz, 2008). Straussian GT subscribes to a more flexible vision of the methodology, recognising the importance of the existence of a relationship between the researcher and the participants in the creation of the conceptual framework (Strauss and Corbin, 1998). Glaser (1992), who believed that an objective approach was needed to collect the data that was contained in participants' words (Mills et al., 2006), was critical of their approach, maintaining that it ignored the original tenants of the methodology (Glaser, 1992).

A further approach, CGT, as proposed by Charmaz (2003), again suggests a slightly different perspective, further emphasising subjectivity in the research process.

Charmazian methods are based on two critical assumptions:

- the researcher enters the research setting with her own preconceived ideas, which inevitably have an important influence on the research process. The researcher's perspectives, positions, and values can serve to enrich the research, but engagement in reflexivity is required to account for the decisions made, and actions taken;
 - the studied phenomenon is situated within a particular social reality, located within a specific context that is both unique, and far from static.
- (Charmaz, 2014)

Hence, CGT holds that it is inaccurate to portray analysis of the phenomena under consideration as precise representations. Instead they should be acknowledged as a co-construction between the researcher and the researched, "(a) picture that draws from, reassembles, and renders subjects' lives" (Charmaz, 2003:270), "located in time, place, and the situation of inquiry" (Charmaz, 2014:342).

Agreement within GT with regards to underlying philosophical stance is lacking and varies according to the approach adopted. Although some have argued that the original conceptualisation of GT (Glaser and Strauss, 1967), suggests the use of a realist ontology and positivist epistemology, Glaser (2002) later argued that GT per se should have neutral ontological and epistemological underpinnings, so that perspectives can be guided by requirements of individual studies. However, Charmaz (2014) has more recently proposed that CGT may be best approached from a constructivist ontology and an interpretivist epistemology. Thus, the philosophical underpinnings identified to benefit the research aim in the current study are congruent with the use of the latter approach.

3.2.6 Choice of constructivist grounded theory

The choice to use a CGT approach (Charmaz, 2014) in the current study, as previously indicated, was taken after consideration of several factors, including compatibility with the research question and resonance with current reasoning and the midwifery care model, as discussed below.

The aim of this study is to construct substantive theory of expectant parents' fetal conceptual and relational experiences. It is acknowledged that the meaning and interpretation that parents give to each pregnancy is unique (Schneider, 2002). Therefore, it is logical that the starting assumption should be that there is no fixed objective truth regarding parents' tie to the unborn child. Within the constructivist paradigm, research is regarded as a process of rebuilding the subjective, distinctive reality of the participating individuals (Birks and Mills, 2011). Thus, CGT (Charmaz, 2014) was felt to fit particularly well with the research aim. The Glasarian vision of the methodology, where there was a presumed existence of an external, objective reality (Glaser and Strauss, 1967), was not considered appropriate, given that the existence of an impartial truth that can explain this complex phenomenon is unlikely.

CGT (Charmaz, 2014) also resonates with current reasoning, in connection with the 'paradigm shift' in social research (Holloway and Wheeler, 2013), emphasising the essentiality of acknowledging the co-constructive nature of theory generation, built through the relationship between the interviewer and the participants (Charmaz, 2003). The nature of this partnership is also reflective of the respectful and non-authoritarian midwife-mother relationship that is so enshrined within the

midwifery profession. The encouragement of this kind of relationship within research is in contrast with Glaser's vision of GT, where theory is seen to originate from participants alone, with the researcher remaining detached, and emotionally neutral (Bryant and Charmaz, 2007). In contrast to this, it is acknowledged that researcher subjectivity in the current study had an inevitable influence on the resultant theory about the PFT. Nonetheless, as suggested by Charmaz (2014), researcher subjectivity was acknowledged and reflected upon (section 3.6).

The Straussian approach to GT (Strauss and Corbin, 1990; 1998), would also have suited the research question, given that it aims to build theory to explain pragmatic, experienced-based issues. Like CGT, the Straussian approach acknowledges that the researcher has an active role to play in theory development (Strauss and Corbin, 1990; 1998). However, Strauss and Corbin (1998), asserted that theories resulting from GT studies should aim to be abstract enough to allow for 'generality', which refers to the applicability of the resultant theory to contexts other than that of the original study. Charmaz (2014), on the other hand, does not believe that generality should be a prescribed goal for analysis. Instead, she asserts that grounded theories should be situated within their historical, social, local, and interactional contexts (Charmaz, 2014). CGT was thus considered a better fit with the research aim because, as previously discussed, the PFT is thought to be a culturally embedded phenomenon (Mercer et al., 1986). There are likely to be some differences in how expectant parents of different cultures build a tie to the unborn child (Ahern and Ruland, 2003; Bielawska-Batorowicz and Siddiqui, 2008). Thus, it is acknowledged that the theory developed will be firmly

positioned within the Maltese context, albeit with its reach being somewhat extended with the inclusion of expatriate participants. It would be inaccurate to claim, beyond doubt, that the resultant framework is necessarily applicable in cultures other than that where it was developed.

3.3 Research methods

3.3.1 Ethical approval

Permission to conduct the study was obtained from the Faculty of Health and Social Care Research Ethics Committee at the University of Hull (Ref: 241), and from the Faculty of Health Sciences Research Ethics Committee (FREC) and the University Research Ethics Committee (UREC) at the University of Malta (Ref:159/2016). These approvals can be found in appendix C.

Permissions to collect data were obtained from the Director of Obstetrics and Gynaecology, the Chief Midwifery Manager, the Data Protection Officer and Chief Executive Officer of the state general hospital in Malta (Appendix D). Additional permission was gained from the Charge Midwife of the antenatal clinic of the same hospital, where she agreed to act as a gatekeeper for the study (Appendix E), a role described in section 3.3.3. Further ethical considerations are discussed in section 3.4.

3.3.2 Sampling strategy

To answer the research question, an initial purposive sample of participants were recruited and interviewed, as described in sections 3.3.3 and 3.3.5 below. The use

of purposive sampling allowed for the selection of individuals who fulfilled predetermined criteria, as deemed pertinent to the research question (Holloway and Wheeler, 2013). The use of this method of sampling in the first stage of GT research is supported by Charmaz (2014).

Participants were selected on the basis that they were:

- expectant parents experiencing an uncomplicated first pregnancy;
- residing in Malta;
- able to communicate fluently in English and/or Maltese;
- at a minimum age of eighteen years;
- married or in a relationship with a member of the opposite sex, where both members of the couple were willing to participate;
- recruited at a gestational age of approximately 12 weeks.

This population was targeted because its members were thought likely to be able to provide rich details about their experience of building a tie to the unborn child, given that they were immersed in the event.

The sample was restricted to first-time expectant parents because, for experienced parents, the fetal tie is likely to be complicated by their prior exposure to parenthood. The lower age limit was a pragmatic consideration to facilitate the process for informed consent. Language options were necessarily limited to those in which the researcher is proficient, as she conducted all the interviews.

The decision to include couples was based on the study's interest in considering the way that inter-partner dynamics influence the development of the family as a triad during the gestational period. The decision to focus on heterosexual couples was primarily based on current demographics in Malta, where most childbearing couples are in relationships made up of a male and a female partner. Although the investigator did not wish to diminish the experiences of those who are in non-traditional relationships, it was felt that the formulated theory would be most beneficial if it were built around dominant relationship tendencies. The sample included expectant parents originating from different countries, but residing in Malta. It was hoped that this measure would increase the reach of the research, being that it was recognised that the PFT was likely to be influenced by the culture in which it developed.

Once tentative theoretical categories started to emerge from the data, and issues of importance started to be identified, theoretical sampling took priority. This progression in sampling methods is encouraged by Charmaz (2014). Theoretical sampling involves seeking, "people, events, or information to illuminate and define the boundaries and relevance of the categories" (Bryant and Charmaz, 2007:611). It involves following up on leads in the data as they surface (Glaser and Strauss, 1967), and serves to focus data generation, by revealing gaps that require further development (Charmaz, 2014). In practical terms, the theoretical sample is selected to clarify and refine the theory as it is formed (Breckenridge and Jones, 2009).

In the current research, theoretical sampling principles led the researcher to recruit further couples who originated from different cultural backgrounds, as well as those who were in less established relationships. These included a transnational couple who had recently started cohabitating and a Southern Asian couple whose recent marriage had been arranged by their parents. The decision to seek out such participants was based on an identified need to inquire more deeply into how the developing theory was affected by relationship stability and cultural influences. Furthermore, attempts were made to recruit participants from various socio-economic backgrounds, through the use of multiple recruitment sites and methods. Finally, to refine and enrich the evolving theory, the content of the interview guide was continually adapted as the study progressed.

Sampling continued until theoretical saturation had been achieved; that is until a process of persistent coding and constant comparison yielded no new properties or dimensions (Holton, 2007), and the categories identified were well-defined (Birks and Mills, 2011). Theoretical saturation is a well-established concept in GT and is recommended by Charmaz (2014). Reaching theoretical saturation is somewhat of a challenge in longitudinal GT research as achieving this at one data generation time point does not guarantee that it will be reached at the next.

Following practices adopted in previous longitudinal GT studies (Lalor et al., 2008; Greenfield, 2017), the concept of saturation was applied to the first time point. Had subsequent interviews with the initial sample not yielded saturation, additional participants would have been recruited to answer any pending

questions. However, in practice, theoretical saturation was reached at all three time points with the original group of participants.

Theoretical sampling does not seek to represent a population or increase the generalisability of results (Charmaz, 2014). It has been maintained that sampling adequacy should be the focal point, with sample size only being considered important as it relates to issues of data saturation (Bowen, 2008). Creswell (2012) suggests that GT studies should comprise of approximately 20 to 30 participants, and in a sample of PhD studies utilising this methodology, Mason (2010), identified that the mean number of participants was 32. The sample size of the current study was 18, including 9 expectant mothers and 9 expectant fathers. The total number of interviews conducted with these participants was 52.

3.3.3 Access and recruitment process

The process of recruitment commenced following the acquisition of relevant permissions, as described in section 3.3.1. Initially, efforts were made to recruit potential participants solely from the antenatal clinic at the state general hospital, when they attended their pregnancy-booking visit. Most expectant mothers in Malta birth at this hospital, and virtually all attend the booking visit.

The Charge Midwife at the antenatal clinic acted as gatekeeper. The use of a gatekeeper was foreseen to facilitate access to the recruitment setting (Flick, 2007), and was a requirement for obtaining ethical permissions to conduct the research through University of Malta Research Ethics Committee (UREC). The gatekeeper's role consisted of making the initial approach to individuals matching

the eligibility criteria, briefly explaining the scope of the research, and distributing an information letter about the study, together with an opt-in form (Appendix G). The information letter specified that interest in participation was to be conveyed either by contacting the researcher by telephone, text or email, or by returning the completed opt-in form, with the participant's contact details, to the Charge Midwife.

While a few participants were recruited in this way, the antenatal clinic is held in a hectic environment, and the initial visit is often rushed. Furthermore, many expectant mothers receive the majority of their antenatal care in private clinics and thus attend the hospital booking visit late in the second trimester of their pregnancy, meaning that they were ineligible to participate. These factors meant that the Charge Midwife had little opportunity to recruit participants, and the process was slow-moving.

Thus, recruitment sites needed to be extended. In addition to the antenatal clinic, permission was gained from the relevant ethics boards to recruit participants through several additional means. These included an obstetric ward that caters for women with early antenatal complications in the same state general hospital, as well as a private obstetric clinic. Furthermore, recruitment calls were posted in several public Facebook groups targeted towards local expectant parents or parents in general, and, in a process of snowball sampling, existing participants were encouraged to notify similar others of the study and the possibility of participation. The sites from which participants were recruited can be seen in table 3.1.

Initial researcher contact was through participant-initiated correspondence, or, in cases where the opt-in form had been completed, the researcher contacted individuals by telephone. During this contact, further information about the study was provided, questions answered, and the initial interview scheduled. The initial telephone interaction also served to begin building a rapport with participants, an important measure which establishes a sense of trust, puts the participant at ease and promotes continued participation (Legard, 2003; Iphofen, 2005).

3.3.4 Participants

The 18 participants (9 women and their male partners) who participated in the study were aged between 26 and 40. They were all expecting their first child and all the pregnancies but one had been planned. Twelve of the participants were of Maltese nationality, while the remaining six were expatriates living on the island at the time of recruitment. Seven of the couples were married, while two couples were cohabitating. The majority of the participants had a tertiary level of education or higher. Further demographic details about the participants can be found in table 3.1

Number	Pseudonym	Gestational Age in Weeks at Each Interview	Relationship Status	Nationality	Age Range	Highest Educational Qualification	Recruitment Location	Planned Pregnancy
Couple 1	Tara	12/27/37	Married	Maltese	26-30	Tertiary	Public Antenatal Clinic	Yes
	Chris			Maltese	26-30	Secondary		
Couple 2	Valentina	12/25/37	Married	Maltese	31-35	Post-graduate	Snowball Sampling	Yes
	Julian			Maltese	26-30	Tertiary		
Couple 3	Lydia	13/24/36	Married	Maltese	31-35	Tertiary	Public Antenatal Clinic	Yes
	Kurt			Maltese	31-35	Tertiary		
Couple 4	Amy	10/25/37	Cohabiting	Polish	26-30	Tertiary	Private Antenatal Clinic	Yes
	Brian			Dutch	26-30	Tertiary		
Couple 5	Lily	15/24/37	Married	Maltese	31-35	Tertiary	Social Media	Yes
	Alfred			Maltese	31-35	Non-tertiary		
Couple 6	Kate	10/24/36	Married	Maltese	31-35	Post-graduate	Social Media	Yes
	Rocco			Maltese	36-40	Post-graduate		
Couple 7	Catherine	14/26/37	Married	Maltese	31-35	Post-graduate	Snowball Sampling	Yes
	Matteo			Maltese	36-40	Tertiary		
Couple 8	Radha	8/28/-	Married	Indian	26-30	Non-tertiary	Antenatal Ward	No
	Krishna			Indian	31-35	Tertiary		
Couple 9	Anna	19/27/38	Cohabiting	Bulgarian	31-35	Tertiary	Social Media	Yes
	Marc			British	31-35	Post-graduate		

Table 3.1 - Participant demographics

3.3.5 Data generation

Data generation in GT seeks to enter participants' settings and see the world as they do (Charmaz, 2014). This study made use of longitudinal data generation, with participants being interviewed three times during the gestational period to allow for analysis of the progression in parental conceptions of, and relations with, the unborn child over the pregnancy.

The first interview took place between the 8th and 19th gestational week. Recruitment in the very early stages of pregnancy, before the 8th week, was not considered appropriate because of the increased risk of pregnancy loss during this time, and because expectant parents have often not made the pregnancy widely known before this time. However, to gain access to expectant parents' reactions to the fetus as early as was feasibly possible, the primary interview was envisioned to take place late in the first trimester of pregnancy or early in the second trimester. In a minority of cases, the initial meeting was delayed by the somewhat lengthy nature of the recruitment and interviewing scheduling process. Consequently, the first time point was the least homogeneous of the three in terms of gestational age.

The second interview was held late in the second trimester of pregnancy or early in the third trimester, between the 24th and the 28th gestational week. The interview was timed to coincide with a period when the expectant parents had adjusted to the pregnancy and settled into the experience. Finally, the third interview was held when the pregnancy was at, or close to, term, between the 36th and the 38th gestational week. The timing for the later data collection point

was guided by a desire to capture participants understandings of the phenomenon at the latest possible point in pregnancy, balanced against the risk of participants giving birth before the data was generated.

Data generation for the study took the form of semi-structured, one-to-one, face-to-face interviews with expectant mothers and fathers, who had first-hand experience of the PFT. The interviews were carried out by the researcher, in either the Maltese or English language or a mix of the two, according to the participants' preferences.

Semi-structured interviews, as were used in the current study, are characterised by a flexible and fluid structure (Fylan, 2005). The use of semi-structured interviews continued to support methodological congruence in the study. This interviewing technique reflects an ontological position of constructivism through its primary interest in understanding individuals' experiences, knowledge, interpretations and interactions (Mason, 2005). In this study, an emphasis was placed on understanding the participant's perspective of the PFT and the meaning they assigned to it, through use of open-ended questions, an approach suggested by Charmaz (2014). This approach ensured that data generation was not forced in a particular direction, preventing issues emanating from the extant literature from dominating the discourse.

Various aspects of the phenomena in question were explored through the interviews, with these often sharing the same basic patterns. The expectant parents were asked to talk about their experiences of the pregnancy thus far, and about the image of the fetus that they held in their mind. Their emotional

reactions towards the unborn child were explored, as were any related changes to their behaviours or lifestyle. The women and men were further asked about the expectations they held before the pregnancy and how the reality of the experience differed. In interviews after the first, the questions mainly centred around changes since the last meeting. A core version of the interview guide is included in Appendix I.

The recruitment and interview processes were piloted with a single couple before the main data generation. The couple were recruited from the public antenatal clinic and met the specified eligibility criteria. Following the initial interview, the participants completed a feedback form. Given that all procedures went smoothly, and that no significant changes were made to the methods based on the pilot, the couple were included in the main study, with subsequent interviews being scheduled, and the data generated being included in the main analysis.

The interviewing technique, and the schedule's content, evolved as the study developed, the situation became more familiar, and concepts needing further clarification were identified during analysis (Birks and Mills, 2011). Later in the data generation process, the researcher adopted a more intensive interviewing technique, an approach suggested by Charmaz (2014), which helped to focus the topic. As the study unfolded and categories were developed, this technique allowed the researcher to take a more active role in the interviews. This involved asking more direct questions and thus gathering more focused data. It enabled the identification of category properties, the filling of conceptual gaps, and the provision of answers to analytical questions (Charmaz, 2014).

Being that the research involved couples, both individual and joint interviews were considered. Ultimately, all the interviews were conducted individually, on a one-to-one basis. The decision to conduct individual, rather than couple interviews was taken based on the question the research sought to answer. The purpose of the study was to construct substantive theory of expectant *parents'* rather than *couples'*, fetal conceptual and relational experiences. While the social context in which parents' experience pregnancy is likely to have a considerable influence on the way they feel about the unborn child, the research was primarily interested in seeking individuals' independent understandings of the experience. Thus, joint interviews, which generate a jointly constructed, collaborative picture of phenomena (Seymour et al., 1995), were not considered suitable.

It is further acknowledged that when conducting joint interviews, one member of the couple tends to dominate the discourse. This can result in the other individuals' perspectives remaining undiscovered, particularly if the dominant partner does not agree with their views (Valentine, 1999). Thus, conducting individual interviews allowed more freedom for all participants to express their own individual opinions in the interview setting (LaRossa et al., 1981).

Moreover, as previously discussed, before the research was conducted it was not yet known whether similar explanatory schema could explain both the MFT and that tie built between the father and the unborn child. The conduction of joint interviews would have hindered the researcher's ability to distinguish individuals' perceptions within the joint accounts and made it difficult to determine whether

separate theoretical frameworks were required to accurately explain the tie for either parental gender.

Having said that, many of the participants chose to meet the researcher in the comfort of their own home, and their significant other was often also in the residence during this time, sometimes intermittently in the room where the interview was being conducted. This was not ideal, and it is acknowledged that partner presence may have affected the truth of the participants' account and the depth they felt able to delve into. However, it was not thought fair to disturb family life by dictating the terms of the interview to a greater extent than was necessary. Furthermore, many of the men, in particular, seemed to feel more comfortable participating in the research in their partner's presence, particularly at the first time-point, before a rapport had been built with the researcher. Other interviews were held in the researcher's private office.

Two of the participating couples moved out of Malta during the study period, to birth the baby in their home country, or that of their partner, and have the support of their family of origin in the initial postpartum weeks. In these cases, efforts were made to conduct the interviews using online video calling services. This worked well with one couple, but difficulty scheduling the final interview meant that a second couple did not participate in the study at the third time point.

The interviews were audio-recorded, with participants' permission, to allow for the accurate preservation of their words, while allowing the researcher to attend fully to the interviewee (Holloway and Wheeler, 2013). Although Glaser (2001), supports the use of note-taking as the sole recording method during interviews,

to avoid unnecessary details, Charmaz (2014) advises that notes cannot sufficiently conserve all elements of importance, such as tone, silences, and flow. Field notes were used to support the data contained in the audio-recordings. They were written as early as possible after the interview. The use of field notes to capture aspects such as body language, manner, and the dynamics of the exchange is encouraged by Legard et al. (2003).

Generation and analysis of interview data is time-consuming and labour intensive (Holloway and Wheeler, 2013). Thus, ample time was scheduled for this part of the research process. As illustrated in the research Gantt chart (Appendix J), data generation for the study took place over a full year, between January 2017 and January 2018. The interviews varied in length, ranging between 16 and 73 minutes (average of 42 minutes), showing a tendency to increase slightly in duration with each subsequent interview, and with the interviews with expectant mothers tending to last slightly longer than those with expectant fathers (average of 45 minutes versus 39 minutes respectively).

In using interviews as the source of data generation, the researcher acknowledges the risk of an interviewer effect. This effect, a form of social desirability bias, occurs where participants modify their responses to appear in a more positive light (Holloway and Wheeler, 2013). To counteract this risk, efforts were made to diminish perceived power differentials between the researcher and the participants (Birks and Mills, 2011). Strategies for this included allowing the participants' to choose the interview setting, provided that it was relatively private

and quiet, allowing them to direct the direction of the conversation, and encouraging the open interchange of ideas (Birks and Mills, 2011).

At the end of each interview, participants were allowed to ask any further questions they may have had, and to talk about their experience of being interviewed. The men, in particular, often expressed appreciation at having the opportunity to reflect on, and talk about their thoughts and feelings concerning the unborn child, something they did not feel able to do in their everyday lives. The interviews gave them an avenue for self-expression, and they found this to be highly cathartic. A financial reward of €10, in the form of a Mothercare® voucher, was offered to each couple at the end of every interview, to thank them for taking part in the study. This reward was not mentioned upon recruitment. The researcher also offered participants the opportunity to receive a summary of the study findings on research completion.

3.3.6 Data analysis

In GT, analysis involves initially developing low-level concepts from raw data, and subsequently advancing them to a higher conceptual level as the analysis progresses (Corbin and Strauss, 2008; Birks and Mills, 2011). The present study used the approach to analysis suggested by Charmaz (2014), in keeping with CGT, and described below. Concurrent data generation and analysis is a fundamental principle of the method (Birks and Mills, 2011), as the data collected is shaped by the emerging analysis (Charmaz, 2014). Thus, analysis started early in the data generation period.

The process of coding in CGT is categorised into three distinct types: initial, focused, and theoretical (Charmaz, 2014). Analysis commenced with familiarisation of the data. This was achieved during and following a process of verbatim transcription. Initially, transcription was carried out by the researcher, but as the volume of data became unmanageable in terms of time requirements, the services of a transcriber were engaged. In such cases, the recordings were listened to several times to enable intimate familiarity. During analysis, transcripts were kept in the language in which they were initially conducted, be that English or Maltese, in an attempt to conserve the richness of the participant experience (Temple et al., 2006). However, given that the research was being conducted in fulfilment of a PhD with a UK-based university, excerpts to be used in the research report were later translated by the bi-lingual researcher. Efforts were made to preserve the participants' original meaning (Venuti, 1998), with the accuracy of these translations being confirmed by an individual skilled in both languages.

3.3.6.1 Initial coding

In Charmaz's (2014) framework of analysis, initial coding involves fragmenting the data and studying it for potential areas of analytic importance, allowing the researcher to make sense of it, and to identify emergent patterns. In the current research, this involved the use of the heuristic device known as line-by-line coding, which promotes functional engagement with the data. The use of line-by-line coding helped the researcher to more effectively bracket her preconceptions about the phenomenon, encouraged critical thinking, and thus promoted the understanding of the participants' implicit and explicit meanings.

As can be observed in the example included in figure 3.1, coding was done using gerunds; ‘-ing’ words constructed from verbs and used as nouns. Charmaz (2014:117) suggests that use of this method “curbs our tendency to make [premature] conceptual leaps”, keeps the researcher grounded in the data, and encourages novel ideas to surface. Furthermore, to enhance authenticity, ‘in vivo’ codes, using the words of the participants themselves, were employed where possible, a strategy that Charmaz (2014) suggests also minimises potential bias from preconceptions, as influenced by the researcher’s background, and having carried out a narrative literature review.

During the process of initial data analysis, additional questions about the phenomena frequently arose, exposing gaps in the data. Recognition of these gaps and a desire to fill them formed the basis for theoretical sampling (section 3.3.2), and led to the evolving content of the interview schedule, with this becoming more intensive over time (section 3.3.5).

3.3.6.2 Focused coding

Later in the process of analysis, techniques of focused coding were used to allow for the reconciliation of the findings (Charmaz, 2014). During this phase, the initial codes were sorted into groups and those codes that made the most analytical sense were elevated into categories or sub-categories. The researcher began to identify relationships between categories, and such links were tested against further data. Memo writing (section 3.3.7) allowed for reflection on the emerging categories, their properties, the relationships between them and their significance to the PFT phenomenon. Diagramming, as described in section 3.3.8, also played

an important role in this process. Focused coding served to move the researcher out of immersion in the data, and allowed the distance required for further conceptualisation and analysis (Charmaz, 2014). Figure 3.3 shows an example of the initial and focused codes identified in a transcript excerpt from the early pregnancy time point.

Focused Codes	Initial Codes	Transcript Excerpt
<p>Feeling shocked at conception</p> <p>Lacking physical symptoms</p> <p>Experiencing difficulty internalising the reality of pregnancy</p> <p>Perceiving visual and audial evidence of fetal presence</p> <p>Gaining reassurance through perceptible evidence</p>	<p>Experiencing shock</p> <p>Suspecting pregnancy</p> <p>Contemplating use of fertility drugs</p> <p>Indulging in alcohol - putting pregnancy at risk?</p> <p>Feeling normal</p> <p>Detecting the pregnancy</p> <p>Experiencing disbelief</p> <p>Consulting the doctor</p> <p>Confirming the pregnancy through ultrasound</p> <p>Reassuring initial signs</p> <p>Lack of a heartbeat - leading to worry</p> <p>Hearing heartbeat - Becoming reassured</p> <p>Fearing miscarriage</p> <p>Calming down - Becoming reassured</p>	<p>Valentina: At the beginning I was a little shocked, because I wasn't expected it. We were waiting, saying, "how long is my period going to take to come?"; so that we would start taking the injections again [referring to medication to stimulate ovaries to produce eggs]. Then, to tell you the truth, it was Christmas time, and I was drinking, drinking, drinking. Then one day, I don't know why ... I was feeling completely normal, I didn't feel any different ... I said, "let me go do a [pregnancy] test", I had some in the box. I said, "All this drinking, what a disgrace!". At that time, in a second, it showed 'pregnant'. I went running with my pyjama trousers around my legs ... "Julian, I'm pregnant!". I think the whole block heard me! And until we went to the doctor I couldn't really believe it. The doctor didn't believe me, the professor. He told me: "It can't be", he sent me to do an HCG test and he said "that result isn't yours". I told him, "then who's is it?". And obviously at the first [ultrasound], at 6 weeks, all we saw was the yolk sac. [The doctor] didn't even wait for Julian, he started shouting, he arranged for me to skip the queue telling them, "I am going to scan Valentina". He told me, "it looks good at this point". But there wasn't a heartbeat yet, we didn't hear the heartbeat. Then, two weeks later, or one week and a half, we went again and we heard the heartbeat. And at that point I calmed down. Because you hear lots of stories, some about women who were 12 weeks pregnant and who went for their ultrasound and didn't hear anything. I think that was the period when I was super concerned. And then I started to calm down a bit. From 8 weeks onwards.</p>

Figure 3.1 - Initial and focused codes identified from an early pregnancy interview transcript excerpt

3.3.6.3 Theoretical coding

Theoretical coding provides a means to, “weave the fractured story back together” (Glaser, 1978:72). In the constructivist approach, it involves the merging of concepts into groups (Evans, 2013), leading to an analysis that is comprehensible and coherent. The resultant theoretical framework explains the process under consideration in detailed terms (Charmaz, 2014). This level of coding involves the use of techniques that smooth the path to the development of the final GT.

Glaser and Holton (2005) posit that this level of coding is often carried out implicitly rather than explicitly. In the current research, it was primarily through the development of a cogent and integrative storyline that the goal of theoretical coding was met; that of producing an abstract theory with explanatory power. The storyline is a descriptive narrative that delineates the processes involved in the phenomenon and the relationships between them (Strauss and Corbin, 1990). As suggested by Birks and Mills (2011), a storyline helps to bring the theory to life in a way that arouses interest in the reader, while still being reflective of the conceptual abstraction that was involved in the analysis.

The use of a storyline seemed a logical choice for longitudinal research, where the phenomenon naturally evolved over time. The storyline was developed through processes of testing and refinement, with several versions being produced. An early and unrefined version of the diagrammed storyline is included in figure 3.2. This undertaking eventually led to the construction of the final theory in the shape of a “conceptually abstract narrative” (Holton, 2007:285).



Figure 3.2 - Early version of the diagrammed storyline

3.3.6.4 Constant comparative analysis

Constant comparative analysis was used throughout the analytical process to compare data, codes, categories, and concepts with, and against, one another to tease out similarities and differences (Charmaz, 2014). It allowed for the

development of, “high-level conceptually abstract categories, rich with meaning, possessive of properties” (Birks and Mills, 2011:90).

In the later stages of analysis, comparison of the major emergent categories to existing, relevant literature can serve to further theoretical codes (Charmaz, 2014). The researcher did not seek to integrate broader disciplinary knowledge into the theory itself but instead sought to position the developed theory in the context of this knowledge in the discussion that follows the presentation of the theory (chapter 6). This comparative process expands the explanatory power and reach of the research (Birks and Mills, 2011).

3.3.7 Memo-writing

Memo-writing is considered a fundamental process in GT analysis (Birks and Mills, 2011). Charmaz (2014:162) asserts that memos “catch your thoughts, capture the comparisons and connections you make, and crystallize questions and directions for you to pursue”, thus acting as a space for the researcher to engage in critical reflexivity. Memo-writing thus ultimately helps to increase the level of abstraction of the developing theoretical framework (Bryant and Charmaz, 2007).

In practice, memo-writing was used extensively in the conduct of the research and employed for diverse purposes. The majority of the generated memos were analytical memos; used to mull over questions concerning factors such as the links between categories, the properties of categories, ways of addressing variability in the data, and later in the analytical process, connections to external theoretical

concepts. An example of an analytical memo, concerning functions of fetal communication efforts, can be found in figure 3.3.

Reflective memos were used to assist in the process of personal reflexivity, for instance to contemplate existing preconceptions and how these could influence data generation and analysis. These memos were also used as a debriefing mechanism, allowing consideration of how each interview went, and what could be improved in the next instance of data generation. Operational memos tended to be more practical, employed, for example, to document plans for structuring the thesis and tweaking the methodology.

Memo - 25th July 2017 - Functions of fetal communication efforts

Communication efforts with the fetus seemed to fulfil a number of functions for the expectant parents. The specific communication techniques consisted of speaking to the baby, using touching on the maternal abdomen, playing music to the unborn child, dancing with the baby. The expectant parents sometimes used these actions as a way to develop closeness with the baby. However, for others, the actions also signified that closeness had already developed. Thus, the communication efforts were both an active attempt to achieve an emotional tie to the fetus (especially for men), as well as an instinctive demonstration of the tie that was already present (especially for women).

Men felt that they were at a disadvantage in terms of being able to establish a fetal bond, as compared to women, who carried the baby with them and experienced all the sensations that this involved. Thus, they sometimes felt the need to actively seek out opportunities to establish the fetal tie. For men, communication efforts were also engaged in to remind themselves of the reality they were living, to help solidify the truth of fetal presence, particularly after being away from their partners for lengthy periods.

Being that the fetus resided within its mother, communication efforts often involved bringing the family together as a triad. In a less stable relationship the female partner sought to highlight the presence of the fetus, and encouraged fetal communication, to engage the expectant father, to draw him in, in an attempt to secure his commitment. In more stable relationships men used their communication efforts to demonstrate their commitment to the family, to their partners and to their unborn child. This helped the men to feel that they were on their way to establishing the triad relationship, the close-knit family unit that they so desired. They hoped their efforts would help their wives feel secure and comfortable.

Communication efforts also helped to give the individuals a sense that they were already parents. In this way they attempted to hasten the actual onset of parenthood and the associated emotions they felt would accompany that.

Although the expectant parents agreed that communication efforts would benefit themselves, there was less certainty of the benefits to the unborn child, particularly in the early stages of pregnancy. It was for this reason that some of the expectant parents were delaying engaging in communication efforts, along with the fact that some hadn't truly internalised the reality of the child. Where it was felt that the child may benefit from communication attempts, this indicated the belief in the possibility of developing a two-way relationship during the pregnancy, but the parents were often hesitant to entirely commit to this idea. On the other hand, some did assign an element of fetal reciprocity to external actions, even in the very early stages of pregnancy, and used their imagination to attribute associated fetal emotions. These feelings seemed to help build empathy with the fetus, and, in this case, communication was done to promote the wellbeing of the fetus, to treat him/her how oneself would like to be treated.

Figure 3.3 - Analytical memo concerning function of fetal communication efforts

3.3.8 Diagramming

Diagramming was another tool which was used extensively in the analytical process, with conceptual maps being of particular value. Buckley and Waring (2013) assert that diagrams can augment analysis through the sparking of new insights, allowing the researcher to recognise implicit relationships. Having a visual representation of ideas relating to categories, their relative importance and the links between them was invaluable in bringing together and clarifying concepts.

Conceptual maps were often hand-written to enable quick brainstorming and then refined online, through the 'Coogler' web application. To give a concrete example of their use, a conceptual map was created to delineate emerging categories and the links between them at each of the data generation points, at first considering female and male separately. This allowed the researcher to observe how concepts became apparent, changed and/or disappeared over time, clarifying the transitions in the developing storyline. An example of a conceptual map, resulting from an early analysis of the interviews conducted with the female participants at the first time point, is included in figure 3.4.

Diagrams also facilitate communication of ideas and increase research transparency (Buckley and Waring, 2013). The conceptual maps were useful in stimulating discussions about the analysis with the supervisory team, such that the research supervisors were able to easily perceive and question how ideas linked together. This kind of discussion acted as a form of peer debriefing, forcing

the researcher to justify and account for her analytical decisions, ultimately enhancing research credibility (Lincoln and Guba, 1985).

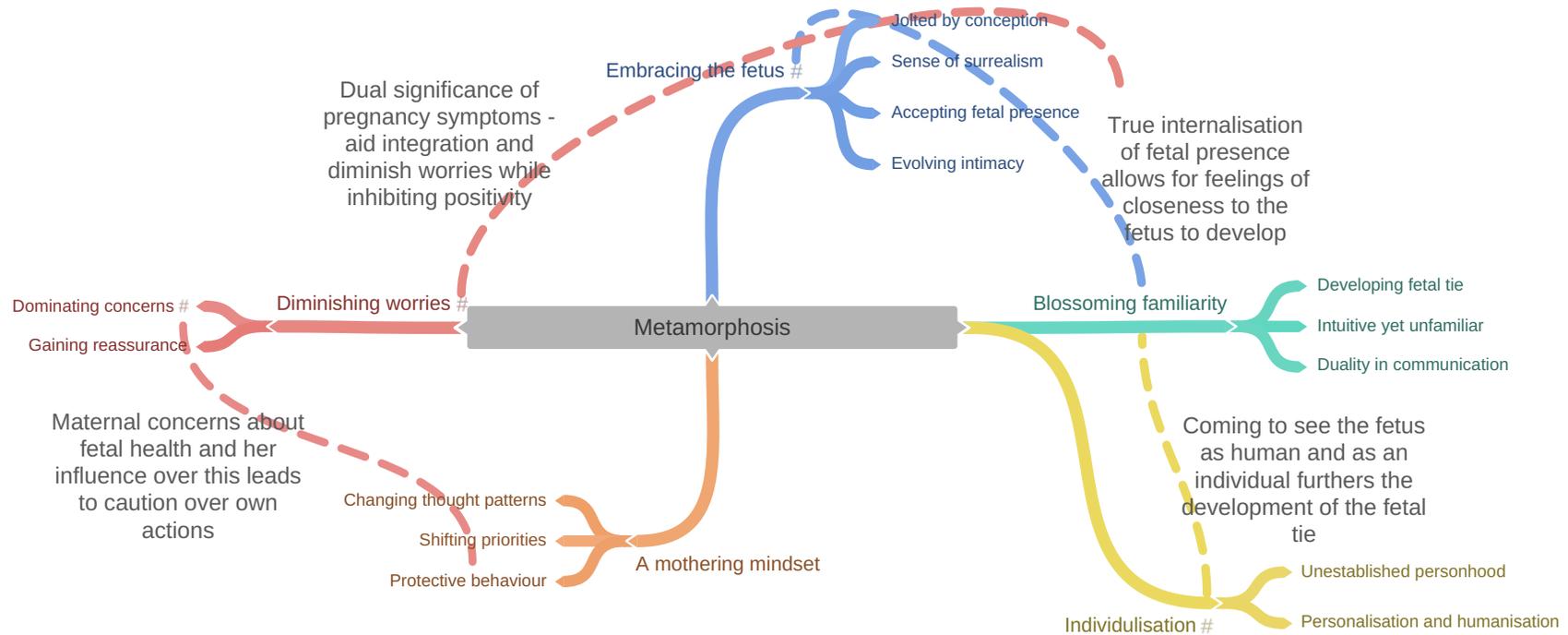


Figure 3.4 - Conceptual map resulting from early analysis of interviews conducted at the first time point with female participants

3.3.9 Use of Computer Assisted Qualitative Analysis Software

Qualitative NVivo (2014, Version 10.2.2) software was used to organise and manage the interview data. At the outset of the research process, initial coding was done using this software. However, with the use of line-by-line coding, numerous codes were being generated at this stage. This resulted in a slowing down of the software to the extent that it eventually became unfeasible to carry on in this way. Thus, a decision was made to primarily conduct initial coding and focused coding manually, using a pen-and-paper technique.

NVivo was then used in a more limited fashion. The software was used to highlight and catalogue participant excerpts from each interview transcript, all of which had been uploaded onto the software. This allowed the building of a library of excerpts pertaining to each identified category and sub-category. Ultimately, it facilitated the process of identifying those participant excerpts which best embodied the category meaning, with these being selected for inclusion in the research report. To an extent, this process provided an electronic audit trail of the data analysis process (Bringer et al., 2004), thus enhancing transparency in the study.

3.4 Ethical considerations

3.4.1 Informed consent

To familiarise prospective participants with the research, an information letter was either handed out by the gatekeeper at initial contact with participants, or was sent by email to potential recruits who themselves got in touch with the researcher. This

letter, the English version of which can be found in Appendix G, was also available in Maltese. It contained information about the research, including the purpose of the study and the voluntary nature of participation. The letter also explained what would be required of participants in terms of time commitments and how the data generated was to be used. It gave reassurances of confidentiality, explained how this would be maintained, and provided the contact details of the researcher and her local supervisor.

The inclusion of many of these details is advocated by Lewis (2003), who, however, comments that giving too much detail may put off potential participants, or decrease spontaneity by introducing preconceived ideals. Thus, the research topic was presented in broad terms in the information letter, but the right to refrain from answering sensitive questions was emphasised.

Written consent was then obtained from participants before the commencement of the initial interview, following an in-person discussion of the processes involved (see consent form in Appendix H). These procedures were designed to ensure that participants fully understood the research and the inherent risks and benefits of participation (Escobedo et al., 2007).

The consent form, as per requirements for ethical approval, reminded participants that the interview would be audio-recorded and that they were free to withdraw from the study at any time, without prejudice. Upon withdrawal, participants were able to specify whether they wanted data already collected from them to be used in the analysis, or if they preferred that it was withdrawn. The couple who failed to

participate in the third interview gave permission for their previous interview narratives to be included in the research.

3.4.2 Confidentiality and anonymity

Confidentiality, in the context of qualitative research, concerns agreements between the researcher and the participants that limit access of others to private information disclosed during data collection (Kimmel, 1988). It typically involves ensuring that no one other than the researcher is aware of the identity of individuals who participated in a study (Kaiser, 2012). Preserving confidentiality is an enshrined principle in qualitative research (Barbour, 2014).

In this study, confidentiality was maintained by removing all potentially identifying features from participants' accounts and using pseudonyms to protect their identities. Participants were allowed to choose their own pseudonyms so that they would be able to recognise themselves in the research report. The participants' identity was not shared with anyone, and the interviews were held in a private place. This ensured that participants' accounts were anonymous to third parties.

The audio-recordings and transcripts resulting from the interviews were stored securely on a password-protected personal computer, accessible only to the researcher. The transcriber signed a non-disclosure agreement upon the engagement of her services, and the password-protected audio files were sent to her in an encrypted format, with the resultant transcripts being returned in the same way.

Goodwin (2006), maintains that it is vital to make clear to participants what confidentiality means, and explain its limitations, for example in the use of verbatim

quotes, and the necessity to breach confidentiality if there is an indication of a significant risk of harm to participants' themselves, or to others. Information to this effect was given when gaining consent.

Full anonymity denotes that a researcher is unaware of the identity of participants within the study (Given, 2008). It was not possible to maintain complete anonymity in the study, given that face-to-face interviews were used as the primary research tool. Contact details of the participants were also needed to allow for initial contact and for arrangements for follow-up interviews to be made. However, anonymisation of data was achieved through the processes described above, to ensure all identifying data was removed before publication, as recommended by Wiles (2013).

3.4.3 Participant welfare

Although this study was not anticipated to cause participants any harm, the potentially sensitive and delicate nature of the research topic was acknowledged. In an approach suggested by Lewis (2003), the researcher watched for signs of distress during the interviews, and should any have been noted an offer to suspend or discontinue the interview would have been made. Furthermore, prior permission was gained from a psychologist to allow the referral of any participant who needed further support (see Appendix F). None of these interventions were ultimately required.

3.5 Trustworthiness and research rigour

It is generally agreed that the quality of qualitative research cannot be assessed by established measures of reliability, validity, and generalisability (Pope and Mays, 2006). Instead, trustworthiness is used as the main criteria to determine whether the information presented is authentic and accurate (Rees, 2011). Trustworthiness refers to, “the ways in which qualitative researchers ensure that transferability, credibility, dependability, and confirmability are evident in their research” (Given, 2008:895).

Credibility refers to processes undertaken during the research to ensure a high level of concurrence between what participants’ express, and that which is interpreted by the researcher (Charmaz, 2006; Given, 2008). Strauss and Corbin (1998) stress that researcher credibility is demonstrated through a cogent explication of the steps taken in the development of the theory. They assert that one can have faith in the research provided that the logic of this process is made clear to the reader (Strauss and Corbin, 1998). Thus, in the current study, credibility was established by detailing the analytic process, and by providing participant excerpts to support assertions in the research report (Saldana, 2011). Further reflection about the research credibility can be found in the conclusion chapter (7.4.1).

Dependability is comparable to reliability in quantitative research. It requires the researcher to provide methodological information in sufficient detail to enable others to replicate the study (Given, 2008). Dependability was demonstrated through careful detailing of the methodology, including any methodological adaptations that were made.

Confirmability relates to the provision of evidence demonstrating that the findings of the study are rooted in the participants' constructions, rather than being shaped by bias or other interests on the part of the researcher (Lincoln and Guba, 1985; Given, 2008). Thus, it concerns the ability of the reader to verify that research findings are grounded in, and reflective of, the participants' perceptions. Confirmability requires the researcher to account for any preconceived biases that may influence the research process through documented acknowledgement (Parahoo, 2014). In the present research, confirmability was demonstrated by providing an audit trail, through the description of how data was generated and analysed (section 3.3.5 & 3.3.6), and through examples of the processes undertaken when coding (figure 3.1). Potential biases were reflected on throughout the research process through the use of reflexivity (section 3.6). Such reflection facilitated the comprehension of existing beliefs, attitudes, and assumptions, and helped the researcher to continually question the basis of methodological decision-making. These measures represented conscious attempts to limit the researcher's influence on the analysis. The concept of confirmability is comparable to resonance, as discussed by Charmaz (2006), which pertains to the extent to which research results make sense to the individuals that are affected by them, and which is discussed further in section 7.4.3.

Transferability refers to the degree to which the research findings apply to situations other than those of the study context (Given, 2008). In the present study, the researcher endeavoured to provide 'thick' description of the research design, population and context. This will allow the reader to determine if the results are transferable to the context in question, although it is acknowledged that CGT does

not aim to produce theory that is applicable in contexts other than the one in which it was established (Charmaz, 2014).

Further considerations relating to research quality can be found in the conclusion of the research (section 7.4).

3.6 Reflections on reflexivity

Reflexivity refers to the researcher's examination of how their interests, positions, and assumptions that may affect their enquiry (Charmaz, 2014). Consistent reflection on such matters, throughout the research process, is necessary to avoid subconsciously applying theoretical codes that are influenced by preconceived ideas about the phenomenon. Figures 3.5 a & b show a memo concerning reflections on how the researcher influenced, and was influenced by, the study.

The adoption of a reflective stance is particularly pertinent in CGT where the important influence that the nature of the relationship between researcher and participant has on the creation of meanings within a study is recognised (Charmaz, 2014). The subjective nature of the research being conducted is acknowledged, in that the views, values, beliefs, feelings and assumptions of the participants will be formed and conveyed through interaction with the researcher, and be interpreted by the same researcher in the shaping of the theory. Keeping this in mind, it is realised that the output of this research is an "abstract theoretical understanding of the studied experience" (Charmaz, 2006:4), rather than an objective representation of reality. Acknowledgement of the existence of multiple interpretations of reality, and

veracity as a time-bounded concept, is reflected in the pragmatist philosophical tradition (Charmaz, 2014).

Theoretical sensitivity concerns the researcher's ability to use personal and professional experiences, as well as extant literature, to develop new perceptions of the research data, and to exploit the potential of the data for theory development (Strauss and Corbin, 1990; Birks and Mills, 2011). McGhee et al. (2007) argue that theoretical sensitivity, and familiarity with knowledge of existing pertinent literature, should not preclude an inductive approach, the importance of which is emphasised within GT. In the current study, reflexivity was used to limit the influence prior knowledge had in steering the researcher's perception of data, through the routine questioning of existing understandings during the phases of data collection and analysis.

Researcher influence on the research process (and vice-versa)

Our social identity and background invariably has an impact on the research process. As a practicing midwife, and a woman, I am aware of having pre-existing ideas about how expectant parents think and feel about the unborn child during the pregnancy. I have formed these ideas through many interactions with expectant parents, through observation of their behaviour during pregnancy, through the reading of background literature in preparation for this research, and undoubtedly, through numerous other channels, many of which I am not conscious. I took a number of measures to try to keep my own influence on the research in check, and to ensure that the resulting theoretical framework was a true reflection of the participant experience. These measures were applied prior to, and throughout, the data generation and analysis process, with reflection primarily occurring through the writing of memos.

Before the data generation process began, I listed as many of my preconceptions related to the parental-fetal tie as I could think of, with the aim of bringing them into my conscious awareness. During the interviewing period I reflected on how I might come across to participants, and how I, being who I was, could influence the interview dynamics. As I progressed through the interviews, I thought about how I felt about each participant and their story, and how my reactions could affect my interviewing style, my general demeanour when with them, and the way I analysed their interview transcripts. Overall, I reflected on how these factors would affect the theory that I was developing.

During the data generation process, and that of analysis, I endeavoured to be open to ideas that contrasted with or furthered my own preconceptions. I was frequently surprised by what participants told me, and I made a particular effort to curiously delve into such ideas further. That I am not yet a mother myself was perhaps helpful in allowing me to be receptive to emergent concepts. This fact helped me to see myself as a learner, a novice in the topic, and to view the participants as the experts.

Figure 3.5 a - Memo concerning personal reflexivity

In connection with this, I actively strove to equalise power dynamics between myself and the participants, to enable them to feel relaxed, and to encourage them give a complete and honest account of their experiences. I feel that allowing participants to choose their preferred interview setting, where they felt most comfortable, often their homes, helped to give them a sense of control. Fearing that knowledge of me being a midwife could cause hesitance in divulging details that contrasted with the norm, I avoided giving midwifery-related advice, and if specifically asked a related question, I delayed answering it until the end of the interview.

On the other hand, being approximately the same age as participants was helpful in building a sense of camaraderie over the three interviews. The participants didn't seem to be intimidated by me, at least after the first meeting. I thoroughly enjoyed the interviewing process and most of the participants seemed to as well. Although some admitted to having initial doubts about their decision to participate in the research, fearing the unknown, this had changed by the end of our time together. Many expressed appreciation for the opportunity to reflect on their experiences around the building the PFT, particularly the men, who often lacked other opportunities for such discussions.

During the process of analysis, I continued to consciously reflect on how my preconceptions could be influencing the codes and categories being identified. If I recognised a category as being familiar and possibly related to existing literature on the topic, I regarded this with suspicion, and re-checked that it was truly reflected in the data.

I feel fortunate to have had the privilege to listen to the participants stories during such a unique time in their lives. I have a great sense of appreciation towards them for letting me hear their innermost thoughts, and for making me feel so welcome in their worlds. It was inspiring for me to witness their endeavours to adjust to their new reality, and their efforts to ensure that they were psychologically prepared for the arrival of their child, to assure that they were born into a space where they would feel loved and cared for. It was particularly touching for me to see the love that existed between the couples, and how they supported each other on their journeys to parenthood. Given all that they gave to me, I can only hope that I was able to do justice to their stories.

Figure 3.6 b - Memo concerning personal reflexivity (continued)

3.7 Conclusion

This chapter has discussed the methodology and methods that were integral to the planning and conduct of the research. The philosophical underpinnings of the study were described and the decision to use CGT justified. The research procedures, including those fundamental to the generation and analysis of data, were catalogued and adaptations made during the process were accounted for. Ethical considerations and techniques used to enhance research rigour were detailed.

The next chapter gives a narrative account of the research findings, structured by the different pregnancy stages at which the interviews were conducted.

Chapter 4 Analysis of Participant Narratives

4.1 Introduction

This chapter puts forward an analytical interpretation of participant narratives gathered through interviews done with expectant parents over the gestational period, concerning their fetal conceptual and relational experiences. The main body of this chapter is divided into three major sections (4.2 – 4.4), each of which describes findings gleaned from interviews conducted at a particular time point in early, mid, or late pregnancy. The text describes the categories that emerged from the research, incorporating participant excerpts to substantiate the findings. Throughout the narrative, the researcher sought to illustrate and explicate divergence as well as convergence in participant experience, highlighting what Charmaz (2014) refers to as ‘multiple realities’; individual differences or variance influenced by factors such as parental gender. The theoretical model that embodies the totality of the phenomenon under consideration will be presented in Chapter 5, starting with a visual representation of the substantive theory.

4.2 Early pregnancy

This first section describes the categories identified from interviews carried out with expectant mothers and fathers in early pregnancy. As explained in section 3.3.5, the initial data point was the least homogeneous of the three interviews in terms of the gestational age at which it occurred. Possibly influenced by this, some of the early

findings dovetail with those emerging from the mid-pregnancy time point. The seven categories that emerged from the analysis are listed in table 4.1.

Struggling with internalisation
Embarking on a journey of assimilation
Laying the foundations of connection
Establishing the need to sharpen the obscure
Adopting a parenting mindset
Establishing new dyadic dynamics
Fighting negative connotations

Table 4.1 – Categories identified from early pregnancy interview

4.2.1 Struggling with internalisation - “you need to see something to believe it”

The dominant reaction to the diagnosis of conception, regardless of whether it was a planned or unplanned pregnancy, was “shock” (Kate, 1). The participants were “surprised” (Radha, 1) to have conceived, sometimes because they had not actively been trying for a baby, and sometimes because they had expected the process to take more time and effort.

Oh my god, it was a shock! ... I bought the electronic [pregnancy test], and it showed me, “yes, you are pregnant 2-3 weeks”. So I started shouting first [laughing], I couldn’t breathe ... I was crying and laughing in the same moment!

(Amy, 1)

For most, news of the conception was welcome, but for Radha, newly married and in a new country, with little by way of a social support system, it was not positively received. She was “upset” and felt that she “wasn’t prepared” (Radha, 1).

Whether the participants looked upon the pregnancy in a positive or negative light, feelings of incredulity prevailed in the weeks following pregnancy diagnosis, with the expectant parents finding it difficult to truly internalise the presence of the fetus within the maternal body.

I think I was still ... in a bit of disbelief, so to say ... I was feeling like ... like [it was] a lie ... I feel like this is not really real.

(Anna, 1)

Thus, a sense of the “surreal” (Catherine, 1 & Brian, 1) dominated, with the participants using terms such as, “in the moon” (Valentina, 1) to describe their feelings of disorientation. These feelings were primarily related to a lack of tangible evidence of fetal existence. The expectant parents frequently and consistently brought up the absence or scarcity of optic, haptic or audial substantiation of fetal presence, and reflected on a need for this kind of evidence to consolidate their new reality. “I first want to see it, and then I’ll believe it” (Brian, 1) is a sentiment echoed by many of the participants, with Chris getting to the heart of the issue:

... you feel like you want to see and touch things, but you can’t yet. [The baby] is not something you can touch and feel.

(Chris, 1)

The underlying perception seemed to be that such a momentous life event, that of being with child, could not be genuine unless accompanied by equally momentous manifestations corroborating it as real. Many of the expectant parents thus spoke about waiting for reality to hit them, anticipating events that would convince them of the existence of the unborn child. They talked, for instance, about looking forward to visible physical changes in the female partner, to being able to clearly distinguish the unborn child on ultrasound images, and to the onset of discernible fetal movement. In essence, they awaited the enhancement of fetal tangibility.

... at the moment it hasn't quite sunk in. Maybe it's the fact that ... it doesn't show that she is obviously pregnant, or the fact that you don't feel him moving. Maybe the fact that we haven't heard the heartbeat, the [ultrasound] images were maybe not that clear ...

(Rocco, 1)

Where the women were not experiencing anticipated physical symptoms of pregnancy, such as nausea, they articulated how this further interfered with their ability to integrate the reality of fetal presence. Such physical symptoms were seemingly regarded as an integral part of a healthy pregnancy, and their absence detracted from the authentication of the gestation in the expectant mothers' minds. Where present, physical symptoms of pregnancy did help to substantiate the reality of the experience. However, if the symptoms decreased or dissipated, feelings of doubt about fetal presence resurfaced, and the expectant parents were again left in a state of 'limbo'. Lydia, for instance, said:

... at the moment I don't feel anything ... so sometimes ... before I use to say that apart from the symptoms ... I wouldn't even know I was pregnant. Now the symptoms have settled down, and I still can't feel the baby moving ... maybe because it's still the beginning ... maybe until my tummy grows, until I start feeling him.

(Lydia, 1)

This re-occurrence of uncertainty upon the diminishment of physical symptoms serves to illustrate that internalisation of fetal presence is not an enduring state. Instead, it requires consistent corroboration to be maintained – the expectant parents were not able to reliably maintain their confidence in the existence of the unborn child without access to a steady stream of tangible evidence.

Difficulties in this internalisation meant that the participants did not always develop the feelings of closeness to the unborn child that they had expected to have at this stage. Reflecting on difficulties in feeling connected to the fetus, Krishna observed the importance of fetal tangibility in allowing engagement with him or her emotionally.

... there is a human tendency ... if you see something physically, then you attach to him or her. When the baby is inside you don't know what he or she looks like. So that is why people can't attach much.

(Krishna, 1)

The expectant parents thus spoke about having a degree of ambivalence towards the fetus in the early weeks of pregnancy, feeling disconnected and distant.

Look, at the beginning, to tell you the truth, I didn't really have a connection.

Even when I saw the ultrasound for the first time, you hear, “tu tum, tu tum, tu tum”. There are people who say they cry, but I started laughing and I couldn't stop ... It was like I couldn't ... like it wasn't real.

(Valentina, 1)

Underlying this admission, there seems to be a preconception that parents should start feeling an affiliation towards the unborn child immediately, any negative or neutral feelings towards the fetus do not necessarily fit in the ideal western cultural narrative around parenthood, and particularly motherhood (LaChance Adams, 2014).

4.2.2 Embarking on a journey of assimilation – “It’s really happening”

As the pregnancy progressed, the women and men talked of a gradual decrease in their feelings of incredulity and about how they began to embrace the reality of the experience, with the existence of the fetus within the maternal body gaining a degree of consolidation in their minds. The participants identified various events that contributed to this process of assimilation. As mentioned in the last section (4.2.1), an example of these incidents was the observation or experience of physical symptoms of pregnancy. Lily recognised the significance of these symptoms in aiding the integration process:

Maybe for those who feel nothing, for those who don't have physical symptoms. They may start thinking, 'But am I really pregnant?'. In that case it would be good to see him [on an ultrasound]. The fact that I'm always nauseated, I know that there is something.

(Lily, 1)

Other experiences also helped the expectant mothers and fathers to overcome their initial difficulties in internalising fetal presence. These included observing visible changes to maternal abdominal girth, "Um, um you're showing!" ... you're seeing something physical" (Matteo, 1), attending doctor's appointments and hearing the fetal heartbeat, "the fact that you hear something, that is functioning" (Alfred, 1), and observing fetal development, "the last ultrasound we did ... you actually see a baby!" (Catherine, 1) and movement, "we saw him moving a little ... it's really happening" (Kate, 1) on ultrasounds. The assigned significance of these events was not universal, and what aided one participant to integrate fetal presence did not necessarily affect others in the same way. However, all of the participants talked about going through a comparable process of acceptance.

Verification of the existence of the fetus in the parental mind served to promote immersion in the pregnancy experience, encouraging the expectant parents to shift their focus to centre on the unborn child. Having the fetus as a new focal point in their lives elicited feelings of excitement for the participants, as they slowly came to terms with what the pregnancy meant for them as individuals, and as a family unit. Concerning these feelings of captivation, Matteo reflected on the way that modern technology allows us to follow the development of the unborn child much more

closely today than ever before in history, encouraging one to become engrossed in the process.

I feel that I'm lucky ... we are lucky. We are blessed that we can follow the progress in such detail nowadays. Because maybe 30 years ago, 40 years ago they didn't have any idea what was happening. Today you know every fraction of a millimetre what is happening, which is amazing.

(Matteo, 1)

Based on this, one can hypothesise that advancements in technology may be helpful in aiding parental engagement in the pregnancy process and with the unborn child, particularly during early pregnancy, giving them access to previously inaccessible avenues of fetal tangibility. This may be especially relevant for men, who are not able to fully share in the physical experience of the pregnancy (Vreeswijk et al., 2014), a hypothesis supported by previous research findings (Walsh et al., 2014). The differences between expectant fathers and mothers in this regard will be described further in the next section (4.2.3).

4.2.3 Laying the foundations of connection - "hearts in my eyes"

The expectant parents talked about how their growing acceptance of fetal presence, and increasing engagement with the pregnancy, marked the onset of their feelings of emotional proximity to the fetus. Thoughts about the baby began to elicit tender sentiments, "when I think about him, it melts my heart" (Valentina, 1). Talking about developing a sense of love towards the unborn child, Catherine explained:

I don't think [it happened] straight away ... at the beginning it's still a bit surreal. Because [in the initial weeks] you don't have any side-effects, or at least I didn't have ... you can't see anything and then you just know [about the fetus] because of the ultrasound, but again it's just a dot. So, it's like it grew, it grew for me ... it came gradually.

(Catherine, 1)

However, it was evident that the intensity of emotional proximity that participants felt towards the fetus in the early stages of pregnancy varied widely in the degree of warmth and affection. These differing reactions were possibly related to whether the pregnancy had been planned or unplanned, and whether it was wanted or unwanted. While some of the expectant parents felt close to the fetus, regarding them as an intimate companion, "... I'm alone at home, but I don't feel alone, I don't feel lonely" (Amy, 1), others continued to feel somewhat disconnected and distant, "I'm not feeling anything" (Radha, 1).

For men, in particular, feelings of connectedness to the unborn child did not always develop spontaneously in early pregnancy. The expectant fathers lamented their disadvantage in internalising the reality of fetal existence, and thus also in developing emotional proximity to the unborn child when compared to their female partners. The principal reason for this perceived handicap was that the fetus resided inside of the female body and was therefore almost entirely inaccessible to the men, particularly at this stage of the gestational period. They were experiencing the pregnancy vicariously rather than directly.

... it's obviously more real for a woman because they are feeling everything going on ... The man is more on the fringe, on the outside, isn't he? He experiences much less than a woman, even emotionally and hormonally and things like that ... and the women are more completely, totally, part of it. I mean it's stuck inside [laughing].

(Rocco, 1)

Their female counterparts tended to agree with their partner's surmised disadvantage, feeling that while developing an emotional tie to the fetus was a "natural" (Tara, 1) and inevitable process for women, despite initial difficulties in internalisation, they imagined it would be more difficult for men. Speaking about her own experience of connecting with the unborn child, and contrasting it with what she believed it would be like for a man, Valentina said:

I don't think you have any other option, given that he is inside you. You're doing everything together, aren't you? I don't know how it would be possible not to have a relationship ... [but] I imagine it's more difficult for [men] to connect ... He sees a little on the ultrasound, but for me it's my reality for 24 hours [a day].

(Valentina, 1)

Thus, on the men's part, it was easier to feel disengaged, especially when they had been away from their partners for long periods. For many of the expectant fathers, the pull of fetal connectedness seemed to be intermittent, being stronger when they were near to the mother and unborn child. In contrast to the spontaneity of the MFT,

developing emotional proximity to the fetus was thought to require a conscious effort from the men.

I'll be at work, all the hectic day, 9 till 6, and then you come here, you eat, and then in the evening when we're sitting on the sofa I sort of realise like, "Hey, we are three people now, is that real?". You know? Sometimes you've got to go and feel her.

(Julian, 1)

In connection with this, some of the men talked about begrudging women their ability to nurture the baby on their own for an extended period before the father could gain access to the child. Although Matteo had come to terms with this reality, he talked about fears that his relationship with the child would be at a disadvantage following the birth, in comparison to his wife's emotional tie. He described how these worries had spurred on his intention to make an effort to connect with the baby during the gestational period.

... it use to worry me. I kind of use to say, "The baby spends 9 months inside Catherine, so she is going to spend 9 months bonding with him before he is born, and I will be at a handicap of 9 months. Then what?" ... today I don't think that anymore. But at the same time I think that for me, to start bonding, I think it's important.

(Matteo, 1)

These men's frustrations at parental gender inequities imposed by the nature of pregnancy, in terms of fetal access, demonstrate the expectant fathers' commitment to fostering parental roles that are comparable to those of their female partners. However, it is essential to note that not all the men in the study shared this opinion, with some still subscribing to 'traditional' fatherhood roles to a lesser or greater extent, seeing their own role in the emotional aspects of child-rearing as secondary to the mothers' (Gatrell, 2005; Dermott, 2008).

While most of the men felt that they were at a disadvantage in developing a sense of emotional proximity to the fetus, some had a more nuanced point of view. Although they acknowledged that women could more easily nurture a tie to the unborn child, they also felt that men's emotional reaction to the fetus was possibly more positively orientated, being that they avoided going through the troublesome symptoms of early pregnancy.

For me personally, for example when Lily is sick, [she] can blame it on the baby ... But I don't feel these things, so I'm only seeing the positive side of the baby, while Lily is seeing it from both sides. So maybe I can [have] a more friendly relationship, while Lily is a bit irritated ... the relationship is definitely going to be different.

(Alfred, 1)

4.2.4 Establishing the need to sharpen the obscure – “you build up more of a picture”

In the initial weeks of the pregnancy, during the early phases of fetal integration, the expectant parents often found it hard to think of the unborn child as an individual. They envisioned the fetus as part of the maternal body, a vague and unformed being that was not yet quite human. They described the fetus as looking like a “mouse” (Kate, 1), or an “alien” (Valentina, 1), thinking of him/her of as “transparent” (Valentina, 1), a “bump” (Marc, 1) and a “ball” (Radha, 1 & Krishna, 1). This perception was often primarily related to the fetus lacking a distinguishable form on the first ultrasound. The women and men found it hard to relate to an entity which they could not recognise.

... in the beginning it's very, very difficult to relate because he wasn't even a ...
how can I say this? He was cells, he was [just] starting to grow, so small that
you almost can't recognise anything. When you saw something [on the
ultrasound], it was like seeing a tadpole. So it's very difficult to relate to a
human being ...

(Matteo, 1)

This ambiguous way of thinking about the fetus hindered the women and men from developing emotional proximity to the unborn child. Recognising this impediment, they spoke about instances that made the baby seem more personal and less vague. One of the primary factors identified in this regard was viewing ultrasound images from subsequent scans, when the baby had become more easily recognisable. Being

able to distinguish a being that looked somewhat human helped the women and men to internalise that the fetus was indeed a person.

During such ultrasounds observing facial features and distinct fetal positions or movements was assigned particular meaning. This was related to individualisation of the child, serving to feed the parental imagination as to what he/she would look like and be like.

... [during] the second [ultrasound] you could actually see the baby ... the head, the feet, the hands! So the second one was amazing, and he was like this [putting hand to forehead], or she was like this. And I was like, "Oh no, sweetheart, you're already like me, you know? A worrier!"

(Catherine, 1)

Through methods that encouraged fetal individualisation, the expectant parents sought to foster familiarity with the unborn child, to increase feelings of intimacy, and to start thinking of the fetus as part of the family unit. Assigning a nickname to the growing fetus, by which the parents could refer to him/her, was another common measure that encouraged a spirit of comradeship.

We've already named him, our [baby] is called Tiny. He's been Tiny from the start. So he already has a name ... it's not like [he's just any] baby ... I feel that it has helped.

(Lily, 1)

The majority of the expectant parents also talked about an eagerness to find out the fetal gender and how they felt this knowledge would help them to develop a closer tie to the unborn child. They felt that knowing the gender would allow them both to better identify with the baby during the pregnancy, and to more easily engage in fantasising about what their future family life would be like. For the few that already knew the gender, they confirmed that this had helped to strengthen their emotional tie to the fetus.

I think [that finding out the gender] helps you have a better connection with the baby. Like, you know that it's a he or a she and you can talk to him or her. You can start to imagine how things are going to be ... what kind of clothes ... how you're going to make the nursery, what kind of toys, or you start thinking of how you're going to bring them up ... you kind of start thinking more about the future, so it helps you connect with it ... at the beginning we were not going to find out ... and then like, we found it a bit impersonal to call it 'It'.

(Anna, 1)

The benefits of fetal individualisation gained through gender knowledge were recognised even by those who had chosen not to find out the gender of the unborn child. Matteo, for instance, admitted that it was a little confusing not knowing how to refer to the fetus in terms of gender. He felt that it was important for him to not build undue expectations or ideas about the baby as a male or a female. He thus focused on building emotional proximity with the 'genderless' infant as an individual entity, using an element of spirituality to aid him.

... a lot of times I call him 'cucclinu' and then all of a sudden I call her 'cucclina'. And it's a bit confusing, even in my mind, but I don't want to set my mind on him or her ... For me it doesn't make a difference. I'm bonding much more with THE baby, with A baby, OUR baby. Whatever it is, it's a child, it's a boy, it's a girl. There is the other element, which is irrespective, his or her spirituality. You're bonding as well with a soul.

(Matteo, 1)

Marc too had noticed that building premature expectations about the baby's gender may cause problems, in terms of possible feelings of disillusionment if these suppositions were not met. In the following excerpt, he narrates his experience of finding out that the baby his partner was carrying was a boy.

I think I wanted it a girl, probably, without really knowing it ... I was a bit emotional ... I was happy, but then I was also was a bit like, "Oh, that means we're not having a little girl!", and to be honest, I just was silent, and I was a bit like, probably looked like a dog that had a toy taken away from him ... It will probably take me a couple of weeks ... and then I'll start accepting it.

(Marc, 1)

Marc went on to speculate more generally about how expectations built about the unborn child were possibly not a good idea, given that any variation from these expectations was bound to lead to disappointment, and possibly mar the emotional tie that the expectant parents had already formed to the unborn child. He used the analogy of buying a new car to get his point across.

I think it's like anything like, if you're getting a new car ... you might think about it, you know, actually you might think about it quite a lot; and then [laughs] it arrives, [and] you might think you have a bit of a connection [with it] but I don't really believe you've built any connection with it until it's actually arrived; because it's going to be different, it might be different to what you've been expecting. So it all starts from the birth, personally, I think you can have ideas and things, but until the baby comes out - that's when I think it actually starts.

(Marc, 1)

This insight into the possible pitfalls of building antenatal representations of the child is interesting because it affects how expectant parents are able to develop feelings of emotional proximity to the child. The research findings suggest that fantasising about what the child would be like is an important route for expectant parents to build closeness to the unborn child. Thus, for those who intentionally avoided building such expectations during the pregnancy, this may have resulted in a continuing sense of emotional distance from the fetus.

Another way that the expectant parents sometimes sought to reduce the sense of distance and disconnect from the unborn child was through attempts to make contact with the baby, through talk or touch, via the maternal abdomen. At this stage in the pregnancy, communication efforts allowed for further immersion in the pregnancy experience, supported internalisation, and allowed the parents to better relate to the fetus as a familiar other.

I, like a fool, I use to talk to him even when he was still very small. Even just to create the bond. Maybe, in the subconscious, because I'm not like [my wife], feeling these things and all this stuff, so there, all of a sudden, you start relating a little more ...

(Matteo, 1)

However, for many of the participants, contact bids felt hollow and ineffective at this stage of the pregnancy. The expectant parents lacked conviction that the unborn child could perceive their efforts, let alone gain anything from them. Many of the expectant parents, therefore, held back from making such efforts.

He's still too small, so it's limited what you can do. For example, if I were to play some music; if he's not going to hear it, then what's the point? ... at this stage, it is very limited what I can do cause it's just one way.

(Lily, 1)

Other participants, though, thought differently. They hypothesised that the fetus could possibly already sense their contact bids. When adopting this belief system, the women and men used fetal communication to try to convey a sense of love and acceptance to the fetus. Their contact efforts were a sign of the warmth and affection that they felt towards the unborn child, and represented their eagerness to embrace their role as parents.

I try to ... I know he can't hear, but talking to him ... maybe he can feel the vibrations of your voice, he can become familiar with them ... so that when he is born, he feels more cosy, more at ease ... that these are his mother and his father, I'm safe with them ... you try, at least, to show him, as much as possible, that there is someone there for him, that can help him ...

(Alfred, 1)

Here we start to see that, in some ways, the tie to the unborn child exists primarily in the imagination of the expectant parent. While objectively all pregnancies are similar in respect to the extent of fetal contact women and men can achieve, the expectant parents' interpretations of these contact experiences seem to influence how closely tied they feel to the unborn child. Thus, in this case, for expectant parents who were able to convince themselves of the potential benefits of communication efforts, their conviction, and their acting on it, ultimately resulted in a stronger sense of emotional proximity to the unborn child. This is in contrast to individuals who were sceptical that the fetus could perceive their contact bids, held back, and did not experience this increased sense of intimate connection to the fetus.

4.2.5 Adopting a parenting mindset – “I'm bringing a child into this world”

Once the unborn child had become real to them, concerns about the fetus quickly came to dominate the expectant parents' thoughts in early pregnancy, as their focus shifted to centre on the unborn child, “It's a constant thought in my mind. All the time, every day, every second” (Valentina, 1). The women and men were struck by a growing sense of responsibility, primarily relating to their task of safeguarding and

promoting fetal health and development, both during the pregnancy and throughout childhood. In the early stages of the pregnancy, the expectant parents expressed a strong sense of protectiveness towards the fetus.

It's a big responsibility. You have a human being in there, you know? ... obviously, the reality of [it is that] if you take certain things there is a higher possibility that the baby will ... that there will be something wrong when he or she is born. Which is scary ... so [I] take care of myself physically and even psychologically.

(Catherine, 1)

In the early gestational phases, the unborn child was thought of as “fragile” (Valentina, 1) and “vulnerable” (Matteo, 1) and thus easily susceptible to harm. In connection to this perception, and with knowledge of the risks involved in the early gestational period, all of the expectant parents spoke about their concern about fetal wellbeing, with anxiety, although varying in magnitude amongst participants, often being an “overwhelming” (Anna, 1) feature of early pregnancy.

... a little bit of anxiety. That everything is ok, that [the baby] is healthy ... that everything goes well. Knowing all that can go wrong, you are inevitably anxious that something may go wrong ...

(Rocco, 1)

The parents regarded their worries as a sign that they cared about the child, signifying elements of an existing fetal tie.

... [worrying] can even make me closer [to the unborn child] probably. You worry a lot about something because you really want it ... If I didn't give a damn about it, I wouldn't worry.

(Rocco, 1)

However, worries about the unborn child also caused the expectant parents to hold back on becoming further immersed in the pregnancy experience, in terms of building excitement, building a more profound emotional tie to the fetus, and beginning to prepare for his/her arrival. The participants were concerned that the sense of bereavement experienced in the case of fetal loss would be worse if they had already developed a deep emotional tie to the unborn child. Thus, they were waiting for signs of fetal wellbeing to become more reassuring before they allowed themselves to be fully open to the experience.

... I tried to keep my emotions and everything in check ... as in, very, very happy, but always with that in mind, like, "Cath, anything can happen, and if it happens it's ok, we'll try again, and it will be fine" ... the consciousness that there could be a miscarriage ... that was holding me back a bit.

(Catherine, 1)

Thus, while the parents were anxious about fetal wellbeing because they had already developed an initial tie to the unborn child, these worries then limited the furthering of this connection, for fear of fetal loss.

The intensity of worrying tended to worsen just before doctor's appointments and, in particular, prior to diagnostic tests. As the unborn child was somewhat invisible to the expectant parents at this stage of the pregnancy, it was only through these events that they could receive definitive feedback about the health of the fetus. Thus, parental anxiety tended to build up between appointments. Interestingly, there seemed to be some differences in the content of worries between women and men. Although parents of both genders worried about the possibilities of fetal loss and fetal abnormality, expectant fathers seemed to emphasise the latter possibility more than the former. This gender variance tallies with an overall sense that in comparison to women, men are more focused on the future with the baby rather than on the unborn child at this particular point in the pregnancy when they are often still feeling quite disconnected.

... [worries about possible fetal deformities] are on my mind a lot, a lot, a lot ...

For example, the day before we had the Down Syndrome test, that night I hardly slept ... and when we have the anomaly test I know for sure that the night before I will go through the same thing ...

(Kurt, 1)

Linked to concern about fetal health was a strong parental drive to ensure that no preventable harm came to the fetus. Although both women and men talked about having similar feelings in this regard, the presence of the fetus within the mother meant that behavioural manifestations of these emotional reactions necessarily differed by parental gender.

On finding out about the conception, the expectant mothers immediately made changes to their routines and behaviours to safeguard the wellbeing of the baby. While the changes made sometimes included actions that went beyond standard medical advice, women often downplayed the significance of these adaptations, suggesting that they were minor.

I know that, ideally, you don't do abdominal exercises at this point. So you adapt a little, but nothing out of this world. In the sense that, for example, I like eating shrimps a lot, but now I've stopped eating them. Things that, at the end of the day [I don't consider major] ... I didn't use to drink, I didn't use to smoke, so I haven't made any major changes.

(Lily, 1)

The motivation behind these behavioural adaptations reportedly partly stemmed from a sense of emotional proximity with the child, and a wish to safeguard the object of their affection. However, the immediate uptake of these modifications, starting from the initial stages of pregnancy, suggest the influence of societal pressure. Socio-cultural norms enshrine the mothers' role in the nurturing and preservation of the life of her offspring, and patriarchal discourses often paint the pregnant woman as an incubator whose primary purpose becomes the safe delivery of a healthy child (Gatrell, 2005; Jomeen, 2010). The women seemed ascribe to this perspective, with the actions taken to protect the wellbeing of the unborn child often stemming from anticipated regret and guilt should preventable harm come to the unborn child.

Before I use to say, “no, you don’t need to let these things change you”. But when you are experiencing it, you feel guilty if you do them. Because you don’t want to harm the baby, or yourself. So you hold back, you say, ‘no’ ...

(Lydia, 1)

Giving further evidence of the influence of the societal discourse described above, the women even adhered to protective behaviours for which they questioned the need. They tended to follow others’ advice blindly, adopting a 'just in case', or 'better safe than sorry' attitude.

Although I don’t know if carrying heavy loads can really do any harm or not ... I mean if the baby is already implanted ... sometimes I think some of these things are a little foolish ... but since that is what people tell you ...

(Valentina, 1)

The expectant fathers in the study talked about experiencing similar feelings of protectiveness over the unborn child. Protection of the child is, after all, seen in the socio-cultural context as one of the primary roles of a father figure (Diamond, 1995), and the men were eager to take on the duty. However, given their position outside of the pregnancy, their ability to safeguard the health of the fetus was somewhat limited. Behavioural changes for the men primarily involved shifting household roles, with the expectant fathers showing a willingness to take on a heavier load, including tasks traditionally thought of as belonging in the female domain (Giddens and Sutton, 2017). This effort was their way of vicariously safeguarding the wellbeing of the child, given that they were unable to do this directly.

Mostly I've been thinking about Lydia, obviously. That she is, every day, safe first of all. I help her to do the housework. Where before she use to do everything herself, I have now begun to help out ... The pregnancy requires input from the man too. You can't leave everything in the woman's hands. For example, shopping, groceries, [carrying] heavy things from the car ... you need to do these things yourself.

(Kurt, 1)

The reality that the child was inside their partner's bodies sometimes gave rise to tension between the couple associated with the men's desire to protect. The expectant fathers experienced impulses to advise their partners on how best to behave to safeguard fetal wellbeing, and to correct the woman's behaviour where it seemed to be risking the health of the unborn child. However, the men recognised that their partners might be sensitive towards such suggestions, interpreting them as a sign they were not trusted to know how to care for the fetus. Thus, the expectant fathers sometimes held back their opinions, biting their tongues, so to speak, to avoid threading on their partner's toes.

I think [protection is] my job as well ... It's a bit strange, well not strange, a bit sensitive, in the sense that I'd want to say, all the time, to Catherine, "Don't carry that, don't do this, don't do that". So any element that can create a risk for the baby. At the same time, I don't want to be selfish with Catherine. That she may think that [I don't feel] that she knows what she should be doing ... I started saying, "I think I'm going to bother her now". You have to find a balance.

(Matteo, 1)

These conflicting feelings in the men illustrate the function of the expectant mother as a gatekeeper. During the pregnancy, it was clear that the woman was perceived to have primary ownership over, and responsibility for the fetus. The men were on the outside of the equation, attempting to get a foot in where possible, without upsetting the balance of things.

In some instances, the male participants seemed to overstep the boundaries, with their discourse coming across as somewhat paternalistic. Where the expectant father tried to exert control by setting limits for his partner's actions, for instance, the woman interpreted this as an impingement on her independence. In cases such as these, the expectant mother objected to the perceived interference.

... he has become more ... he has become overprotective. I told him, "I know what is good and what is bad" ... he tells me, "be careful, slowly, look out for your tummy", things like that ... when it gets too much, I start feeling ... he knows that I'm capable of determining what's good and what's bad.

(Lydia, 1)

Such opposition on the part of the woman exhibits the influence of feminist discourse, with the expectant mother resisting being dominated by her male partner, in a situation that can be perceived as a power struggle (Higginbottom et al., 2013). In a patriarchal society, pregnancy and birth are often a period of empowerment for women, when they feel that they have the right to exert control (Higginbottom et al., 2013).

In a sense, the gestational period can be pictured through an analogy of a dance between the couple, as the man solicited more intimate access to the unborn child, and the woman controlled whether to allow him to move closer or to push him away. In other instances, however, the dance was different. When the expectant father was perceived not to be exhibiting enough investment in the pregnancy, it was the woman who attempted to draw him further into the experience. These different modes of dyadic interaction will be discussed further in the next section (4.2.6).

4.2.6 Establishing new dyadic dynamics – “we’re going to be parents together”

As mentioned in the last section (4.2.5), the early gestational period was a time when the expectant parents were highly motivated to make changes to themselves and their lifestyles, to develop the qualities that are synonymous with being a ‘good’ parent. The way that the women and men perceived their significant other also changed during this period, as they started to see them not only as a partner but also as a co-parent, a role that they would share for life. This modified viewpoint fostered a closeness in their relationship that had previously been absent. Creating a child together cultivated a sense of pride and unity between the couple; they had

conceived the child by way of their shared love, and they thought of the unborn child as a part of 'them'.

It's like with your joint love, let's say it as it is, because a pregnancy can occur by accident too. However, in our case, we can say that with our joint love, we managed to create a baby.

(Kurt, 1)

For the men, feeling connected to their female partners was an indirect method of achieving closeness to the unborn child. Bonding as a triad was an important aspect of the pregnancy, as building a strong and resilient family unit was often an important life goal for the expectant fathers.

I feel that the three of us can build ... so, not only [me] ... but also via Catherine. In the sense that I'm building a bond with the baby and with Catherine. Even while hugging her maybe, and hugging him at the same time. It's not the first time that I hugged her and I imagined that we're already the three of us. So there is already a bond, I think.

(Matteo, 1)

Interestingly, this kind of triadic bonding was not mentioned by the female participants in the study. This is likely because, when compared to men, women could more easily connect directly to the unborn child. For the expectant fathers, their female partners were necessarily an enmeshed participant in the development of the paternal-fetal tie, being that the man needed to access the baby through the

maternal body. Thus, as previously mentioned (section 4.2.3), the man's fetal tie is mainly vicarious and regulated by the female partner. In this way, the pregnancy seems to be a period of imbalance in terms of parental equality, where motherhood is promoted, while fatherhood is somewhat relegated.

The men's response to this inequality varied. There was evidence of subscription to both traditional and more contemporary discourse around the role of the father, certainly across different individuals, but also within the same individual.

Many of expectant fathers demanded access to the unborn child from an early time point in pregnancy, wanting to be an integral part of the process, and fighting the assumption that the woman had sole 'ownership' over the fetus.

I'm showing her from now that I want to help, I want to be part of it ... you try, as much as possible. You say, "I'm trying to play my part, I'm making an effort".

(Alfred, 1)

However, in contrast, the men were sometimes prepared to allow their female partners to have primary rights over the unborn child, while they existed on the periphery of the experience. Subscription to the latter view tended to be justified through claims that this is how nature intended it to be.

... the mother is always going to be with the baby because she is carrying it inside her. So she has a lot more time with the baby. There's not much you can do ... you try to do what you can.

(Alfred, 1)

As mentioned in section 4.2.3, the expectant fathers were often slower to internalise the presence of the fetus and to become immersed in the pregnancy process. Thus, men were not always as quick as their female partners to draw their focus towards the unborn child, and to start prioritising the family-unit above other commitments. When the women perceived that their partners were reluctant to make changes to their lifestyle, to undergo a change in mindset similar to their own, and to begin preparing for the arrival of the child, they found this highly frustrating.

... he told me he's going [away] for a weekend. I said, "wait, I'll check that I can travel, that everything is all right, and we can go together". He said "but why can't I go alone?". Sometimes he still thinks like he is single, and it makes me angry ... I don't like it, and I think that when he realises that everything is real, he will change his mindset ... I've started to make plans, and I think it seems very fast to him. Like I'm putting pressure on him ... for me now the baby is the most important thing, but he sometimes thinks otherwise.

(Amy, 1)

In response to this perceived delayed reaction in men, women sometimes took action to try to draw their partners into the pregnancy experience, to highlight the presence of the unborn child and kick-start the onset of the paternal-fetal tie. These efforts involved sharing things they had learnt about the pregnancy and the fetus, and encouraging the men to communicate with the unborn child. This sense of needing to draw the partner in was particularly strong for Amy, where the dyadic relationship was relatively new and thus perhaps perceived to be less secure than the more established relationships and marriages of the other participants.

I start to explain to him, that we need to start thinking more seriously about things ... me, I feel different, I feel changed. So, I feel certain that there is someone inside me. But for him, I sometimes think ... ok, he knows that I'm pregnant, but he can't see anything yet.

(Amy, 1)

However, it is important to note that diversity in couple dynamics and interaction existed in this regard. For instance, where men did want to be highly involved in the pregnancy, the expectant mothers sometimes protested, pushing them away. While the women wanted assurance that the men were dedicated to the family and the unborn child, and available for practical purposes, they did not necessarily want them to get so close that they would impinge on the expectant mother's independence. This could be seen clearly where the men sought to protect the baby by attempting to dictate maternal actions, as described in section 4.2.5. In another example, some of the women also admitted to acting as a barrier to paternal-fetal communication efforts. Wanting to maintain their bodily autonomy, they imposed their thoughts on the futility of fetal communication onto their partners, who wanted to connect in this way.

[My husband] tells me, "let me talk to him, to Tiny!" ... If I'm in a bad mood [I tell him], "leave me alone, he can't hear you!" [laughing] ... he tells me, "It's not fair, he's always with you ... you don't even let me talk to him".

(Lily, 1)

These examples provide further illustration of the maternal role as a gatekeeper during the gestational period, deciding when and in what manner the father could spend time with the unborn child. The men often accepted this dismissal compassionately, empathising with their partner's heavy load.

[Talking about making fetal communication efforts] When she's in a good mood! You can't blame her ... after a day of work. I like to joke around, but then she loses her temper.

(Alfred, 1)

4.2.7 Fighting negative connotations – “look what I got myself into”

Although the discourse about the unborn child was mostly positive, there were occasions where both the men and the women talked about having some negative associations connected to the unborn child. For the women, these were mainly linked to unpleasant symptoms of pregnancy, which cast a negative light over the pregnancy experience. At times, this led to an element of resentment towards the unborn child and likely hindered the early onset of the emotional tie to the fetus.

The first 3 months ... I was feeling very, very tired and experiencing a lack of motivation. I'm not use to feeling like that, I'm very active, and so I felt demoralised. Plus, my stomach, the morning sickness ... I suffered from very intense nausea ... I was a little negative. When you are at your worst you become negative, but then when everything subsides you forget, and you regain your positivity.

(Lydia, 1)

The women, however, attempted to rationally separate their frustration with the symptoms from their feelings towards the fetus.

At the beginning my friends use to tell me, "he's demanding this baby" ... I would tell them, "That's not his fault, poor thing". Now I'm blaming him a bit. For example, he didn't like figolli [referring to traditional Maltese sweet], I would say, "Not even figolli ...?".

(Lily, 1)

Some of the expectant fathers also spoke of having a sense of resentment towards the unborn child. The men spoke about experiencing momentary anger at the fetus for disrupting or threatening to disturb the equilibrium they had achieved in their lives. Kurt spoke about this in terms of having to give up hobbies he enjoyed, to carry out more housework. Matteo, meanwhile, spoke about it in terms of fears that the infant would interfere with the dyadic relationship with his wife, which he treasured. The men, however, were able to put their concerns into perspective, rationalising

that the joy of bringing a child into this world far outweighed any associated challenges that they were navigating.

There are moments when you say ... for example ... I like [working in the] garage, it's my hobby, I like spending time there. But then I know I need to wash the floor. I am associating the housework, that I have to do now, with the baby. Sometimes I say, "look what I go myself into, damn this baby that I created!". But then, at the end of the day, that's just an expression, you feel sorry that you said it afterwards. You say to yourself that these things are nothing compared to the pleasure, not pleasure ... the contentedness that you have a son or a daughter in this world.

(Kurt, 1)

Thus, although the infant was sometimes conceived in a light that was not entirely positive, these negative connotations were regarded as a weakness on the part of the expectant parents, something that they needed to overcome. This interpretation suggests that the women and men ascribed to societal discourses which dictate that parents should love their children unconditionally and in their entirety, with any doubts signifying an inadequacy on the part of the parent, an element of selfishness that requires personal work to overcome (Lopes et al., 2015).

4.2.8 Summary of findings from interview 1

Early pregnancy seemed to be a somewhat surreal period for expectant parents in terms of developing conceptions of the fetus. While cognitively aware of fetal presence, the women and men had not yet fully integrated the unborn child's

existence into their psyche and tended to feel somewhat distant and disengaged. Men, in particular, were at a disadvantage given their enforced distance from the pregnancy, and they needed to make an effort to immerse themselves in the process. While the fetus had not yet achieved full personhood in the parental mind, instances that enhanced his/her tangibility, together with exercises that allowed for individualisation of, and a sense of familiarity with the unborn child, helped the parents to become emotionally engaged, marking the onset of a fetal tie. When the unborn child was believed to be capable of perceiving stimuli from the outside world this encouraged parental connection endeavours. Scepticism about fetal perceptive abilities, conversely, forestalled such bids.

The internalisation of fetal presence led to changes in the mindset of the women and men as they set off on the journey to responsible parenthood. Worry about the unborn child acted both as a sign of the parents' emotional tie to the fetus as well as an inhibitor to the deepening of that tie. The expectant mothers sought to protect the unborn child through behaviour modification, but resisted perceived interference from their male partners in this regard. The couples were sometimes tasked with working through mismatched expectations governing parental roles in pregnancy, with the woman acting as a gatekeeper to facilitate or impede their partner's access to the unborn child. Negative associations and fear of the unknown sometimes led to an element of resentment towards the unborn child, which clouded otherwise positive fetal connotations.

4.3 Middle-pregnancy

By the mid-pregnancy interview, many of the parental ideas about the unborn child had evolved, with some gaining importance and others losing some of their significance. The sections below describe this transformation. Table 4.2 highlights changes in category headings. One can observe that while two of the categories merged into one, the other categories endured in a developed form. The progress in parental ways of thinking about the fetus observed between interviews substantiates the PFT as a growth process.

Struggling with internalisation	→	Achieving internalisation through tangibility
Embarking on a journey of assimilation		
Laying the foundations of connection	→	Growing intimacy versus continued distance
Establishing the need to sharpen the obscure	→	Building a sense of familiarity
Adopting a parenting mindset	→	Feeling the weight of paternal responsibilities
Establishing new dyadic dynamics	→	Working as a team
Fighting negative connotations	→	Battling doubts

Table 4.2 - Evolvement of categories from early pregnancy to middle pregnancy

4.3.1 Achieving internalisation through tangibility - “you’re seeing the process with your own eyes”

While the expectant parents had struggled to come to terms with the reality of the pregnancy in the early gestational weeks (4.2.1), by the second interview they had largely internalised the presence of the fetus. This process of integration was aided by increasing access to evidence that left no doubt in the minds of both expectant

parents that a process of change was underway. At this stage in the pregnancy, influential sources of evidence continued to include maternal abdominal growth and noticeable fetal development on ultrasound scans. Moreover, the onset of perceivable fetal movement had now given the expectant parents a new avenue through which to experience fetal tangibility. The haptic experience of fetal movement was particularly significant to the expectant mothers.

Now it's quite clear that there's a baby inside because you feel the kicking ... so it's becoming much more real than ever before ...

(Catherine, 2)

For the expectant fathers, who, at this stage of the pregnancy could often not yet clearly feel fetal movements through the maternal abdomen, it was seeing moving, working fetal parts on the ultrasound that was especially meaningful in terms of bringing them in touch with the reality of the situation. Movement here referred either to perceptible fetal activity or to functioning internal fetal organs seen on the scans.

... I was impressed with the four chambers of the heart. When you see them working like that - wow, it was amazing ... a heart beating is everything at the end of the day ... It's getting closer, [becoming] a lot more real ... because you're seeing something, you're feeling something.

(Matteo, 2)

Thus, for parents of both genders, the fetal movement represented life, whether observed in haptic or optic form. Whereas the sources of evidence of fetal presence had been ambiguous and transient in early pregnancy, corroborative experiences were now much more consistently available. This continuity allowed the expectant parents to gain confidence in their new reality.

4.3.2 Growing intimacy versus continued distance - “you kind of love someone that you’ve never met”

As the presence of the fetus became more of a given in the parental mind, and the expectant parents became further “immersed” (Lydia, 2) in the pregnancy experience, they often found themselves feeling progressively closer to the unborn child. “Knowing” (Catherine, 2) that the baby was there, a constant presence in one’s life, was often enough to encourage parental feelings of warmth and affection to “grow” (Lydia, 2) and “mature” (Catherine, 2). Being better able to relate to the baby as a known other was also influential in encouraging emotional proximity. Section 4.2.4 introduced the process of familiarisation, and it will be discussed further in the next section (4.3.3).

The more you see him developing - and when you go and see ultrasounds you see him looking more formed - you say, "It's really happening". You see him moving, so you feel ... your instinct causes you to move closer to the baby ... Before you would hear a sound, now you're seeing that sound, you're seeing everything being formed. Last time we saw his face, now we know the gender. So it's more, more ...

(Alfred, 2)

However, that is not to say that the development of PFT had become unconstrained at this middle stage of the pregnancy. Despite access to various means of fetal tangibility, the hidden nature of the baby inside the maternal body continued to present a sizeable barrier to the formation of a genuine tie. The expectant parents often struggled to feel close to a being whom they had never "met" (Lily, 2) or indeed really seen, with the child continuing to be mainly considered unreachable. Relating to the fetus was an unfamiliar experience for the parents, and they found it challenging to consolidate their feelings in this regard.

... there is a certain bond ... It's difficult to feel a bond with someone you've never seen, although you feel him moving. I don't even know how to explain it.

(Valentina, 2)

Towards the baby, I feel ... ok, I say I love him, you know? But there isn't really that bond per se as yet. Because it's an unknown person. I'm sure the feeling when he is born is going to be different, obviously ... the fact that he's not inside you, for the father it's a bit more difficult ... you appreciate that there's a living thing in there but ...

(Julian, 2)

As hinted by Julian, this sense of being on the outside, and unable to reach the fetus, affected men disproportionately more than women. In truth, the expectant fathers often felt that they existed on the periphery of the pregnancy experience as a whole. The maternal figure, the bearer of the child, was the primary focus of attention, in some cases leaving the men feeling left out and helpless. The pregnancy felt like a women's domain, from which men were often excluded.

It seems that I am the last person to know about anything. The female in-laws understand everything better than me. I just did the thing and that's it, "now stay there", you know? ... in the pregnancy ... I'm the secondary person ...

(Julian, 2)

Thus, as noted in section 4.2.6, it seems that the male role often continues to be relegated by the mother and by wider society as the gestational period progresses. The expectant fathers were mainly able to rationalise their designated supporting role as a natural state of affairs. However, a hint of hurt at their marginalisation was often perceivable in their narratives. As the woman was the one carrying the baby,

the men accepted that she was the one who should receive the majority of the attention.

You definitely can't be as involved as the woman! Obviously! ... You feel a little [left out] ... You're obviously going to be a little on the outside ... you feel it a little, but there's nothing to be done.

(Chris, 2)

This 'bowing down' to accept how things are habitually done emphasises the dominant social discourse around pregnancy, where women are seen to have ownership over the unborn child (Zachariah, 1994). Section 4.3.4 further highlights this way of thinking from a maternal perspective.

However, one should acknowledge that this experience of being excluded was not universal. Some of the men did feel like active participants in the pregnancy process. A sense of inclusion often seemed to depend on the expectant fathers' initiative and determination to be involved, a concept introduced in section 4.2.3, as well as their partners' willingness to let them in.

I don't know, but from what a lot of women and a lot of my friends say, I think I make more effort than others, than my friends ... maybe because they're too manly or too macho, but they don't feel like they can joke around with the baby or sing to the baby. I don't have an issue with that - on the contrary, I do it a lot ... I think it works both ways - even Catherine involves me a lot - [the baby] doesn't even start moving before she calls me, or pulls my hand towards her.

(Matteo, 2)

Nevertheless, even those men who felt highly involved and included in the pregnancy process tended to share the perception that their own fetal tie was incomparable to that of their female partners in terms of emotional proximity. As in early pregnancy (section 4.2.3), expectant parents of either gender rationalised that complete physical immersion in the pregnancy experience gave the expectant mothers an unbeatable advantage over men in this regard. It is possible that the men's sense of exclusion, as described above, contributed to this sense of disparity.

Obviously, for the moment I'm certain that it's completely different - because he's inside her and she feels everything ... Kate is carrying him - she's carrying him with her all the time. So I'm sure that there is a much bigger bond ...

(Rocco, 2)

4.3.3 Building a sense of familiarity – “you almost feel like he's already come”

As the pregnancy progressed, the expectant parents sought ways to become better acquainted with the unborn child, to build on their perception of the baby as a

familiar other. The familiarisation process began early in the pregnancy, as reflected in related findings from the first interview (section 4.2.4), and intensified as the pregnancy advanced and curiosity about the unborn child deepened.

The parents' ability to confer personhood to the fetus had grown from early pregnancy. With the aid of ultrasound images in which the fetal form was now "clearly" (Rocco, 2) recognisable as human, for instance, the expectant parents were able to "form a mental image" (Chris, 2) of the fetus as a "normal baby ... on a smaller scale" (Chris, 2), rather than an indistinguishable foreign object. The women and men could better identify with a likeness that was understandable to them. They underscored the significance of details within the images, features such as the "face" (Tara, 2 & Valentina, 2) and "fingers" (Chris, 2), that made fetal humanity indisputable in their minds.

Because I saw him on the ultrasound, so the connection to my heart ... ya, it is growing ... it's not like it's just a ball [anymore] when I see the ultrasound. I wasn't connected in my heart [referring to the time of the first interview] ... After 4 months I had a colour doppler. This type of ultrasound shows you the baby's hands, legs, eyes and all things.

(Radha, 2)

The power of these ultrasound images in emphasising fetal humanity is evident in Marc's narrative, where he talks about how experiencing such ultrasounds caused him to rethink his views on the beginnings of life, and pregnancy termination.

You know it probably changed my view on things like abortion and stuff like that - where I've always thought, "well, a baby is not really a person until it's born", but actually when you see the baby, and it's moving, and it's got a heartbeat you're like, "Actually that baby is [already] there".

(Marc, 2)

Thus, at this stage of the pregnancy, ultrasounds offered the expectant parents an opportunity to "see what's going on inside" (Lydia,2), "spying on [the fetus] with a camera, like a fly ... like you're looking through a window (Kate, 2), and reducing the sense that the women and men were "blind" (Kate, 2) to the inner life of the fetus. This insight fostered a sense of closeness between parents and the unborn child, diminishing feelings of distance and disconnect.

The expectant parents also talked about gaining a better understanding of fetal perceptive and emotive capabilities through "reading" (Matteo, 2) and watching "videos" (Krishna, 2). Having this kind of knowledge promoted the sharpening of the depiction of the fetus that was gradually forming in the parental mind, allowing the women and men to better relate to the unborn child with a spirit of compassion, rather than ambivalence. A better understanding of fetal developmental stages also allowed more confidence in the efficacy of fetal contact bids, a concept which will be discussed later in this section.

... the more that I read and the more that I learn ... the more I can understand, the more I can do particular things that are helping me a lot to bond ... it's very insightful to know that at 24 weeks his hearing abilities are almost fully developed. You start saying, "Wow, he's hearing everything, he's hearing her, he's hearing me ... I notice the difference from how I was before, when I didn't know certain things, to after, when I got to know more.

(Matteo, 2)

Aside from developments that emphasised the humanity of the unborn child, there also continued to be occasions which distinguished the fetus as an individual. For the majority of the expectant parents, and as mentioned in section 4.2.4, finding out the gender of the fetus was a highly anticipated milestone, and embodied an influential element of fetal individualisation. Most of the couples had learnt the fetal gender by the time they participated in the second interview. Some of the participants talked about how this knowledge helped them communicate with the unborn child in a way that fitted with gender norms during the pregnancy period, while others discussed how it allowed for a more focused imagination of their shared future. Fetal gender knowledge thus continued to foster a sense of familiarity.

I think [finding out the fetal gender] massively helped ... that kind of bonding with the baby ... I can picture things now. Before you'd kind of picture something and then you'd go "oh that's what I do if it was a boy", and then you'd sort of flip and go "oh if it was a girl I'd been doing this". You kind of linger on those thoughts for longer now you know it's actually gonna be a boy, "oh we're gonna probably be playing football together in the park".

(Marc, 2)

A few of the expectant parents were still unaware of the fetal gender, either by choice or because of restrictions in revealing this information in their country of residence. In such cases, while this had been seen as a mild inconvenience in early pregnancy, not having this information had often become exasperating at the mid-gestational phase, restricting the parents' ability to relate to the unborn child.

It's a bit frustrating that every time you refer to him, you need to say, "he or she" ... Even when you talk to him or her. Or that you can't call him by his name when you relate, when you try to relate to him, you try to bond. So you start saying, "Wouldn't it be better if I knew, so that I could talk to him more?" ... I didn't use to think about it like that, but it's changed ... if I'm joking with him or her; if she's a girl I think I would joke one way, if it's a boy I would joke in another way.

(Matteo, 2)

Choosing a name for the child was also considered to be a meaningful step in the pregnancy process. While some of the expectant parents had assigned a nickname to

the unborn child in early pregnancy, gender knowledge now allowed them to assign a more official name. Many of the parents felt that selecting a name before birth was a crucial step in fetal individualisation. They referred to the fetus by name when talking to, and about, him/her and felt that this encouraged the perception of the unborn child as an intimate part of the family unit, rather than a stranger, an outsider.

You get into the picture more. You don't say, "the baby", you say, for example, "Now when Luke is here ...". You almost feel like he's already come.

(Rocco, 2)

Seeking family resemblances on ultrasound images served a similar purpose - that of supporting the vision that the child inherently belonged within the family, that he/she was, in a sense, an extension of the self.

... the doctor did a 4D ultrasound, and I saw the face, and I saw my lips, and I started crying. From happiness ... knowing that it is similar to mine, I was like, "my God!" ... I said, "Oh my lips! My lips!

(Amy, 2)

Like with physical features, the women and men sometimes imagined certain fetal behaviours to signify family likenesses. They often took patterns of fetal movements to indicate particular characteristics in the child, grasping at possible indicators of the child's personality.

The baby starts to show you things. For example, when I eat yoghurts with apple he starts jumping and he is happy, [and] for example on Sunday there was a band making a lot of noise and he didn't stop jumping. So you notice that he is hearing ...

(Valentina, 2)

The expectant parents thus sought to know as much as they possibly could about the unborn child, clung onto this knowledge, and used it to conjure up more detailed ideas about the baby. Objects such as infant clothing and nursery furniture, which the women and men associated with the unborn child, also supported the building of this picture in the parental mind, as they visualised their child making use of these objects. Being around young children fulfilled a similar purpose - fuelling the parents' imagination what life with their baby would be like. These findings serve to further emphasise the importance of the tangible in allowing the parents to engage with the unborn child, reducing the sense of a gap between themselves and the fetus.

... when I'm sorting out the [nursery], I feel happy, because I'm doing something tangible ... Even when you buy [baby] clothes ... They're just things, but you can feel them with your hands, so it makes you grasp the situation better. You say, "I don't know what's happening in my tummy, but I have this item in my hands".

(Tara, 2)

In this way, the PFT seems to be a one primarily built with a conjectured image of the child. However, despite the benefits, individualising the baby was also recognised to have a potential pitfall. On occasions where burgeoning expectations about the fetal

gender, for instance, proved to be inaccurate, this led to a period of confusion and adjustment for the parents, before they were able to reconcile their feelings. This hazard was noted in the primary interview narratives (section 4.2.4) and was brought up again in the mid-pregnancy interviews, emphasising its significance. Lydia and Kurt, for example, had first been told that they were expecting a boy, but a later ultrasound showed that they were having a girl. Here they relate how it felt to have the fetal depiction they had formed challenged:

... I took it badly because I had spent half the pregnancy thinking it was a boy, and now, the last time I went, he told me it was a girl. There I felt a bit mixed up ... In reality, I'm very happy that there is a girl ... But the fact that I was psychologically prepared for a boy and at that time he told me, "It's a girl I'm seeing" ... I don't know why I took it badly, it's all psychological ... [now], because of what happened to me, I am sometimes scared to completely embrace it.

(Lydia, 2)

... I didn't show [my wife] that it affected me so much ... [the obstetrician] tells you a story that it's a boy, a boy, a boy. So you start saying, "I'll take him to the garage and on the boat" - that kind of thing. And then, all of a sudden, in the split of a second ... he tells you that there's been a sex change.

(Kurt, 2)

The experience described by Kurt and Lydia above gives an initial suggestion that becoming attached to ideas about the baby may pose problems for the expectant

parent's emotional tie to the fetus if these expectations are challenged. Though the transition between the PFT and the parental-infant bond after birth is beyond the remit of this thesis, it is feasible the issue of unmet expectations, and the possible psychological consequences relating to this, may complicate this progression. This is likely given that life with the neonate is unlikely to exactly match that those depictions conjured up during the pregnancy.

As in early pregnancy (section 4.2.4), attempts to make contact comprised a further way through which the expectant parents achieved a sense of familiarity with the unborn child. The participants made an effort to "talk" (Matteo, 2, Amy, 2 & Valentina, 2) to and "touch" (Kurt, 2 & Tara, 2) the fetus via the maternal abdomen. These communication attempts served to psychologically prepare the women and men for the onset of parenthood, a concept which section 4.3.4 discusses further.

I touch the baby ... we're getting use to the idea ... psychologically, so that I'm ready for when she's born. Having a baby is something nice, but it will be a psychological shock! All of a sudden you have something that changes your life completely. Slowly you try to ease it, you reduce the current, so that once she's born, it's not such [a shock] ...

(Kurt, 2)

In a further example of anticipatory parenting, such bids gave the expectant parents a sense that they were "building [the parental] side of the relationship" (Matteo, 2), through creating associations in the fetal mind that could ease the child's passage

into the world, and serve to transition them in the future. They wanted the infant to be able to recognise them as significant others, who were there to provide care.

I believe that he starts getting use to voices, for example. That [he knows that] they belong to the people who are going to protect him - myself and Lily, because he is going to spend most time with us. So if you start [talking to him] from now, maybe you'll be able to comfort him when he's crying ... if he hears that sound and he associates it with comfort ...

(Alfred, 2)

While for the expectant fathers, these contact bids required "effort" (Matteo, 2), they came more "naturally" (Valentina, 2) to the expectant mothers. This difference ties in with parental gender variance in the building of the fetal tie, in terms of it being effortful versus spontaneous, as introduced in section 4.2.3.

... now it's even more natural ... I think [it's] for the baby's benefit, in reality, and for the baby to start getting use to me speaking to him, and to comfort the baby, sort of ... so already connecting with the baby, and getting use to speaking to a baby.

(Catherine, 2)

Many of the expectant parents of either gender, however, as in early pregnancy (section 4.2.4), continued to question the usefulness of their connection endeavours, in terms of fetal perception of, and ability to benefit from, these. There were also different opinions and overall uncertainty about whether the unborn child could

react to parental contact bids through movement, which would allow for a discernible element of fetal reciprocity. While some of the expectant parents believed that fetal reciprocation was possible, others were far more dubious about whether fetal “kicks” (Amy, 2) in “response” (Alfred, 2) to stimuli was intentional, thinking that the movement was more likely a “coincidence” (Lily, 2). This spectrum of opinions about fetal reciprocity led to divergent views about whether the fetal tie was experienced solely from the parental side, or whether it was in some ways “two-way” (Catherine, 2), with the baby being able to communicate and connect with the parent in a rudimentary fashion.

I start imagining that he’s responding, even though it’s not true. But through that, I start feeling that there is a connection, a small relationship that I’ve started ... we try talking to him ... maybe he’ll give some kind of response ... there’s nothing more you can do ... I try, but I know that maybe he can’t hear, or he doesn’t notice, or it doesn’t matter to him ... when I see him moving it seems like he’s giving you feedback so I don’t see it as one-way communication ... In the sense that he’s doing something for me - he’s doing enough. So I don’t feel like I’m talking to the wall ...

(Alfred, 2)

... apart from a few kicks here and there, there isn't anything back, and I don't think he's able to communicate or relate ... So I think it's more like a one-way feeling of protectiveness towards the baby, rather than a relationship or a bond.

(Anna, 2)

Anna's excerpt above shines a light on a notion shared by all of the participants in the study; that reciprocity is an essential element in building a genuine parental-infant bond. Thus, in the absence of fetal response to parental communication efforts, or a lack of ability to perceive such feedback, many of the expectant parents shared the opinion that their tie to the infant could only cement in the period following the child's birth, when a reciprocal relationship became possible. Even then, many of the women and men believed that it would develop slowly, as the baby emerged from being "in his own trance, in his own space, in his own bubble" (Matteo, 2).

This craving for the reciprocity, along with a desire for a more tangible experience of the baby, led the expectant parents to develop an intense yearning for the birth of the child. They longed to see and hold the baby in their arms. Having the baby within the maternal body, beyond reach, could never fully satisfy their desire to connect to the child. Thus, the women and men felt that their feelings of emotional proximity to the baby would intensify significantly following the birth, where a true optic, haptic and reciprocal connection would become possible. In a way, it felt as if the limited clues about the child available to them at this stage were simply a teaser for the real thing.

You need to have interaction to have a connection. Now if you feel him moving, that's a kind of interaction. Him being in your arms is a much more powerful kind [of interaction] ... [the connection] is always increasing and then it obviously shoots up when he's born.

(Rocco, 2)

Despite the expectant parents' efforts to individualise the unborn child, by mid-pregnancy there was still ambiguity in their minds about whether the baby was a separate being or, in fact, still an integral part of the mother. The women and men found this dichotomy challenging to explain, but it related to the baby's lack of ability to express his/her own needs and the reality that he/she was still dependent on the maternal figure for sustenance, while, simultaneously, being able to move and act independently. Such was the extent of maternal-fetal interconnectivity in the minds of both the female and male participants, that some felt that the infant would continue to form part of the mother, to an extent, even after the birth.

I think they're one thing at the moment ... I can't imagine them as separate ... He can't tell you anything. [My wife] has to tell you if [the fetus] needs anything ... [After the birth] at the beginning it's still going to remain the same ... I believe that it will start [changing] slowly ... when he can communicate.

(Chris, 2)

This understanding of the mother and child as fundamentally connected may link to two concepts which are described in the next sections. The first is the sense of ownership that women talked about having over the fetus, an idea introduced in

section 4.2.5, and referred to in sections 4.2.6, 4.3.2 and 4.3.4. The second likely-related concept is the sense of emotional proximity that the men reported feeling towards the fetus when relating to their female partners, an idea which was introduced in section 4.2.6, and which is discussed further in section 4.3.5.

4.3.4 Feeling the weight of parental duties - “burdened with responsibility”

As the pregnancy progressed and the arrival of the unborn child approached, the expectant parents felt a greater urgency to develop a responsible persona. This process had begun in early pregnancy, as discussed in section 4.2.5 and, by the second interview, the expectant parents felt like they had matured, becoming more selfless.

You start thinking differently ... you mature involuntarily, the way you think about certain things. You start thinking like a parent ... you weigh up things before doing them. More than before, when we would say, “It’s us two, we’ll try everything”. You deliberate over things more.

(Tara, 2)

Parents of both genders continued to feel responsible for the protection of the unborn child. For the expectant fathers, as in the first interview (section 4.2.5), protective measures were mainly said to involve taking on household roles that had previously been performed by their partners. These measures also included attempts to vicariously promote the health of the fetus through the care of their significant other.

... obviously the more you read, the more you realise that everything that goes into her stomach is going to pass to [the baby]. So you say, "I have full control of this". And when we argue, for example, when we have an argument - we almost try to come to a solution before it comes to that. The fact that you know that he's hearing everything, he's feeling everything, that he/she is going to feel the change in mood - you say, "I might be the culprit of something that ..."

(Matteo, 2)

To protect the fetus, and as in early pregnancy (section 4.2.5), the men sometimes continued to feel inclined to keep an eye on and dictate their partner's actions, in ways that could be perceived as paternalistic. However, on the whole, the men had, over time, gained trust in their female partners' ability to care for the unborn child without their input, and did not feel such an urgent need to oversee her behaviour.

[My protective impulses have] probably decreased. For me, seeing her, Anna's handling it - I'm completely comfortable, and I know she's doing a fantastic job to make sure she's eating the right things and doing everything in the baby's best interest ... I probably don't worry as much ...

(Marc, 2)

Sexual intimacy between the couple was sometimes affected by protective inclinations, as parents of both genders struggled to trust that intercourse would not harm the fetus. While refraining from intercourse was usually a shared decision, the cessation tended to put a strain on the couples' dyadic relationship, particularly from the men's perspective, a concept which section 4.3.5 will build upon.

You can cut the frustration associated with the sexual relationship with a knife ... she's not comfortable, and to be quite honest deep down I don't feel comfortable about it. Knowing that there's the baby - not that you're going to do harm - but it doesn't feel right ... my mind is at rest that there's nothing [wrong], but yes, frustrating!

(Julian, 2)

For the women, who carried the fetus within themselves, the experience of protection differed somewhat from that of their male counterparts. The expectant mothers were highly aware that anything they did could inadvertently impact the fetus. Thus, they continued to be vigilant over their actions and to consider how these could affect the unborn child. This not only included potential harm from engaging in strenuous physical activities or ingesting potentially damaging substances, but also involved attempting to reduce the emotional burden to the self so as not to pass the stress onto the unborn child.

I'm always thinking [about the baby]. Subconsciously, for everything I do, I say, "am I doing it right?" or "let me be a little careful". It's always on my mind ... I think the fact that you're a little stressed affects things in some way. Maybe [the baby] won't be so relaxed. Maybe he'll be born nervous. You try to take things more slowly.

(Tara, 2)

The onset of perceivable fetal movement had now given the women a method through which to monitor fetal health, and they took on this role with enthusiasm.

Fetal movement provided reassurance of fetal wellbeing on a far more frequent and consistent basis than that previously offered through ultrasound, or based on vague indicators of fetal life such as physical symptoms of pregnancy. In fact, for some of the expectant parents, both women and men, the significance of the ultrasound experience diminished when fetal movement became perceivable. This change came about because they no longer felt the need for external validation of fetal health.

At the beginning, the ultrasounds were a lot more meaningful ... I think I feel more content, deep down, when she tells me that she feels him moving - because there you have a signal that there's life, [that] it's happening. Obviously, you need to go do ultrasounds, to see the progress, but I would consider them to have less weighting than before ... [the onset of fetal movement] has changed a whole lot of things.

(Julian, 2)

The expectant mothers found themselves monitoring the frequency and strength of fetal movements to ensure consistency. This task gave them a sense of increased accountability over fetal wellbeing. Where there was a delay in the onset of fetal movement, or where fetal movements decreased for some time, this was a source of acute anxiety for the woman, who became immediately concerned that this indicated a change in the health status of the fetus.

... I wait for her to move; I want her to move. If there is a day when, I don't know, she's asleep, I worry a lot, and I start thinking the worst. I start thinking that there is something not right.

(Lydia, 2)

As in early pregnancy, the women linked their concern to the emotional tie they had developed to the unborn child.

... the emotional connection is obviously automatically there ... without wanting to, as soon as I thought that something could be wrong ... you start panicking ... it's a baby, just inside, not out yet, but it's a baby ... [worrying] is surely a sign of the connection.

(Catherine, 2)

Interestingly, once the mothers had assigned themselves the role of 'guardian' of the fetus, they also seemed to be developing a certain sense of possessiveness over the unborn child. This view seemed to be limited to the female participants in the study and was observed for the first time in mid-pregnancy. This maternal reaction suggests that women acquire a sense of ownership over the unborn child that grows over the gestational period, coming to think of the fetus almost as an extension of themselves. The women talked about how it would be difficult to share the baby with others after birth, having had him/her all to themselves during the pregnancy.

... the thing I like most, for example, is waking up in the night and feeling him moving. You stay quiet and you say, "For now he's all mine' ... Soon I'll have to share him with everyone.

(Valentina, 2)

They talked in terms of being the person who best knew what the unborn child required, and they experienced an aversion to interference from others. This concern was relevant during the pregnancy and extended into the future.

I'm worried about my mother, butting in a bit too much - that's for sure ... even at a point, she was like "aren't you going to rest? ... the baby needs to rest," - So you're telling me already what my baby needs!

(Catherine, 2)

In a sense, the expectant mothers sometimes felt that the baby was safer on the inside, during pregnancy, than they would be after birth. They feared that they would lose a sense of control over the child following the delivery, as the infant came into contact with others in the outside world. They were torn between wanting the child to be independent versus wishing to keep them protected by tying them to oneself.

For now, he is safe. That's how I think. He's safe, nothing will happen. And after ... after he will be outside, so you never know what will happen ... sometimes I think that I will not give him to anyone. Just me and that's it! ... [I'm worried] that I might be jealous.

(Amy, 2)

The expectant mothers also talked about controlling access to the baby - at times they seemed to like others acknowledging their pregnancy, touching their abdomen and such. Yet, they were reluctant to give up their bodily autonomy entirely; they wanted the touch to happen on their own terms. These ambivalent feelings related to desiring external acknowledgement versus preserving individual autonomy were especially evident in Valentina's narrative.

... [It's nice] that people acknowledge [the pregnancy], and it's not just you who is seeing it. There are people who say they don't enjoy people touching their tummy, but I like people who I'm close to doing it, because it makes it real ... that's it's not just your tummy growing ... for now he's still all mine, he's going to stay mine alone for the moment ... although, saying that, it's not really true. We were at a wedding, and everyone was touching my tummy. They were feeling him [moving], they were shouting, drunk. I was literally going to die ...

(Valentina, 2)

For participants of either gender, worry, a concept introduced in section 4.2.5, continued to feature in the pregnancy experience. The women focused on fetal wellbeing as their primary concern. The expectant fathers, however, appreciating the interconnectivity between the mother and the child, talked about worrying about the health of both the mother and the unborn child.

[I worry] that everything goes well. From her end, from the baby's end ... when she says, "I have pain here", your first thought is, "is that normal?". You worry - your thoughts immediately go there, even if it has nothing to do [with the pregnancy], your mind goes there first.

(Chris, 2)

Nevertheless, on the whole, the narratives revealed a tendency for worries about the unborn child to have diminished by the time of the second interview. This reduction came with the knowledge that the risk of miscarriage decreased after the first trimester of pregnancy. Reassurance gained from medical professionals that all was well, particularly with the anomaly scan, also helped, as did the growing ability to ascertain the continuation of fetal life more easily through the perception of fetal movements, either directly or vicariously, through the woman's assurance of this.

... the worries have disappeared to a certain point. You can never be sure ... [but] I don't think about it anymore, it's over now ... there are two things that [reassure me]. Her [growing] body and the fact that she feels him moving. That gives me a sense of serenity.

(Julian, 2)

For the expectant parents who had held back on building emotional closeness to the fetus in reaction to their worries about loss or abnormality, a phenomenon introduced in section 4.2.5, the comfort offered through reassuring test results allowed them to move emotionally closer to the unborn child.

... to tell you the truth I was very scared that there was ... we hadn't done - I think it was the Down Syndrome test, and I was very worried ... You would be shocked if, God forbid, they gave you bad news ... But thank God, there wasn't anything wrong. So I feel more ... I love the baby more than before. ... It's not because there were no problems that I love her more, because if there was a problem I may have loved her the same amount or even more. But it does help a bit.

(Kurt, 2)

4.3.5 Working as a team – “it's just one triangle”

By mid-pregnancy, there was a strong feeling that the parental dyads had come together to prepare for the arrival of their child. The parents' continued to think of the baby as an embodiment of the love that existed between the couple, a concept introduced in section 4.2.6, and this was a unifying force between them.

It's a small person that we made. Obviously from the inside I'm one big smile ... we've made something together ... it makes me really proud.

(Brian, 2)

As in the first interview (section 4.2.6), and again only on the part of the men, some participants talked about achieving feelings of emotional proximity to the unborn child through nurturing the relationship with their partner. Being that the child resided within the female, feelings of dyadic connectivity were thought to extend to the unborn child automatically.

... we've built up a great relationship, so far. So yes, I think because of that, because everything is good [between us], everything with the baby is good [also] ... I think it's just one triangle. In that way, I feel connected.

(Brian, 2)

4.3.6 Battling doubts – “I don't know if I'm up for it”

Although the existence of the unborn child had deepened the sense of commitment and belongingness within the couple for both partners, fears associated with the unborn child sometimes put a strain on the couples' dyadic relationship. Some of the male participants spoke about having continued concerns that the baby had, or would, become more important to their female partners than they themselves were. Section 4.2.7 introduced this concept. The men were sensitive to being pushed away, excluded, and denied the dyadic intimacy they had valued before the pregnancy. A decrease in sexual intimacy over the pregnancy, as discussed in section 4.3.4, served to fuel these fears.

There's some fear that when the baby arrives he will come between us, take over our quality time. So I'm trying to work on that mentally - I don't want it to affect anything. Obviously, there will be times where Catherine will have to dedicate a lot of time to the baby, rather than to me - that's obvious, that's a given, you can't change it. I'm preparing myself for it so that when I see it happening, I don't feel like Catherine prefers the baby, but because that's what's necessary at the time.

(Matteo, 2)

Although the men did not talk specifically about resentment towards the unborn child, these expressions of concern give clues that some ambiguous feelings may exist below the surface; that associations with the unborn child are not always entirely positive in a clear-cut way.

Fear of the unknown also affected the ability of some of the expectant mothers to develop feelings of emotional proximity to the fetus. The women were unsure of how the bond between themselves and the infant would develop following the birth, worrying specifically about the evolution of a reciprocal relationship. They, therefore, sometimes found themselves holding back from building emotional proximity to the unborn child for fear that feelings of closeness fostered in the current stage would not accurately represent the emotions that developed after birth. They worried that it would be somewhat easier to develop affection for the idealised unseen being than it would be to love a more complex and demanding infant.

It's difficult, you know. It's a little scary because ... you don't know whether he's going to be healthy, if you are going to cope, if he's going to love you, if you're going to love him back ... when you're pregnant you're happy, but you don't know [what's coming] ... although everyone says he's part of you and it's the best thing that happens to you. At the moment I'm confused, I'm not sure, and I don't know if I'm up for it.

(Valentina, 2)

Thus, fear of the unknown, in terms of uncertainty about how the parents would cope with, and adapt to parenthood, led to some ambiguous feelings about the unborn

child. These doubts marred otherwise positive parental perceptions and interfered with the flourishing of the fetal tie.

4.3.7 Summary of findings from interview 2

By the second interview, the expectant parents had internalised the reality of fetal presence, with the onset of perceivable fetal movement acting as a significant catalyst in the integration process. While the expectant parents instinctively moved closer to the unborn child as the pregnancy progressed, the extent of emotional proximity achievable was limited by a continued sense of the child as hidden and unreachable. In particular, men had to fight to remain relevant in the pregnancy process and put energy into connecting to the unborn child.

The parents sought to deepen their sense of knowing the fetus through processes that emphasised his/her humanity, individuality and position as a part of the family unit. However, where existing mental depictions of the unborn child were challenged, this marred the PFT, requiring recovery work. Varying opinions about fetal perceptive capabilities prevailed, and these were entangled with diverse views on the unborn children's capacity for reciprocation, an element which was considered essential in conceiving the PFT as a genuine relationship.

Worries about the fetus had generally decreased with reassurances about his/her wellbeing. However, the development of a responsible persona remained a critical concern as the expectant parents worked together to prepare themselves for life as a triad. The expectant mothers sought to oversee fetal wellbeing through the vigilance of fetal movement patterns, and had also often developed feelings of

ownership over the fetus, and a reluctance to share the unborn child with the outside world. Fear of the unknown, in terms of how the child would integrate within the family and affect the existing parental relationship continued to influence the development of the PFT, detracting from otherwise largely positive fetal conceptualisations.

4.4 Late pregnancy

The researcher met the participants for the third and final time within a few weeks of the expected date of delivery. The expectant parents often used the concluding interview as an opportunity to reflect on their pregnancy journey, talking about how their conceptions of, and feelings towards, the unborn child had evolved. Many of the themes that emerged in the final interview mirrored those identified at the mid-pregnancy time point. In some ways, given that there were limited new means to relate to the unborn child, the parents' maturing conceptions of the fetus had reached a plateau by the time of the final interview. Nonetheless, the emphasis placed on the different concepts varied over time, and such adjustments in parental attitudes are discussed in sections 4.4.1- 4.4.5. Table 4.3 shows the changes in category titles from the second data generation point to the third. One can observe that two of the categories have been withdrawn, having lost their significance or blended into other themes, while the others have remained and evolved.

Achieving internalisation through tangibility	➔	Category withdrawn
Growing intimacy versus continued distance	➔	Pathways and hurdles to intimacy
Building a sense of familiarity	➔	Building bridges
Feeling the weight of paternal responsibilities	➔	Developing a parental persona
Working as a team	➔	Category withdrawn
Battling doubts	➔	Leaping into the unknown

Table 4.3 - Evolvement of categories from middle pregnancy to late pregnancy

4.4.1 Pathways and hurdles to intimacy – “you start really relating to what’s happening”

As in previous interviews (section 4.3.2), the expectant parents struggled to precisely describe their feelings towards the unborn child in late pregnancy, given the unfamiliar nature of the tie between them. They felt a tenderness, a fondness towards the unborn child and yet thought it strange to feel those emotions in the absence of a face-to-face encounter. “Something starts building in you - a love for something that you haven’t yet seen” (Kurt, 3).

The women and men were able to talk in detail about instances that deepened their emotional pull towards the fetus. These 'proximity' events centred around times where fetal presence was clearly evident, and when parents could be fully immersed in the moment, and mindful of the unborn child. At this late stage in the pregnancy, the women and men often talked about feeling closest to the fetus when they had a chance to quietly indulge in the sensation of fetal movement, nurturing the haptic tie.

Researcher: ... when is that moment when you feel closest to the baby?

Participant: ... when he moves ... for example after I have a shower. I relax a bit more, and I sit down and change position [and] he starts moving a lot. I enjoy that.

(Lily, 3)

The expectant mothers had previously identified the significance of fetal movement in aiding internalisation and promoting a sense of emotional proximity to the unborn child at the second interview (section 4.3.1). However, the increasing magnitude and intricacy of fetal palpability now allowed the expectant fathers to better share in the experience. The men no longer had to rely on their female partners to report on the activity of the unborn child; they could perceive it for themselves, meaning that this avenue to fetus engagement was now less vicarious for them. The growing intensity of the fetal movement gave the perception that the unborn child was almost within reach, reducing the perceived barrier between the expectant parent and the fetus.

Now it's easier. Before to feel a kick you'd have to really pay attention because it would be really faint - now it's like, "Get out of the way!" So the more time that passes, the more you relate ... it's coming closer ... and the relationship is starting - it's starting to happen!

(Alfred, 3)

This growing ability to perceive fetal movement led to a decline in the significance assigned to other fetal tangibility sources. Ultrasounds, for instance, which had been

given such importance earlier in the pregnancy (section 4.2.4), were now thought of as less satisfying in promoting a deep fetal tie. In comparison to the physical observation and haptic sensation of fetal movement, the impersonal nature of technologically-generated images could not offer the warm palpability coveted by the parents.

You know, it's quite mad! ... seeing him moving, and elbows, and legs, and stuff, and the body ... that for me is a long way off the scans and hearing the heartbeat ...

(Marc, 3)

Despite the increased palpability of the fetus through the maternal abdomen and the value of this in promoting emotional proximity, as discussed above, the maternal body itself remained a significant barrier to the progression of the fetal tie. The contained nature of the child within this sealed and opaque vessel meant that parents of either gender, but men in particular, at times continued to feel somewhat remote and removed from the fetus. For the expectant fathers, this gap was aggravated by the continued requirement for their partners' cooperation in allowing them access to the unborn child.

... connecting with the baby, yeah, for me it's still weird that you can make a connection with the baby when he's in the belly ... I don't know how to make a kind of connection like that - like to the air.

(Brian, 3)

[Talking about using specific techniques in fetal contact bids] I haven't done them. Because Lily is very tired now, especially in the evenings. She's not sleeping, and I'm trying not to bother her ...

(Alfred, 3)

The men thus looked forward to a time, after the birth, when they could spend time alone with the infant in the absence of the mother, "he can be with you even when your wife is not there" (Chris, 3). However, some of the expectant fathers spoke about achieving elements of this one-to-one tie even during the pregnancy. The excerpt from Kurt's narrative, given below, emphasises the salience of being able to connect to the baby directly, in a sense 'cutting out the middleman'.

[I feel closest to the baby] in the evening when the mother is sleeping, and I touch her tummy and [the baby] starts moving. I say, "It's just the two of us awake, and the other one [is] asleep".

(Kurt, 3)

In this instance the maternal figure was absent from her role as gatekeeper, a concept introduced in section 4.2.5, and thus unable to dictate the terms of the paternal-fetal tie, allowing the men to hone in on the fetus, strengthening the intimacy of their tie.

All of the expectant parents discussed the apparent gender imbalance in terms of access to the fetus. As in previous interviews (sections 4.2.3 & 4.3.2), they generally felt that the absence of a threshold between the mother and the child, the enforced physicality of the maternal experience, gave women an advantage in becoming

immersed in the tangible experience of the unborn child. Section 4.4.3 further discusses these gender differences.

In contrast, and reinforcing findings first noted in early pregnancy (section 4.2.3), some of the expectant fathers recognised possible ambiguity in the maternal emotional reaction to the fetus. They postulated that the strain of carrying the baby, and the unpleasant symptoms that came with the role, may cloud positive maternal regard of the unborn child, giving men an advantage in the building of favourable fetal representations.

I think there are some differences - because as a father you can be caring towards the baby, because it's not you who is carrying the weight, it's not you who is carrying the stress ... So I think the bond between them is less than I have with the baby.

(Kurt, 3)

Nonetheless, it is relevant to observe that, even in late pregnancy, barriers to the fetal tie existed for expectant parents of both genders. While acknowledging that men faced more drawbacks than women in terms of access to, and time spent with, the unborn child, feelings of emotional proximity often seemed to depend, at least to some extent, on parental interpretations of, and approach to, the hurdles they faced, rather than the objective presence of such hurdles. Immersion in the pregnancy experience was more straightforward for women. Still, many of the men did achieve a deep level of engagement, particularly towards the end of the pregnancy, "Now in everything we do we think of him" (Julian, 2). Dedicating oneself

to building bridges with the unborn child, both through practical efforts and in one's imagination, also appeared to be a highly influential factor in achieving a sense of fetal emotional proximity. The next section (4.4.2) discusses these efforts.

4.4.2 Building bridges – “not a day that goes by where I don't talk to him”

In a process starting in early pregnancy (sections 4.2.4 & 4.3.3), the relevance of building familiarity with the unborn child persisted into the third interview. The women and men continued to seek ways to deepen their sense of the fetus as a known individual, and their conception of the unborn child as part of the family.

By the last weeks of the pregnancy, the parents had built a clear mental image of the fetus as a fully-fledged infant, having overcome initial difficulties in thinking of the baby as a real, live human (section 4.2.4). In the excerpt below, Marc talks about the process he underwent in developing concrete and robust internal representations of the unborn child, which allowed him to better identify with the fetus.

[The affection I feel towards the baby has] definitely developed over time ... We sit here and you can see the baby kicking and moving, and we had a scan of the baby and you can see his face. I think it's definitely grown. I see him as a little person now, he's just inside Anna's belly at the moment, but he's definitely there. [In early pregnancy] you talk about something so small ... you still feel an emotional tie to him, but as he's growing and getting bigger, you're kind of like, “OK, this is us, and this is part of us”.

(Marc, 3)

While the process of assigning personhood to the fetus was thus largely complete by late pregnancy, there was no limit to the parents' thirst for knowledge about their unborn child. No one medium of fetal tangibility was considered sufficient in allowing for the extent of insight and intimacy that the parents craved. Ultrasound scans hence acted to supplement the haptic tie that the women and men achieved through the sensation of fetal movement. The expectant parents continued to prioritise fetal facial features on resultant images, often studying them for family resemblances, "my nose, my lips" (Amy, 3).

We look forward [to the ultrasounds] ... in the one before the last we didn't manage to see her face at all ... because [the obstetrician] told me that the position was awkward ... like that it's like we went for nothing - not for nothing because there were other things ... but I'd want to see her. Even my friends tell me, "But why an ultrasound every time? You don't need it", but now I want it, I anticipate it, and I've come to expect it ... Now I know that she's formed ... to see her face, to see her, the baby, that's it ... I enjoy it, I say, "there she is!".

(Lydia, 3)

Thus, in the parental mind, the ability to observe specific features in the infant seemed to emphasise the distinctness of the child. Moreover, family resemblance encouraged a sense of kinship, hinting at the significance of biological linkage in promoting an understanding that the baby belonged to them and within the family.

Many of the expectant parents again mentioned the value of knowing the gender of the child in helping them to more clearly visualise the baby, and conjure up plans for

a future with them. Furthermore, knowledge of the fetal gender allowed the women and men to “refer to” (Valentina, 3) and “address” (Lydia, 3) the unborn child by name, once the parents had chosen this. As at previous interviews, naming the child was thought to “give him an identity” (Valentina, 3), further fostering the sense of kinship.

... we no longer refer to “the baby”, we refer to her as Rose ... she’s already part of our family without even being here ... I think, emotionally, it really helped. Even when we talk, about plans for next year, where we’ll travel, or where we’ll go with the boat - we always include Rose with us, when she’s not even with us [yet].

(Kurt, 3)

On the topic of fetal individualisation, one can also observe progression in parental thinking in terms of regarding the unborn child as an autonomous being versus an integral part of the mother. While some participants still dwelled on the dependence of the unborn child on the mother, at this late stage of the pregnancy participants of either gender were more likely to think of the baby as an autonomous being. This is in contrast to earlier data generation points (sections 4.2.4 & 4.3.3). The fact that the unborn child could be seen and felt to move separately from the mother, as well as the knowledge that he/she could survive independently, helped the baby’s transition in the parental mind.

I think now because the movements are a lot stronger and a lot more often you realise that it's a separate human being ... I think before it was more like part of you, now like the further you get along the more sort of like differentiated it gets.

(Anna, 3)

The expectant parents had now also become more confident in fetal perceptive abilities, "He hears, I know that he hears things ... he hears things from outside" (Rocco, 3). During the interview, the women and men continued to reflect on the capabilities of the unborn child in terms of recognising sounds, distinguishing between voices, and benefiting from parental contact bids. A growing sense of conviction in these elements encouraged the parents to intensify their attempts to communicate with the unborn child. In the excerpt below, Lydia reflects on how her fetal contact bids had evolved over the pregnancy, and on how these changes were influenced by progression in her way of thinking about the unborn child.

... at the beginning, you say, "he's still developing". Kind of what are you going to do? He's not hearing me, he's not going to ... it's like talking into emptiness. Although you anyway say, "but there is still life, you can still do it", but I didn't use to ... Then, from the second trimester, I started playing her songs and things like that ... and I started to try to find more time, opportunities when I'm quiet, and we're close together ... and when she moves ... in the second trimester it wasn't so frequent, but now it's all the time. So it grows, because even when you're busy with something, she reminds you that she's there ... I play her music so that I see her moving and we call her by her name and ask her when she's coming, that sort of thing ... I think she feels comforted, that someone waiting for her.

(Lydia, 3)

Communication efforts had thus often evolved both in frequency and in content during the pregnancy. At this stage, they were often elicited by fetal movement, which served as a reminder of fetal presence. For the expectant mothers, the contact bids had sometimes changed from internal to more external utterings, and the verbalisations had become increasingly spontaneous. For the expectant fathers, in comparison, communication was still effortful, though it had come to feel more natural over time.

Through their contact bids, the parents sought to convey feelings of warmth and affection to the fetus, to promote infant recognition of them as parental figures, and to get the unborn child use to sounds that may provide comfort after the birth, through reminding them of their time in the womb. In this way, fetal stimulation and

communication efforts were methods through which the expectant parents sought to provide anticipatory care to the unborn child, as well as means of building the foundations of the parental-infant relationship.

I think that there is a certain sound in her tummy when you talk, and that, when he is delivered, he'll start hearing it again - there will be a [smooth] transition ... [at least] the sound waves will be the same - he won't be hearing something new ... you say the same things, and you rub her tummy so that he knows that when you're talking to him, you're also reassuring him ...

(Alfred, 3)

The growing parental faith in fetal ability to benefit from contact bids links to the perception of the unborn child as a developed individual, a concept discussed earlier in this section. However, there were still a minority of expectant parents who were not convinced that the unborn child could profit from direct communication, continuing to question the utility of their efforts, and consequently, holding back in making contact attempts.

... for me, it's hard to believe that it actually works to talk to the baby when he's in there ... Because if you think about it from the basic point of view, the baby doesn't know any language, he didn't go to school, you know? So how he's going to understand? Like a Chinese person can talk to me as much as he wants but I don't understand a single word. For me, it doesn't make really sense.

(Brian, 3)

However, for the remainder of the participants, their evolving conviction in fetal perceptive capabilities was accompanied by developing confidence in the unborn child's ability to respond to communicative attempts in noticeable ways. Thus, most of the expectant parents by now felt that the baby could intentionally react to their presence and their efforts in rudimentary ways, although all continued to view the fetus primarily as a perceiver rather than a communicator. These reciprocal fetal actions seemed to be of great consequence to the way that the expectant parents felt towards the unborn child. Where the fetus was felt to respond to parental speech or touch, this was said to elicit unmatched feelings of emotional proximity.

... when I put my hand on [my wife's] tummy [the baby] always gives some kicks ... Even sometimes when he isn't moving at all, I say, "Let me put my hand [there], let me see if ...", and he responds. So there is something - some spark. So, at this stage, being that he's so tiny, with an undeveloped mind, there's already a big bond. He hasn't even seen me and he's already making movements, let alone [later] ... It feels like he's accepting you. Kind of, "I want to make a connection with you" ... when you see the kicks it's like you're seeing love, a relationship ...

(Alfred, 3)

All the women and men, though, lamented the fact that the fetus had very limited avenues for exhibiting their response, with fetal 'kicks' being their only option. In the excerpt below, Lydia questions whether the fetus was responding to contact bids in other ways, unperceivable in the outside world.

At the moment there is a bond, but I think it's still a bit limited ... because she's there, she moves when I call her, and when she hears songs she moves, but at the same time it's also like no one is talking [back] to you ... no one is answering you ... even though I think that maybe deep down there is some feedback from her end, that we can't perceive.

(Lydia, 3)

Thus, to allow them to discern subtler fetal responses, the expectant parents yearned to establish true visual and tactile contact with the unborn child. Others, more cynical, continued to question whether the unborn child was genuinely responding to their contact attempts at all, or instead moving by coincidence. The women and men, consequently, to a lesser or greater extent, all felt that the fetal tie was primarily one-sided at this stage, missing a piece of the puzzle so to speak. There was a limit to the ability to build a genuine bond with the fetus, and the parents had often reached this boundary in the final weeks of the pregnancy. The PFT felt like a relationship awaiting actualisation.

... I'm thinking of seeing him, of holding him ... I think they'll be a surge [in the connection]. I sometimes imagine looking at him - It's like you fall in love when you see him ... That's how I imagine I'm going to feel ... You love them, of course, you think of him, but when you see him it will be greater, I think!

(Julian, 3)

4.4.3 Developing a parental persona – “It’s a new chapter in life”

As discussed at both previous data generation points (sections 4.2.5 & 4.3.4), the expectant parents viewed the pregnancy as a time for reflection, reprioritisation and developing a more responsible and selfless persona. Particularly in the late gestational phase, they talked about making efforts to close off pending affairs and complete organisational preparations before the birth, to allow them to focus entirely on integrating the new arrival into the family.

It’s a new chapter in life. It’s an opportunity to sit back and assess where you are, and then kind of re-prioritise things in life ... I think having somebody else in your life to focus on isn't a bad thing for us ... I'm kind of prioritising us and the family a bit more ... I need to be more responsible ... ”OK, now actually what's important is us three and it's my job to make sure that we're happy, and well provided for, and we got everything we need.”

(Marc, 3)

The development of inclinations to become more ‘motherly’ and ‘fatherly’ appeared to be bi-directionally linked to the expectant parents’ maturing conceptualisations of the unborn child. While internalisation of the unborn child’s presence had kick-started the parental maturation process earlier in the pregnancy (section 4.2.5), it seemed that the parents' growing sense of accountability for the child's wellbeing, in turn, promoted the development of a deeper emotional tie to the fetus. The taking on of anticipatory parenting behaviours linked to this growing sense of responsibility had begun early in the pregnancy and continued throughout.

The responsibility is enormous! Before it was me and Julian, now it's going to be Julian, myself and the baby ... you have to change, you don't have a choice. Before, for example, I use to forget to take my vitamins, I use to forget to take my thyroxine more frequently than I would remember to take it - but now I know that it is essential. I put on an alarm at 5 in the morning so it's absorbed, you know? It's different, it's an enormous difference, because you're responsible for another person.

(Valentina, 3)

For the female participants, and as introduced in section 4.3.4, in the latter half of the pregnancy, mothering behaviours extended to the vigilance of fetal movements. This vigilance was a method through which the expectant mothers sought to protect the unborn child, a concept which will be discussed further later in this section. When absent or minimal, fetal movement was a source of worry for the expectant mothers. However, on balance, the growing ability to perceive fetal vitality for oneself, visually and palpably, was a generally a source of comfort, as, in contrast to early pregnancy, it gave women access to a consistent source of reassurance of fetal wellbeing. Vicarious knowledge of fetal movement had a similar meaning for the men as well, "I ask sometimes, still, "Is he moving? Is he moving?", because I want to know if it's going well." (Brian, 3).

Reassurance received from physicians throughout the pregnancy had also played an influential part in quelling the men's and women's initial fears about fetal health, "he doesn't have a cleft palate ... he doesn't seem to have any other physical disabilities ... you feel better ..." (Lily, 3). Thus, although there was wide variation in reported

levels of related anxiety amongst the participants, worries about the health of the unborn child had often continued to decrease gradually over the gestational period. The baby was typically perceived to have developed an extent of robustness.

[My worries] about the baby, in general, have decreased. I don't think so much about the fact that the baby might not be healthy, that the baby may not be 100% ... the fact that he's grown and you can really feel him ... you see her tummy moving as a whole ... you automatically start relaxing, becoming reassured ...

(Matteo, 3)

However, on the contrary, some of the expectant parents found that their general worries about the unborn child had spiked again in the last weeks of the pregnancy, after a lull around the halfway point. It seemed that two related factors caused the later surge in anxiety. The first cause of concern was related to the parents letting their guard down and allowing feelings of emotional proximity to the infant to develop. This 'embrace' is in contrast to the early months of the pregnancy where some of the participants had spoken about putting up a barrier to protect themselves from the emotional toll of a potential fetal loss (section 4.2.5). Withdrawal of this protective barrier meant that the expectant parents were now more invested in the baby's safe arrival, and recognised that it would be devastating to lose the child at this late stage. The unborn child had become increasingly precious to the parents as their sense of emotional proximity deepened.

I think obviously, you know, after you do all the tests and everything - you know like that the baby is sort of fine ... you know even if they come out now they will probably survive. [So] the worries sort of get a bit lower. I think at this stage now they're starting to increase [again] ... So I think there was a time where they dipped and now they're a bit more — not wanting something to go wrong at such a late stage you know?

(Anna, 3)

A growing realisation that it would not be long before they were able to confirm the baby's wellbeing, his or her 'wholeness', in person, also contributed to a rise in worries for some of the participants. Where, in the past, the expectant parents may have been able to push their fears about possible disability or compromise in the child to the back of their minds, they were now forced to confront the reality of this possibility. Such views appeared to be influenced by the medical model of health, which views pregnancy and birth as inherently risky, suggesting that fetal wellbeing can only be confirmed retrospectively (Jomeen, 2010). Thus, for some of the parents, an underlying worry remained which they felt would only be quelled when they could confirm infant health visually, at birth.

[The worry about fetal health] remains. It stays. Every time we go [for a visit] you're waiting ... even though they've told us that the major risks have passed ... there's still that percentage that you can't know about completely.

(Chris, 3)

The extent of fetal-health associated anxiety appeared to be related to the magnitude of the parents' impulses to protect the fetus. Where the women and men reported a reawakening of worries, they also tended to talk about having renewed protective inclinations. Thus, this perspective seemed to be related to a revived notion of fetal susceptibility to harm. For these men, this translated behaviourally to a resumption of vigilance over their partner's actions. For the affected women, meanwhile, it meant that they continued to strictly adhere to protective measures.

I think in the recent past [my protectiveness] has started to increase again a bit ... I've gone back to square one ... now the baby doesn't have much bump cushioning on her tummy because he's grown. So God forbid she falls because the baby will feel it straight away. Yes, I think I've become as I was before. Maybe not as bad as I was in the first trimester, but I'm not as relaxed as I was in the second trimester.

(Kurt, 3)

Conversely, where worry had continued to decline in intensity, the expectant parents felt that they could relax their protective actions. This link was first identified in the second interview (section 4.3.4). For women, increased confidence in fetal wellbeing often behaviourally resulted in a loosening of the precautionary measures they had adopted in the earlier stages of pregnancy, such as those concerning diet. Although they experienced some guilt at non-conformity to medical advice, some of the expectant mothers felt that they were no longer at such significant risk of harming the now vigorous child. In the excerpt below, Lydia speaks about changes to her

protective inclinations over the pregnancy and reflects on how this relaxation was related to her evolving conceptualisations of the unborn child.

... at the beginning you don't know where you stand because the baby hardly ... you say, "who knows?"; you're more attentive about more things because you say, "the baby is still developing". You don't want to be the cause [of harm]; but now that the pregnancy is coming to an end ... I had a little soft cheese ... because I said, "Now it's safer, now I've arrived at the end ... I'm not going to do any harm". I wouldn't have done it in the first [trimester], nor the second, but now ...

(Lydia, 3)

Lydia's excerpt seems to point towards a growing self-assurance in her abilities to care for the unborn child, and an increasing confidence in her knowledge about the risks of her own behaviour on fetal wellbeing. As also identified in the second interview (section 4.3.4), women had gradually developed a perception that the baby was safer within themselves than they would be after birth, when they would be exposed to more significant risks.

He's going to be fragile. The protection I've shown up until now is nothing compared to that when he is born ... because in there he's safe ... but once he comes out ... bacteria, prams, pushchairs that he'll fall out of, nappy changers ...

(Valentina, 3)

These sentiments were linked to a broader maternal feeling of ambiguity about releasing the child into the world, having developed a certain ‘possessiveness’ over the baby. The expectant mothers truly treasured the sense of oneness and interconnectivity between themselves and the unborn child. They all felt that, following the birth, they would miss the feeling of fetal movements within, of having a consistently present companion accompanying them through their day. They enjoyed having secret and privileged knowledge about the fetus that no one else could perceive.

At the moment we are one thing, him and I, we do everything together ... the fact that you don’t feel movements [after the pregnancy] ... I’ll definitely [miss that] ... it’s almost depressing I think ... For example, when I wake up [I say], “Ah you’ve woken up already?” ... [or I say to myself] “ah he’s still asleep”, “sleep then”... I take him everywhere with me, don’t I?

(Valentina, 3)

This feeling of intricate interconnectivity between the mother and the child is perhaps the most significant difference between women and men in terms of building emotional proximity to the unborn child. It is here that the most substantial disadvantage that men face in feeling close to the fetus can be best observed. While men can, through focus and effort, build a fetal tie (section 4.4.1), none spoke about developing this extent of interconnectedness.

Given women’s recognition of the specialness of this union, it is perhaps not surprising that the mothers often had somewhat ambiguous feelings about birthing

the baby and allowing them into the wider world. On the one hand, they yearned to meet the child and were looking forward to starting life as a triad. However, on the other hand, they wanted to keep him/her to themselves. They did not want to forfeit the privileged tie they shared with the fetus, which they felt that the input of others would challenge.

[I'm] very protective, yes, because even when they start talking, my parents and Kurt's parents, I start feeling ... I say, "but the baby is mine, why are they talking like they're going to take her away from me?"

(Lydia, 3)

Although the women coveted their distinctive tie to the baby, they also wanted their male partners to share in the experience. In this sense, the women's feelings were conflicted – they desired the men's engagement in the pregnancy but did not want them to get close enough to threaten the perceived superiority of their own tie to the unborn child.

I'm the one who's carrying her ... he's not always with me, sometimes she starts moving and, you wouldn't believe it, as soon as he puts his hand [on my belly] she stops. At that time, that period of five minutes during the ultrasound, he's seeing her with me as well. He has less contact [with her] so I say, "he gains something too ... he's part of it".

(Lydia, 3)

4.4.4 Leaping into the unknown – “I don't know what to expect”

As in previous interviews (sections 4.2.7 & 4.3.6), the parents' conceptions of the child and the PFT continued to be affected by doubts and uncertainties about how they would adapt to parenthood, how the child would affect the couples' relationship and whether the parent-infant bond would develop smoothly. Interestingly, the content of fears differed between women and men, suggesting that these were linked to perceived gender roles in parenting.

For the expectant mothers, approaching the end of the pregnancy seemed to bring these doubts to the forefront of their concerns. Many of these hesitations concerned the responsibilities involved in child-rearing, their mothering abilities, and worries about loss of treasured independence.

... sometimes even I find it difficult because you say, “he’s going to take over my life, left, right and centre”. Now I’m sure that when he’s born you’ll love him; but now, sometimes ... you say, “My goodness, how stressful”.

(Valentina, 3)

Furthermore, and as also identified in the second interview (section 4.3.6), some of the women were concerned about whether the emotional tie they had begun to form with the child over the pregnancy would successfully carry over into the postnatal period, resulting in a close maternal-infant bond.

... [I think about] how she's going to bond with me as well. I say, "Maybe, I don't know, I don't put in enough effort". I start saying, "Maybe there isn't going to be such a strong bond".

(Lydia, 3)

On the men's part, the doubts they talked about had remained the same throughout the pregnancy (sections 4.2.7 & 4.3.6). To some extent, they viewed the baby as a threat to the couples' dyadic bond, resulting in ambiguity in their feelings towards the unborn child. The men's relegated role in the pregnancy, as identified in sections 4.2.6 and 4.3.2, possibly also acted to accentuate these uncertainties, and to inhibit the paternal-fetal tie from developing further.

Our sexual life has taken a hit ... you fear that the baby - ok, today I know for sure that you're not going to do any harm to him, but you're more careful with the mother - careful not to hurt her, and knowing that there is someone in there, you need to hold back ... it affects things a bit ... The baby is going to decrease the attention that [my wife] gives to me. So you see him as a - not a threat - I don't want to use that word - but you see [the baby] as a threat that is going to decrease your time with the mother. If before we use to have fun doing something [together], there is going to be less time for that. You see the baby from two different aspects.

(Kurt, 3)

Thus, fear of the unknown, but with a focus on particular aspects of concern as to what was to come, affected how the expectant parents thought and felt about the

unborn child. They narrated their uncertainties with a sense of regret, almost embarrassment, suggesting the influence of societal discourse that dictates the benchmark of seeing your children through a lens of unreserved positive regard (Lopes et al., 2015), “the love of the father needs to be unconditional” (Matteo, 3).

4.4.5 Summary of findings from interview 3

The nature of the PFT remained somewhat enigmatic and obscure in the participants' minds into the final gestational weeks, given the barriers that persisted between the two parties. However, a growing focus on the unborn child and an amplified ability to achieve a haptic tie through fetal movements deepened the expectant parents' sense of emotional proximity to the fetus. For the men, the required cooperation of their female partners in allowing them access to the unborn child was frustrating at times, and they yearned for a more direct way to connect.

With the process of assigning personhood to the fetus complete, the women and men continued to build familiarity with the infant through various methods, encouraging a sense of kinship to develop. They were now more confident in fetal perceptive and responsive abilities. Still, they continued to yearn for the birth as the event that would allow for the actualisation of their relationship with the child. The extent of worry about fetal health varied amongst participants and was linked to the degree of their protective inclinations. The development of the parental persona, the responsible and accountable protector of the susceptible infant, was at the forefront of the participants' minds as they made their final preparations for the transition into parenthood. The expectant mothers continued to treasure their interconnectedness with the unborn child. They expressed ambiguity about releasing the child into the

wider world, where they would be exposed to uncontrollable risk. The rapidly approaching birth further accentuated fears of the unknowable in terms of how the infant would fit into the parents' lives, which detracted somewhat from the expectant parents' positive regard of the unborn child.

4.5 Conclusion

This chapter presented an interpretation of participant narratives collated through interviews done in early, mid- and late pregnancy, and analysed through a process of initial and focused coding according to the methods of CGT (Charmaz, 2014).

The predominant processes identified from the expectant parents' accounts can be summarised briefly as follows: As evidence of fetal presence mounted, as the unborn child became increasingly visible and palpable, parents were able to internalise the reality of the fetus and to become emotionally engaged with the process. Mounting fetal tangibility also allowed the parents to get to 'know' the unborn child, to establish a sense of familiarity, with ultrasounds and perceivable fetal movements giving 'clues' as to child's appearance and personality, which in turn fuelled parents' expectations of what he/she may be like. In later pregnancy, palpable fetal movements in response to the parents' contact bids suggested that an element of fetal reciprocity was present. Nonetheless, the expectant mothers and fathers were never entirely satisfied with the extent of fetal contact available to them during the pregnancy, and they yearned to experience the baby in his/her physical totality; something only achievable following the birth.

In the next chapter, the researcher will outline the substantive interpretive theory that emerged from the research findings, as narrated in the current chapter.

Chapter 5 The Theoretical Model

5.1 Introduction

Following the analysis of participant narratives put forward in the last chapter, the theoretical model will be presented here. The substantive theory delineates how the expectant parents in the study thought and felt about their unborn child across the pregnancy, conceptualising the phenomenon as a process which is primarily forward-moving. This fits well with Charmaz's (2014) notion that social life is processual. However, it is important to note that the social process described in the model is not entirely linear. Instead, the elements within it are all interrelated and reinforcing of one another.

The model illustrates the phenomenon under consideration as a coherent whole, spanning the duration of the pregnancy and embodying a collective of perspectives. A visual representation is presented in figure 5.1. Section 5.2 explains how to move through the diagram, with its interrelationships, and gives rationale for the wording of the core category. The diagram can be observed to have four vertical layers, and the description will start at the uppermost level and move downwards.

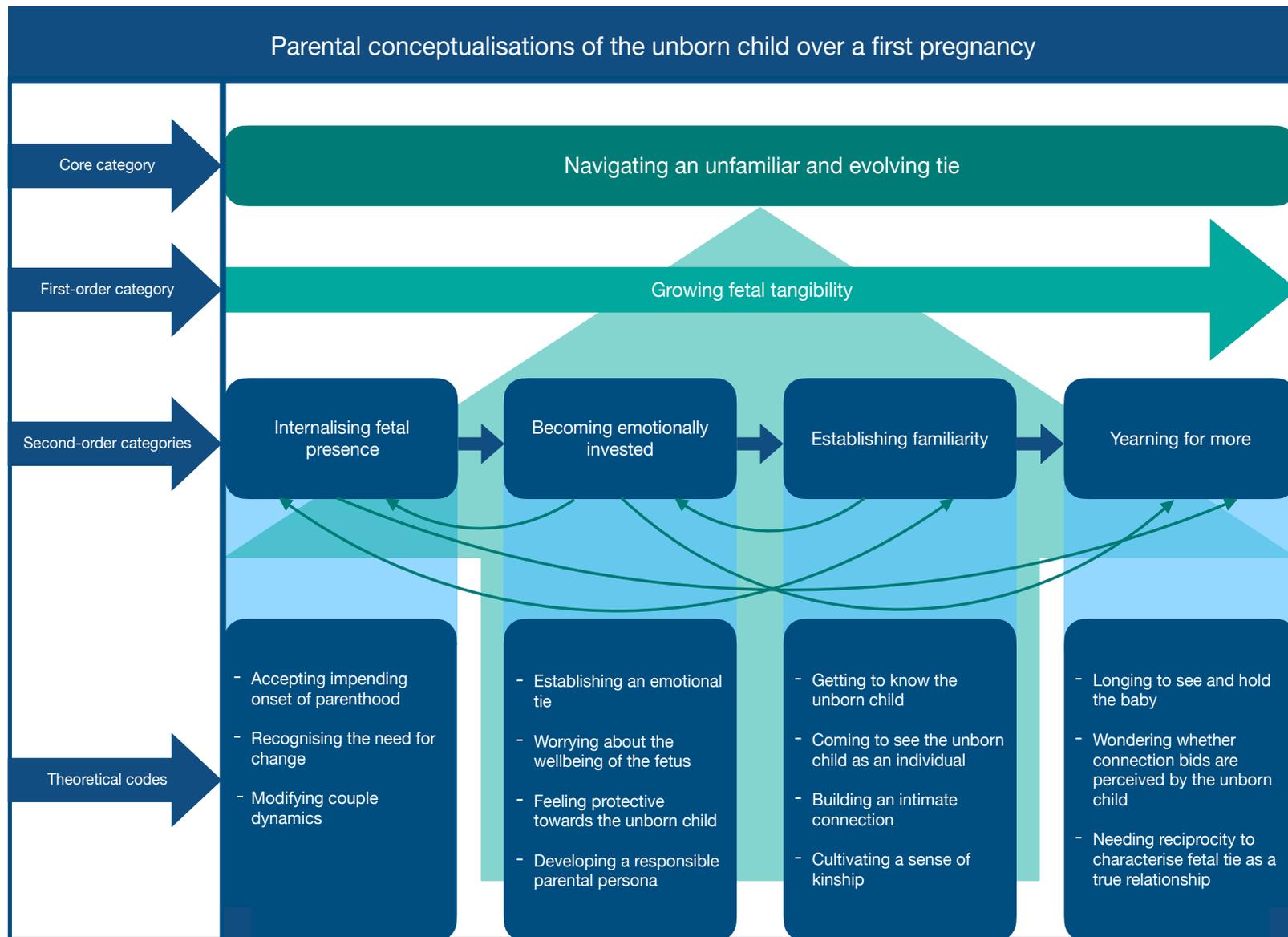


Figure 5.1 - Visual representation of the theoretical model

5.2 A guide to the diagram

The core category of the theory, 'navigating an unfamiliar and evolving tie', represents an aggregate of the journey that the expectant parents went on as they constructed and adjusted their thoughts and feelings about the unborn child, throughout the pregnancy. Thus, this core category finds its place at the top of the diagram, with all the other codes and categories leading to it. A sizeable vertical arrow in the background of the diagram, leading to the core category, serves to illustrate the prominence of this idea.

The researcher phrased the core category to delineate the journey taken by expectant parents in developing conceptions of the unborn child. An explanation of the wording follows:

The characteristics of the parental tie to the fetus were **unfamiliar** to these first-time expectant parents. They had nothing to compare the experience to; they had never before been required to relate to an entity which they had not yet met, a being who was, for the most part, abstract, intangible, and unreachable. They needed to **navigate** their way through the process, rather than being able to rely on previous experiences that would guide their emotional reactions. They needed to reconcile societal discourses that subtly suggested what they should be feeling, as impending parenthood and its responsibilities loomed, with their authentic emotional experience, and consolidate it in a way that made sense. The development of PFT was thus overwhelmingly a social process, requiring the

expectant parents to make sense of how their past socialisation experiences could be adapted and applied to this novel tie.

Apart from it being a unique experience, parents' conception of the unborn child and their emotional tie to the fetus was also continually **evolving**. Thus, there is no accurate answer to the question: 'How did expectant mothers' and fathers' perceive the unborn child?' Instead, the better question to ask is, 'How did maternal and paternal conceptions of the fetus evolve over the pregnancy?'. The expectant parents typically began their journey unable to internalise the reality of fetal presence and then progressed through various stages (see second-order categories in the diagram) until they came to perceive the fetus as a fully-formed baby waiting to be born. As their conceptualisations of the fetus evolved and matured, the women and men also experienced a deepening emotional **tie** to the unborn child. They started the pregnancy with a sense of distance from the fetus and progressed towards an understanding of the unborn child as an integral part of the family unit, and with a strong and powerful yearning to hold the baby in their arms.

Continuing through the theoretical diagram, it was 'growing fetal tangibility', perceived through experiences such as viewing fetal ultrasounds, hearing the fetal heartbeat and feeling fetal movement which drove the progression of the parental journey. Tangibility concerned visual, aural and haptic corroboration that the fetus was present. In the diagram, the first-order category concerning fetal tangibility is given prominence with a forward-facing arrow, defining it as the force that propelled the onward movement of parental conceptions of the fetus.

Moving down to the third layer of the diagram, one can observe the second-order categories in the theoretical framework. These are 'internalising fetal presence', 'becoming emotionally invested', 'establishing familiarity' and 'yearning for more'. These categories represent the predominant phases that the women and men went through when building mental representations of the unborn child and developing understandings of the tie that existed between themselves and the fetus. In the diagram, one can see that the second-order categories are principally linked in a series by forward-facing blue arrows, indicating that the phenomenon under consideration primarily progressed by way of these steps.

However, as mentioned in the introduction of this chapter (section 5.1), the evolution of parental conceptualisations of the fetus was not straightforwardly sequential. Thus, in the diagram, one can observe numerous green curved arrows below the second-order categories. These illustrate the complexity and interconnectivity of the whole process. Like the larger blue arrows, these also link the second-order categories together, but often in a direction opposite to the predominant direction of the process. The narrowness of these arrows is intended to demonstrate that these links have less weighting than the more dominant connections.

To give an example of one such subordinate link, one can observe that the second-order category 'becoming emotionally invested' principally leads to the next second-order category 'establishing familiarity', but the latter category also links to the former with a narrower left-facing arrow. The reason for this is that while increasing emotional investment in the pregnancy drove parental desire to

establish familiarity with the fetus, a growing sense of familiarity with the unborn child also strengthened the parents' emotional investment in the pregnancy.

In some cases, these subordinate connections also link non-adjacent second-order categories to each other directly, bypassing intermediate categories. For instance, 'becoming emotionally invested' is principally linked to 'yearning for more' by way of the second-order category 'establishing familiarity'. However, 'becoming emotionally invested' is also linked directly to 'yearning for more' though a less dominant channel, as illustrated by a right-facing narrow green arrow. This association exists because once the expectant parents emotionally engaged with the unborn child, they instinctively yearned to hold them in their arms, to have them physically with them, even before having established a significant sense of familiarity with the fetus.

In the lowest level of the diagram, one can observe the theoretical codes that relate to each of the second-order categories. These codes represent either nuanced constituents of that central category, or they occur as a consequence of the process described in that central category. To give an example, the theoretical code 'wondering whether connection bids are perceived by the unborn child' falls under the second-order category 'yearning for more'. In this case, the theoretical code is a constituent of the second-order category. The parents wanted more direct contact with the unborn child, and this was partly attributable to a desire to know whether the fetus could discern and benefit from their communication efforts. In another example from the diagram, this time demonstrating how a theoretical code can occur as a consequence of a second-order category, one can

observe that 'recognising the need for change' falls under 'internalising fetal presence'. These two concepts are related because, in coming to accept that the unborn child existed, the expectant parents also internalised the fact that they needed to make changes, both to their sense of responsibility and to their lifestyle, to adapt to their new role as expectant parents.

In reviewing and understanding the diagram, it is essential to note that, as described in the narrative findings, although all the participants within the study passed through the stages portrayed by the major and minor categories, there were individual differences in the emphasis that they placed on each stage. For instance, while all of the expectant parents talked of 'establishing an emotional tie' with the fetus, some reported having profoundly intense feelings of emotional proximity to the unborn child. In contrast, others spoke of a continuing sense of distance from the fetus, which they hoped and expected would resolve after the birth. Thus, although it has common elements, the experience of conceptualising and connecting to the unborn child was not identical for all the participants.

Some of the differences noted seemed to be influenced by parental gender, although this was not always consistent. For instance, women tended to internalise fetal presence before men, an imbalance influenced by the more pronounced tangibility of the fetus in early pregnancy for the expectant mothers, who, unlike their male counterparts, experienced physical symptoms and concrete bodily changes which reinforced the internalisation process. Nonetheless, when looked at as a whole, it was clear that expectant mothers and fathers conceptualised and connected to the unborn child in largely corresponding ways

over the gestational period. Therefore, while some gender-affected differences were highlighted in the analysis of participant narratives (chapter 4) and are further considered in the discussion (chapter 6), the creation of single theoretical model for all expectant parents serves to emphasise that men's and women's experiences in their journeys towards parenthood are far more similar than they are different.

Chapter 6 Discussion

6.1 Introduction

This chapter commences with a discussion of the major concepts within the theoretical model, organised under the headings of the second-order categories. Points of convergence with existing literature are identified, and novel insights emerging from the current research are highlighted. The discussion then moves on to consider key characteristics of the PFT and examines sociological concepts which serve to underpin the conceptual framework. Attention is drawn to parental gender disparities. The developed model is then compared and contrasted to others in the research area, and the implications of the new theoretical framework for the field of study are underscored. The chapter concludes with a reflective section discussing issues which may have affected the data generated and the way that this was analysed.

6.2 Internalising fetal presence

In the initial stages of the pregnancy, the expectant parents in the study struggled to come to terms with the reality of the fetus within the maternal body, with this disorientation being primarily attributed to an inability to verify fetal presence through tangible means (section 4.2.1). This 'incredulity' hindered parental ability to develop an emotional tie to the unborn child, who, at this stage, was perceived as somewhat abstract and indistinct. This finding is supported by existing research, which has established a robust link between maternal awareness of the unborn

child and the development of fetal attachment (Siddiqui et al., 1999; Della Vedova et al., 2008).

As the pregnancy advanced, it offered progressively more concrete ways for the expectant parents to perceive aspects of the fetus audibly, visually, and palpably. This growing evidence was instrumental in allowing the parents to internalise the presence of the unborn child (sections 4.2.2 & 4.3.1). Internalisation, in turn, allowed for a degree of emotional engagement with the fetus to develop, these feelings growing stronger as evidence became more pronounced. Thus, tangibility emerged as a consequential element in moving parental conceptualisations of the fetus forward from an early stage of disorientation, towards a stage of emotional engagement. These findings are congruent with existing research in the field, where it has long been established that signs of fetal presence, such as ultrasound visualisation, the visibly pregnant abdomen and increasingly discernible fetal movements enhance PFA (Lumley, 1982; Heidrich and Cranley, 1989), and contribute to the evolving nature of the PFT (Müller and Ferketich, 1992; Yarcheski et al., 2009; Habib and Lancaster, 2010).

Moreover, participant narratives in the current study suggested that it was tactility, being able to perceive the fetus through the sense of touch, that best allowed for authentication of his/her presence (sections 4.3.1 & 4.4.1). In comparison, visual and audial forms of evidence, gained through, for instance, observing the unborn child and hearing his/her heartbeat on ultrasound scans, were regarded as more impersonal and remote. These findings are in line with those from Wadehul (2013), who argues that, despite technological advances,

having direct contact with the unborn child remains vital to expectant parents. It may be speculated that several factors influence the parents' preference for tactile substantiation. This form of evidence allows for sensual and intimate knowledge of the fetus and eliminates the parents' reliance on an 'outsider' to facilitate the tie. Fetal movement, furthermore, offers a way to connect with the child on a far more consistent basis than through ultrasounds.

The importance of tactility in facilitating human engagement has been noted in other areas of research. For instance, Featherman et al. (2006) found that people can better engage on an emotional level with physically-based services rather than digitalised e-services, which lack a tactile presence and tend to be perceived as more abstract and less authentic. Furthermore, Styvén (2010) posited that tangible forms of music, such as compact discs and records, are often more highly valued than less tangible digitalised forms, despite acknowledged advantages of the latter. The researchers found that individuals, particularly those who are deeply involved in music, assign value to having a tangible product to own, touch and display (Styvén, 2010). Although these findings seem unrelated to the PFT, they demonstrate the importance of object palpability in promoting human engagement, and that this seems to apply in a wide range of experiences.

The delay in fetal internalisation and engagement before perceivable fetal tangibility has implications for the assessment of the PFT. Measurement, particularly in early pregnancy, may 'catch' parents at this stage of disorientation before internalisation has occurred. Quantification of the tie at this stage is undesirable given that parental conceptions of the unborn child are unlikely to be

indicative of their later representations of the fetus/infant. Nor is it entirely possible to predict the duration of this stage, which was observed to be highly individual. It often lasted longer for men, for instance, for whom fetal tangibility was more limited than it was for their female counterparts. Issues relating to the measurement of the PFT will be discussed further in section 6.6.

The internalisation of fetal presence was linked to a transformation in the men's and women's conception of the self (sections 4.2.5, 4.2.6, 4.3.4 & 4.4.3). The expectant parents talked about how accepting fetal presence led to the onset of the development of a responsible parental persona. They wanted to feel that they were, and to be perceived by others as 'good parents', a status demonstrated through traits culturally associated with the role (Gatrell, 2005), such as responsibility, care and devotion to the child. This 'remodelling' of the self occurred within the context of the couple's relationship and was overseen and influenced by the partner. The process further included renegotiating the relationship dynamics within the parental dyad, an undertaking discussed by Raphael-Leff (2005), and reflected on in section 6.11.1 of this chapter. Although these concepts are arguably somewhat beyond the remit of this thesis, and will not be discussed in detail, it is helpful to observe that developing fetal conceptualisations does not occur in a vacuum. Instead, it is both influenced by and influences broader processes in the transition to parenthood (Doan and Zimmerman, 2003).

6.3 Becoming emotionally invested

As discussed in the last section (6.2), internalisation of fetal presence allowed for the onset of an emotional tie to the unborn child. Feelings of emotional proximity then deepened over the pregnancy as fetal tangibility increased, and parents developed a sense of familiarity with him/her (sections 4.2.4, 4.3.3 & 4.4.2). This growing familiarity will be discussed in the next section (6.4).

Becoming emotionally invested in the pregnancy process led to a parental tendency to worry about the unborn child. Worry was particularly intense during the phase when parents were starting to accept the existence of the fetus and to become enamoured with the idea of him/her. This period often coincided with a time when the fetus was perceived to be highly fragile, thus leading to acute fears relating to possible fetal demise (section 4.2.5). As Raphael-Leff (2005) suggests, expectant parents initially find difficulty in trusting their own or their partner's ability to sustain the precarious embryo. In some cases, such fears put a pause on the further development of the parental tie to the unborn child, as the expectant parents sought to protect themselves from the pain of loss. This phenomenon has been noted in other research looking into the PFT (Sandbrook, 2009; Georgsson Öhman and Waldenström, 2010), often being referred to as 'tentative pregnancy' (Rothman, 1986). Once the viability of the pregnancy was more certain, and the parents had received reassurances about fetal health, they were often able to relax into the experience and move emotionally closer to the unborn child (section 4.3.4).

Becoming emotionally engaged with the fetus also often led the expectant parents to develop an acute sense of protectiveness. Both women and men did their utmost to safeguard the child's wellbeing, to ensure that no harm came to them and to encourage their healthy development (sections 4.2.5, 4.3.4 & 4.4.3). Parental protectiveness over the unborn child during pregnancy is also supported by existing literature (Condon, 1993; Shieh et al., 2001), with Sandbrook (2009) arguing that it is the most critical element in the characterisation of MFA.

There appeared to be an intrinsic link between feelings of worry and protectiveness in the parental narratives. Where one was pronounced, the other tended to be as well (section 4.4.3). While not emphasised in antenatal attachment literature, existing parenting research supports the association between these two sentiments. Manfredi et al. (2011), for instance, through hierarchical regression analysis, found that maternal overprotection predicts ruminative brooding and worry. It is hypothesised that worrying and protective tendencies observed in pregnancy may hold some predictive value in terms of future parenting styles. Investigating such an association may warrant further longitudinal research, particularly because it has been suggested that an overprotective parenting style may pose problems for the child, resulting in restriction of their exploration experiences (Manfredi et al., 2011). Potential precursors of such restriction were observed in the current research, where, for instance, men with an acute sense of worry and protectiveness sometimes impinged on their partner's independence, attempting to dictate her actions and constrain her activities (sections 4.2.5 & 4.3.4).

The acute maternal sense of possessiveness over the unborn child observed in some women (sections 4.3.4 & 4.4.3), was also driven by a preoccupation with safeguarding fetal wellbeing. In this regard, and as previously noted by Raphael-Leff (2005), some of the women admitted to developing ambiguous feelings about birthing the child, worrying that he/she would be at further risk of harm in the outside world, and fearing the loss of the unique interconnectivity between themselves and their offspring. This reaction in the expectant mothers was linked to the physical experience of carrying the child and a tendency to think of the fetus as a component of the self for a significant portion of the pregnancy. However, women's possessiveness over the unborn child also hints at the influence of traditional social norms that position the mother as the primary carer of the child (Gatrell, 2005). The women's adoption of this stance suggests that, during pregnancy at least, conservative gender roles concerning parenthood often seem to win out over more contemporary norms that call for gender equality in child-rearing (Giddens and Sutton, 2017). The influence of presuppositions about parental gender roles in the development of the PFT is discussed further in sections 6.8 and 6.11.1.

Other research has similarly identified women's sense of ownership over the pregnancy (Jomeen, 2010; Shahoei et al., 2011) and the fetus (Zachariah, 1994). However, prevailing theories of PFA do not emphasise this 'possessiveness' as being of particular importance. It is relevant to consider whether these feelings of fetal ownership indicate a healthy maternal tie or a dysfunctional one, and to think about what consequences they could have in the postnatal period when others,

including the father, would likely compete for time with the child, threatening the mother's unique tie. Longitudinal research spanning the transition to parenthood could provide further insight.

In the development of emotional proximity to the fetus, it is relevant to note that parental fears concerning the fetus at times limited the men's and women's sense of closeness to the unborn child. As mentioned earlier in this section, one example of this was a delay in the PFT associated with worries about fetal loss. Moreover, for some of the men, fears about the influence of the child's arrival on the couple's dyadic relationship affected their ability to regard the fetus in an entirely positive light (sections 4.2.7, 4.3.6 & 4.4.4). They worried that the mother's attention would be shifted to the child, resulting in the loss of treasured time as a couple.

Men's fear of being 'downgraded' in their partner's eyes has been noted in other research looking into the transition to parenthood (Gatrell, 2005). However, it does not appear to have been previously linked to an ambivalent view of the unborn child. The participant narratives in the current study suggested that a decline in the dyadic sexual relationship during the gestational period and feelings of exclusion from the pregnancy often exacerbated men's fears of alienation. Given this finding, it is postulated that those seeking to support the development of a strong PFT should consider including an element of couples' counselling. Such care could support men's and women's transition to parenthood through the promotion of robust familial relationships.

6.4 Establishing familiarity

Analysis in the present research indicated that with increasing fetal tangibility, which fuelled the parents' imagination, the unborn child gradually transformed in the parental mind from an abstract object, not yet quite human, to an individual with a distinct personality and appearance (sections 4.2.4, 4.3.3 & 4.4.2). The child often had a known gender and an assigned name by the later stages of the pregnancy and was perceived as part of the intimate family unit. The parents thus experienced the gestation as a period of progressively getting to know the fetus, thereby increasing relatability. Previous research (Leifer, 1977; Siddiqui et al., 1999; Shieh and Kravitz, 2002; Doan and Zimmerman, 2003), has similarly shown this process of fetal personification and mental representation, with Benedek (1959) cited in Condon (1993), referring to this concept as 'the gestation of a person', and Raphael-Leff (2005) talking about the shaping of an 'imaginary friend'.

The process of familiarisation appears to be a well-established path through which expectant parents build fetal connectivity. However, parental narratives in the present study suggested a potential complication associated with constructing mental depictions of the fetus. The issue arose in cases where there were challenges to parents' representations of the unborn child. Such challenges occurred, for instance, when the ultrasonographer revised an already internalised idea about fetal gender on a subsequent scan (section 4.3.3). In cases such as these, the parents admitted to feelings of confusion and disengagement from the

unborn child before they were slowly able to characterise the child in a new light, thus rebuilding a sense of familiarity and affection.

To the researcher's knowledge, existing literature has given scant attention to the issue of unmet expectations relating specifically to the unborn child, with the exception of Condon (1985) who briefly talks about the pain associated with loss of a fantasised healthy baby in cases of diagnosed fetal abnormality. However, related research has suggested that where optimistic parental expectations held during pregnancy are not met by experiences after birth, this can have negative implications for later parenting experiences (Harwood et al., 2007). In literature external to the field, Illouz (2007) found that in the context of internet dating, self-generated images of the other that develop before physical meetings often lead to disappointment upon face-to-face encounters, due to the mismatch between the depiction and reality. It is important to consider the potential implications of challenged fetal representations. It is possible that the birth of a child who looks and acts differently than expected could disrupt the emotional tie that was developed over the pregnancy. Alternatively, intentional avoidance of building expectations about the fetus, based on the realisation that these representations could not possibly be accurate, could result in an impaired fetal tie during the gestational period. Further research would be needed to investigate these potential associations.

6.5 Yearning for more

Throughout the gestational period, the expectant parents in the study experienced difficulty in defining the nature of their tie to the unborn child. This uncertainty was related to the tie being unlike any other connection that they had experienced in the past, given the continued constraints in fetal tangibility (sections 4.3.2 & 4.4.1). Although the palpability of the fetus had increased over the pregnancy, allowing for the development of a parental sense of connectivity to the fetus, both women and men expected their emotional response to blossom when they were able to hold the baby in their arms. The birth would allow the parents a full physically immersive experience of the child, engaging every sense simultaneously. Thus, limited fetal tangibility continued to restrict the fetal tie throughout the pregnancy, with the child, during the gestational period, remaining “a curious mix of fantasy and reality” (Condon and Corkindale, 1997:360).

Parental uncertainty about the nature of the fetal tie was further related to issues of reciprocity. Reciprocity here refers to discernible fetal responses to parental connection bids. Belief in such fetal capacities existed on a spectrum. As similarly noted in research by Brandon et al. (2009), by the later weeks of pregnancy many of the participants had recognised elements of fetal reciprocity, primarily surmising that specific fetal movement signified that the unborn child could sense parental contact bids and react. However, all the expectant parents recognised that fetal reciprocal capabilities would remain severely limited during the pregnancy (sections 4.3.3 & 4.4.2).

In many cases, the women and men felt that restricted fetal reciprocity impeded the growth of the PFT, meaning that the tie was primarily conceived as a relationship awaiting actualisation, rather than a true bond in the present moment. The women and men spoke about yearning for the moment when their relationship with the child would flourish, something that they felt would only occur gradually in the postnatal period, once the infant developed the ability to respond to parental communication efforts.

Therefore, while some researchers have referred to the PFT as a 'relationship' (Dipietro, 2010), the use of any term that implies that the antenatal tie is bi-directional has been disputed (Walsh, 2010). The current study provides empirical backing for this. Without sufficient reciprocity, the PFT was primarily thought of as a one-sided sense of relatedness from the parental end. It is for this reason that the term parental-fetal 'tie', as coined by Condon (1993), is used throughout this research, as it has fewer connotations of directionality.

This objection to nomenclature links to pre-existing disputes about the right terminology and theoretical foundation to reference when thinking about the antenatal tie. As discussed in section 1.4, in the past many researchers referred to the phenomenon as an 'attachment' (Cranley, 1981; Condon, 1993; Müller, 1993), and indeed based their conceptualisations, and built their tools, on the principles of the attachment theory (Bowlby, 1969). However, it has more recently been recognised that this thinking is flawed (Habib and Lancaster, 2006; Van den Bergh and Simons, 2009; Walsh, 2010; van Bakel et al., 2013; Walsh et al., 2014). Attachment, as conceived by Bowlby (1969) and Ainsworth (1989), is said to

develop by way of reciprocal interactions between the child and the primary caregiver, something that, as seen in the current study, is limited in pregnancy. Furthermore, attachment primarily concerns an individual's psychological dependence on another (Bowlby, 1969). As parents cannot be said to be dependent on their children, at least in healthy relationships, they cannot accurately be described as being attached to them (Habib and Lancaster, 2006). Bowlby (1969) himself posited that the term attachment should only be used to describe the child-to-parent aspect of the familial tie. Given these arguments, it is clear the antenatal tie cannot accurately be thought of, or referred to, as an attachment relationship, at least in the way that the term is currently used (Walsh, 2010).

6.6 Characterising the parental-fetal tie

While it is relatively easy to speak about what the PFT is not, it is more difficult to pinpoint precisely what it is. As other researchers (Della Vedova et al., 2008; Sandbrook, 2009; Redshaw and Martin, 2013) have noted, the PFT appears to be, in many ways, a unique phenomenon, which differs significantly from the parental-infant bond that develops after birth. The current research has identified some key constituents that characterise the tie.

One of the fundamental features of the PFT is that it is not static or stable, but instead consistently evolving. As highlighted in section 6.2, this is not a new concept in the literature concerning the PFT. However, prior research in the field, being mainly quantitative, has focused on the very fact that the tie intensifies,

rather than the reasons and mechanisms behind that intensification. Furthermore, despite early recognition of the limitations of using a cross-sectional approach to measure PFT (Condon, 1985), most research in the field continues to measure it in this way. The current research, having the advantage of being both qualitative and longitudinal, has been able to follow the in-depth evolution of the PFT, and, through the theoretical model, seeks to clarify and illustrate the processes underlying the progression.

A second characteristic of the PFT is that it is non-linear. While the tie mainly progresses on a continuum of maturing fetal conceptualisations and a deepening fetal tie, this is an oversimplified view of what was going on in the parental mind. Instead, within that progression, the process was convoluted and intricate. Earlier steps in the process, for instance, were reinforced by later ones and progress was sometimes disrupted and delayed by parental doubts and fears (sections 4.2.7, 4.3.6 & 4.4.4). Moreover, fetal representations were sometimes set back by revised information about the fetus (section 4.3.3), and one partner often encouraged or interfered with the PFT of the other (sections 4.2.6 & 4.4.3). The theoretical model diagram illustrates the complexities in the process (chapter 5).

A third quality of the PFT is that it is highly individual. Although all the expectant parents developed conceptualisations of the fetus during the pregnancy, as well as an extent of emotional proximity to the unborn child, individuals' ways of thinking about the fetus at any one point were not equivalent. This individuality continued up until the end of the pregnancy, meaning that there was never a point where fetal conceptualisations converged. However, they seemed to become

more similar by the later gestational weeks. The participant narratives suggested that a complex combination of factors influences the way the PFT develops and is expressed, which goes some way to explaining the diversity in the parents' thoughts and feelings. Many of the factors involved have been recognised in previous research. These include the parent's personality (Sjögren et al., 2004), their values and their childhood experiences of being parented (Müller, 1993; Krause, 2013), as well as their dyadic relationship with their partner (Krause, 2013). Thus, while, as Dayton et al. (2010) and Condon (1993) argue, antenatal representations of the infant offer a perspective of the baby that is relatively unfettered by actual experiences with the child, it is important to emphasise that these parental perspectives are nevertheless highly influenced by other contextual variables, a concept supported by researchers such as Doan and Zimmerman (2003).

A fourth important and related feature defining the PFT is that it appears to be considerably influenced by the cultural conditions in which the expectant parents grew up, as well as those in which they currently lived. Looking at the PFT in this way is seeing it through the lens of social constructivism, a sociological theory which underlines the importance of culture and context in the understanding of society and the way it functions (Scott, 2014). In the current study, and as noted in related work (Raphael-Leff, 2005), such societal discourse appeared to be particularly influential in determining an individual's notions about parenthood, including their interpretations of their role in child-rearing as defined by their femininity or masculinity (sections 4.2.1, 4.2.5, 4.2.7 & 4.4.4). These ideas, in turn,

affected how the expectant parents thought about the unborn child. The mother's sense of possessiveness over the child, as discussed in section 6.3, is an example of this. Furthermore, men's varied reactions to their disadvantaged position in achieving emotional proximity to the unborn child, by the very nature of the pregnancy, offer a particularly compelling insight into traditional versus contemporary discourses about the man's role within the family. Section 6.8 discusses these attitudes.

A fifth and final quality of the PFT is that it is primarily conjured up in the parental imagination. It is through the use of their imaginative capacities that the expectant parents were able to take the relatively minimal concrete signs of the unborn child available to them and transform them into elaborate ideas about the baby's physical features, their personality, and what life with the infant would be like. These depictions, in turn, were the primary facilitators in allowing for a sense of intimacy to the unborn child to develop, a link which will be further discussed in the next section (6.7). Expectant parents who did not engage in inspired sessions of fetal depiction, a tendency which was often attributed to their propensity to think practically rather than creatively, were more likely to report feeling distant from the fetus than their more imaginative counterparts, even in the latter stages of pregnancy (sections 4.3.2 & 4.4.1). Based on these findings, it is hypothesised that an imaginative mind, and a willingness to engage with this in relation to the unborn child, is an essential facilitator of the PFT. As Condon et al. (2013) suggest, it seems probable that a predominant contribution to a parent's attachment to their infant, at least in the antenatal period, may not result from objective contact

exchanges with the infant. Instead, the ability to form a sense of emotional proximity to the fetus is likely rooted in an individual's intrinsic capacity to form such bonds through their own mental efforts. This concept may at least partially explain the link between the antenatal tie and the postnatal bond that develops between parents and their infants (Hjelmstedt and Collins, 2008), and the stability in the quality of parental representations of the infant over the transition to parenthood (Theran et al., 2005).

6.7 Proposing new theoretical perspectives

The journey that expectant parents go on in developing conceptions of the unborn child and a sense of emotional proximity to them can be explored through two sociological concepts which serve to underpin the conceptual model developed through the current research. Drawing on these theoretical perspectives, which have not been used in the context of the parental-fetal tie in the past, proffers new ways to think about the phenomenon.

One area of research which can offer valuable insight into the PFT is that concerned with the sociology of intimacy. Intimacy can be defined as "the quality of close connection between people and the process of building this quality" (Jamieson, 2011:8). The quality of intimacy is generated and sustained by the individuals within a partnership through "practices which enable, generate and sustain a subjective sense of closeness and being attuned and special to each other" (Jamieson, 2011:1). Despite often being thought of as primarily relating to romantic unions (Moss and Schwebel, 1993), intimacy has been studied in many

different contexts, ranging from the connections between health care providers and patients (Williams, 2001) to parental-child relationships (Harach and Kuczynski, 2005). However, it has never before been applied to the PFT. As discussed in section 6.4, the gradual development of a sense of intimacy with the unborn child is a central constituent of the PFT, fostered through a process of familiarisation. It is thus worth exploring how existing insights into intimacy may move thinking about the PFT forward.

Limited access to the unborn child during the gestational period undeniably influences the development of intimacy, affecting the implementation of certain intimacy enhancing practices and making others untenable. However, as Jamieson (2011) argues, there is a multitude of ways in which to foster intimacy, and each intimate connection will only apply a proportion of these practices. The PFT serves as a unique context in which to study intimacy. Nonetheless, the PFT is, in terms of intimacy cultivation, in some ways comparable to long-distance romantic relationships, in that both types of connection are affected by a paucity in the tangibility of the other.

In studying intimacy in long-distance relationships, Jurkane-Hobein (2015) suggested that where partners are not 'co-present', there is an escalated role for the imagination in facilitating intimacy. The imaginative capacity of the human mind in conjuring up and elaborating on people and the relations between them has long been recognised, with Cooley (1902:95-96) aptly positing, "an invisible person may easily be more real to an imaginative mind than a visible one; sensible presence is not necessarily a matter of the first importance". As observed in the

current study, the capacity for visualisation and fetal depiction is also central to the development of the PFT (section 6.7). Intimacy can be said to be composed of several different dimensions, referred to as embodied intimacy, emotional intimacy, intimate knowledge (Morgan, 2013) and imagined intimacy (Jurkane-Hobein, 2015). The relevance of each of these to the PFT is expanded upon below.

Imagined intimacy is defined by Jurkane-Hobein (2015:229) as “activities or practices that one carries out to cultivate feelings of intimacy and attachment without the necessity for the partner to respond”. She posits that assigning symbolic meaning to physical items is a core practice of imagined intimacy, where no input from the intimate other is required for a deepened sense of closeness to develop (Jurkane-Hobein, 2015). In the current research, imagined intimacy was observed to play a vital role in the development of the PFT. The expectant parents derived pleasure and a deepening sense of emotional proximity to the fetus through the observation of tangible objects/people which they associated with the unborn child, such as nursery furniture or the children of friends (section 4.3.3). Such objects were assigned meaning beyond their face value and allowed the expectant parents to better visualise the unborn child and imagine what having him/her physically present would feel like. Practices of imagined intimacy were observable throughout the pregnancy. However, their role appeared to be most important in the early gestational phases, when fetal tangibility was most limited. Once the presence of the unborn child was more obvious, other forms of intimacy also came into play.

Embodied intimacy is bodily-focused, concerned with the sensual experience of the other, most commonly in the form of affectionate contact through touching (Morgan, 2013). As with imagined intimacy, this dimension was also clearly observable in the formation of the PFT. For the expectant mother, in particular, the sensation of the unborn child moving within gave her an unmatched physical association with the fetus, which allowed a treasured sense of interconnectivity to develop (section 4.3.3). However, parents of either gender were consistent in their emphasis of how fetal movement sensations, and their own reactive touch and caress, facilitated a sense of familiarity with the unborn child and promoted feelings of emotional proximity (sections 4.3.3 & 4.4.1). For the expectant parents, imagination was again called into play here, in that they were required to visualise fetal parts and positions during occasions of affectionate touch and take a leap of faith in believing that the fetus could sense and understand their contact (section 4.4.2). Jurkane-Hobein (2015) further posits that senses other than that of touch can also be used to heighten embodied intimacy. In the case of the PFT, further opportunities to augment embodied intimacy included viewing the unborn child on ultrasound scans, and hearing their heartbeat (section 4.3.3), with these events often said to heighten a sense of attunement to the unborn child.

Emotional intimacy is concerned with learning about and gaining an understanding of the other's personality (Morgan, 2013). In typical relationships, this is chiefly achieved through conversations comprising mutual disclosure (Jamieson, 1998). This aspect of intimacy is perhaps the most limited in the PFT, given that the unborn child cannot perceivably express his/her thoughts and

feelings. In place of this, the women and men talked about spending a significant amount of time thinking about what the child would be like and act like, again making use of their imagination. Aspects of the child's personality were furthermore extrapolated from fetal movements (section 4.3.3). Through these methods, the parents were able to experience the onset of a sense of emotional intimacy with the unborn child.

Intimate knowledge, the final dimension of intimacy, is concerned with having privileged and private knowledge about the other (Jurkane-Hobein, 2015). This kind of intimacy was also highly relevant to the PFT, particularly for the expectant mothers. The women spoke about learning the daily routine of the fetus, including their sleeping patterns, the kind of foods they liked her to consume, and the position that they preferred her to lie in (section 4.3.3). They placed value on having such privileged knowledge of the fetus, which nobody else could perceive, and it was this privileged understanding of the child that the women feared losing in the postpartum period. The men too spoke about some of these factors, albeit to a lesser degree. In this case, and, in truth, in almost all the dimensions of intimacy, the expectant fathers were in a disadvantaged position. This disadvantage is discussed further in section 6.8.

The discussion above demonstrates the relevance of the concept of intimacy to the PFT. It postulates the critical role of the imagination in the process of intimacy formation and development, particularly in this context. Through the use of the imagination, a parental sense of intimacy to the unborn child could be constructed

through various practices, many of which were adaptations of culturally established methods of fostering closeness.

A seemingly intrinsic desire to create a sense of intimacy with the unborn child links to another theoretical concept which appears highly relevant to the PFT, also as yet unexplored in this context. As discussed in section 6.4, once the process of familiarisation with the unborn child was underway, the expectant parents started talking in terms of regarding the child as part of the family, adopting a sense that they belonged within their 'tribe'. Signs of genetic linkage to the unborn child were frequently emphasised, for instance, with the women and men actively seeking family resemblances on ultrasound images, and fantasising about which family member/s the baby would look like and be like (sections 4.2.4 & 4.4.2). They day-dreamed about bringing the baby home and establishing themselves there as a triad. These activities were part of the process of building a general sense of intimacy, but went further, conceptualising the unborn child as a member of their innermost unit. These findings invoke the idea of kinship and the pertinence of this anthropological concept in the building of the PFT.

According to anthropologist George Peter Murdock, kinship is "a structural system of relationships, in which individuals are bound one to another by complex interlocking and ramifying ties" (Murdock, 1949:92). Although the concept broadly concerns points of likeness between two people, or groups of people, that allows for relatability between them (Parkin and Stone, 2004), the term kinship is primarily used to describe familial ties, "the blood relationship, the fact of shared biogenetic substances" (Schneider, 1980:107). In Western Europe and North

America, normative discourse has long emphasised the supremacy of the nuclear family and the importance of the genealogical connections that bind it together in the creation of durable, robust and unconditional bonds (Howell, 2009). It is thought that the emphasis that the expectant parents in the current study placed on points of likeness between themselves and their unborn child is likely to be a consequence of this socio-cultural partiality for biological connectedness in establishing meaningful ties of mutuality.

Parental preference for producing biological children has long been identified. Telfer (1999), in an Australian study exploring potential parents' preferred methods of procreation, identified that unassisted reproduction lied at the top of the hierarchy, followed by assisted conception with own biogenetic substances, and with adoption placing near the bottom of the list. Howell (2009) posits that there is a somewhat unfounded prevalent cultural perception that a lack of shared blood negatively affects the parental-child relationship, resulting in tension and strained affection.

In cases of non-biological adoption, practices referred to as 'kinning', have been observed (Howell, 2003). These practices are thought to encourage the development of personal characteristics in the non-native child that are congruent with the customs and culture of the adoptive family, at the expense of those of the birth family. Howell (2001) described such processes as 'self-conscious kinship' and proposed they constitute parental efforts to naturalise the 'foreign' relationship, thus reproducing the ideals associated with biological relatedness.

These 'kinning' practices can be compared to the efforts that expectant parents in the current study made to mentally integrate the unborn child as part of their biological family. Bestowing on the unborn child the position of a 'kin member' appeared to give the expectant parents a reference point from which to perceive the unborn child. This point of reference enabled the designation of relational features culturally associated with this kind of union, and thus allowed for a less ambiguous interpretation of the nature of the parental tie to the fetus. Kinship emphasises notions of closeness, connectedness, and unity versus distance, disconnection and difference (Swain, 2005).

Ideas about intimacy and kinship were interwoven throughout parental narratives about fetal conceptualisations and connection, being called into play time and again as the expectant parents strove to comprehend their tie to the unborn child. It was through the reinterpretation of these familiar concepts that the women and men were able to consolidate who the fetus was to them. Perspectives offered by the concepts of intimacy and kinship are highly useful in understanding the essence of the PFT.

Moreover, the application of these sociological and anthropological concepts to the PFT has significance for the depth of our understanding of the concepts themselves. The inherent relevance of intimacy to the way that expectant parents feel about the unborn child forces us to broaden our notions about intimacy and reconsider the scope of this concept. The study findings serve to emphasise that intimacy concerns numerous aspects of social life, rather than, as many presume, being exclusively concerned with romantic relationships. Similarly, thinking about

the meaning of kinship in the context of the antenatal tie encourages us to think about an unborn child's social identity and how this is intertwined with their biological identity in the eyes of their parents. The research extends the reach of the kinship concept to the very beginnings of human existence, even before an infant's birth, to suggest how a sense of 'mutuality of being' (Sahlins, 2011) with one's offspring originates.

6.8 Notable differences in the maternal and paternal-fetal tie

One of the primary reasons for conducting the current study was the observation that existent research looking into the antenatal fetal tie has primarily focused on mothers, meaning that, in comparison, little is known about the paternal-fetal tie (Condon et al., 2013; Della Vedova and Burro, 2017). It had not, for instance, been determined whether the maternal and paternal antenatal tie to the fetus are similar enough to be measured by the near-identical tools currently in use (Cranley, 1981; Weaver and Cranley, 1983; Condon, 1993; Müller, 1993; Armstrong, 2000).

Participant narratives in the current study revealed that expectant parents of either gender form fetal conceptions, and develop emotional ties to the fetus, in similar ways. The development of a single theoretical framework reflects this (chapter 5). While others have argued that the antenatal tie to the fetus is mainly conceptual rather than sensual for the expectant father (Condon, 1985; de Cock et al., 2015), findings of the current research make clear that both women and men connect with the unborn child on both a conceptual and a sensual level, albeit

to different extents. Contemporary discourses about 'involved' fatherhood may be influencing men's drive to engage with the unborn child to an extent that was uncommon in previous generations. Raphael-Leff (2005) argues that sex-role expectations are gradually shifting, and that both women and men are, in many Western societies, now more free to adopt, fluidly, traits traditionally associated with the opposite gender, such as, in the case of men, the 'expressive' function synonymous with women.

However, it is salient to acknowledge some notable gender differences that influenced fetal conception and connection. These differences involved physical gender disparities in terms of contact with the unborn child, as well as pre-existing ideas about parental gender roles. It is difficult to separate the influence of these factors.

By middle to late gestation, as discussed in section 6.3, the expectant mothers had achieved a sense of intimate interconnectedness with the fetus. Through quickening, women continually received reminders of fetal presence, thus encouraging them to centre their attention on the unborn child, with feelings of connectivity naturally emerging as an adjunct of this. Meanwhile, the expectant fathers were on the other end of the spectrum in terms of achieving a sense of oneness with the unborn child, often feeling somewhat excluded and distant (sections 4.2.3, 4.3.2 & 4.4.1). For men, cues of the unborn child's existence were far less frequent, and it was easy for them to forget about the child while engaged in other activities. They were less immersed in the experience.

Some of the male participants in the study were predominately content to stay in the background, allowing their female partners to get on with nurturing the unborn child without much input from their end (section 4.2.3). These men rationalised that it was natural and right for the mother to have the primary tie to the fetus. They often had expectations that these distinct parenting roles would persist even after the infant's birth. They tended to belong to a school of thought that suggests that hormonal and genetic differences primarily differentiate parental gender roles, a way of thinking which is relatively prevalent in the literature (Cassidy, 2008; George and Solomon, 2008). Condon (1985) suggests that some men do not perceive feelings of affinity to the unborn child as being compatible with their notions of masculinity, and may thus suppress such emotional reactions, or avoid demonstrating them externally. This observation may go some way towards explaining the superiority of the MFT that has been observed in some studies that compare fetal attachment between parents of either gender (Lorensen et al., 2004; Ustunsoz et al., 2010), although this link has been inconsistent.

In contrast, other expectant fathers were determined to be involved in the pregnancy at every stage, expressing an extent of envy of their female partner's physical immersion in the experience. Their vicarious access to the child was not satisfying to them, and they yearned to achieve the same level of 'oneness' with the unborn child that their partner effortlessly had. They sought opportunities to connect to the fetus whenever possible, determined to overcome their disadvantage through effort (sections 4.2.3, 4.3.3 & 4.4.2).

The need for effortful connection in the case of expectant fathers was a substantial finding of the research. While an emotional tie to the fetus seemed to develop naturally and spontaneously for women over time, for men, the fetal tie seemed almost 'optional' (sections 4.2.3, 4.3.3 & 4.4.2). It was up to each expectant father to determine the lengths he would go to to connect with the unborn child. While achieving a sense of intimate proximity to the fetus was entirely possible for men, the strength of the tie was primarily determined by the amount of effort they chose to put into nurturing it. This finding corroborates that of Widarsson et al. (2015), who aptly used the term 'paddling upstream' to describe the barriers that expectant father's face to feeling involved in the pregnancy. In the current research, each man's interpretations of the fatherly role influenced the course of action he chose. Raphael-Leff (2005:165) posits that in Westernised societies:

increasing liberalization of parental roles ... [means that] each man reacts to impending parenthood according to his current internal reality and personal construct of generative identity.

Diversity in the understanding of the paternal role is supported by research by Habib and Lancaster (2006), who found that men who assigned importance to caregiving and emotional support scored higher on a fetal attachment measure than those who did not. In the same study, seeing oneself as a 'breadwinner' was not associated with the strength of the antenatal tie (Habib and Lancaster, 2006).

The contrasting attitudes within the male population, comparable to those described by Raphael-Leff (2005) as 'participator' and 'renouncer', and those in between, were almost certainly influenced by the competing discourses around

fatherhood that exist in contemporary Western society. Raphael-Leff (2005) argues that given that men do not experience physical changes to validate their transitional state during pregnancy, they must find their own way of gaining social recognition and effectuating personal maturation. Moreover, Dermott (2008) and Miller (2011) talk about contemporary fatherhood being characterised by paradoxes; one of which revolves around the ever-increasing cultural representation of fathers as involved and nurturing, contrasted with continuing inequality in actual child-related domestic division of labour. It has been suggested that many fathers long to increase the time they spend with their offspring in the home (Gatrell, 2005). However, deeply embedded gendered assumptions about men's primary role as workers, and a failure of systems to encourage the male caregiving role restrict them from doing this (Gatrell, 2005; Dermott, 2008; Giddens and Sutton, 2017). In support of this, many men in the current research spoke of feeling disengaged from the unborn child during prolonged periods at work (section 4.2.3). Their feelings of emotional proximity to the unborn child seem to vacillate in intensity, being stronger when they were close to their female partner.

The men's physical separation from the pregnancy thus put them at a disadvantage in forming emotional proximity with the fetus. Moreover, the expectant fathers' access to the unborn child was further complicated by the mother's agency in acting as a gatekeeper to the fetus (section 4.2.5). The expectant mother could, and often did, either encourage paternal-fetal interaction or discourage it. The expectant fathers were thus forced to connect to

one person through another. Therefore, unlike the MFT, the paternal tie to the fetus depended somewhat on another person's cooperation, and, in this instance, the quality of their relationship with their significant other.

In the male mind, this arrangement meant that their connections to the partner and the fetus were somewhat intertwined. This way of thinking is exhibited, for example, in instances where the expectant fathers described feeling close to the child when connecting to their partners, either physically or emotionally (section 4.2.6 & 4.3.5), a concept absent from maternal narratives. The existing literature does not discuss this idea in-depth, and this possibly relates to the scarcity of qualitative research looking into the paternal-fetal tie. Given that all the couples in the current research were in stable and largely supportive long-term relationships, it would be interesting to look into men's emotional tie to the fetus in cases where the couple's relationship is compromised or absent.

6.9 Comparing and contrasting the theoretical model to existing frameworks

In examining existing conceptualisations of the PFT (Cranley, 1981; Condon, 1993; Müller, 1993; Shieh et al., 2001; Doan and Zimmerman, 2003; Sandbrook, 2009), concordance with the findings of the current study is immediately apparent. Each existent theory has emphasised particular elements within the broader phenomenon. Cranley (1981), for instance, stressed the behavioural aspect of the PFT, noting actions such as the 'contact bids' referenced in the current research (sections 4.2.4, 4.3.3 & 4.4.2). Müller (1993) focused on maternal curiosity about

the unborn child, and the use of fantasy to supplement factual knowledge about the fetus, a concept congruent with ideas about familiarisation in the present study (sections 4.2.4, 4.3.3 & 4.4.2). Sandbrook (2009) emphasises the element of protectiveness as a vital factor in the tie, a concept discussed in section 6.3 of the current study.

Condon's (1993) theoretical framework of PFA is perhaps the broadest that originates from empirical research. It also has several similarities to the current model, including the inclusion of expectant fathers in the research from which the theory was developed. Condon (1993) suggested that PFA is characterised by increasingly elaborate internalised representations of the fetus, and a parental desire to know, be with, protect, and gratify the needs of the unborn child – all features that are supported by findings of the current research. The researchers, however, posit that the primary tenet of the tie is a sense of love (Condon, 1993). Due to the questions around reciprocity, as discussed in section 6.5, the appropriateness of the term 'love' to describe the PFT is not entirely supported by the current research. While some of the participants readily used this term to express their feelings towards the fetus, others felt that a bi-directional relationship was required before this emotion could be used to characterise the tie. Participants in a study by Sandbrook (2009) similarly objected to the tie being referred to in this way. This variation in opinion depended on individuals' interpretation of the loosely defined term, and the sentiments ascribed to it. However, given the current findings, 'love' is perhaps not the best word to use in portraying the nature of the PFT.

Another branch of research has focused on exploring parental representations related to the unborn child (Theran et al., 2005; Dayton et al., 2010; Vreeswijk, 2014). Here, the term ‘representations’ refers to an individual’s mental constructions of reality that originate from their expectations, perceptions and memories (Larney et al., 1997). This concept cannot encompass all aspects of the PFT, given that it is limited to the cognitive elements (Doan and Zimmerman, 2003). However, the ideas behind it have congruence with the findings of the current study in terms of emphasising the importance of depictions of the fetus built in the parental mind. Participant narratives in the present research suggest that the formation of such mental images is a predominant process in forming an emotional tie to the fetus (4.2.4, 4.3.3 & 4.4.2). Furthermore, internal representations research emphasises the multi-factorial contextual and cultural influences on the development of these working models, an idea that also clearly emerged from the current research (see section 6.6). Thus, as Walsh (2010) argues, the parallels between antenatal attachment research and that concerning antenatal representation seem to reveal highly overlapping constructs, both of which warrant consideration when seeking a global view of parental conceptualisation of, and connection to, the unborn child.

6.10 Moving the knowledge base forward

Harmony with previous theories in the field is reassuring, suggesting that it is broadly the same phenomenon that is being investigated. However, it is essential

to consider how the current research has moved the knowledge base in the field forward and contemporised ways of thinking about the PFT.

The development of the theoretical model presented in chapter 5 is the most prominent original output of the research. The model is unique in its portrayal of the PFT as an evolving process, where the expectant parents progress through various stages as their conceptualisations of the fetus mature. Given the consensus amongst researchers in the field that the tie between expectant parents and the unborn child develops over the pregnancy (Müller and Ferketich, 1992; Della Vedova et al., 2008; Sandbrook, 2009; Yarcheski et al., 2009) (section 6.2), this way of presenting the model is befitting, allowing readers to gain a sense of the phenomenon as an unfolding event. Parental ways of thinking about the unborn child changed radically over the gestation, starting from a point of disorientation, disbelief and distance and ending at a stage of reconciliation, acceptance and connection. It was the longitudinal design of the research that allowed the model to be developed in this way.

Furthermore, the present research is the first in the field to create a theoretical model of parental-fetal relations which is equally based on the accounts of both expectant mothers and fathers. Before this, theoretical research in the field had primarily focused on women, with paternal equivalence in the PFT assumed, or only taken into consideration after the creation of the initial theory. In this sense, the current study updates thinking in the field in line with cultural trends and emphasises the critical role that the expectant father plays in a family's transition to parenthood. This way of thinking sits well within the recent trend in maternity

care research where attention paid to the paternal experience is increasing, with proportionally more studies taking into consideration paternal experiences and concerns, instead of focusing solely on the mother (Newham and Alderdice, 2017). This movement serves to address criticism concerning the neglect of fathers in maternity services and encourages the development of care programmes which are geared towards preparing both parents for parenthood (Newham and Alderdice, 2017).

The parental narratives in the study suggested that the male and female experience of building conceptions of, and connections to the unborn child was similar enough to be described within a single theoretical framework. However, the research also identified issues that affect parents of either gender disproportionately, or which only apply to one parental gender. These issues were discussed earlier in the chapter (section 6.8). They are important to consider when developing programmes to enhance the PFT and, in particular, when attempting to measure the PFT.

However, gender differences are not the only issue affecting the assessment of the PFT. Rather, the characterisation of the tie as a continually evolving, convoluted and highly individual process (section 6.6) raises serious concerns about the entire notion of quantification. While prior researchers in the field have used the theories they developed as a springboard from which to generate tools that measure the phenomenon (Cranley, 1981; Condon, 1993; Müller, 1993), findings from the current research suggest a somewhat different approach may be warranted. Attempting to empirically, quantitatively and cross-sectionally,

measure, in a meaningful way, a phenomenon which exists on a continuum, varying significantly both over time and between different individuals, seems both impractical and futile. As discussed in section 6.2, there is no ideal time point during pregnancy to measure the tie. Even if there were, it would be unfeasible to identify accomplishments that the parents were expected to have achieved by that point to be considered to have a 'good enough' fetal tie.

For instance, one item on the self-report PAI (Müller, 1993) asks expectant mothers to react to, on a likert scale, the statement: "I know why the baby is moving" (Pallant et al., 2014:125). It is hypothesised that marking 'almost always' to this statement may suggest that the expectant parent thinks of the unborn child as a known other, a stage in the building of the PFT recognised in the current research. It is, however, unclear what marking 'almost never' to that statement would indicate. It may well be premature to say that a negative response would signify that the respondent was more likely to have a maladjusted PFT. Instead, it could indicate an expectant parent who has not yet reached a stage in the pregnancy where they conceptualise the child as a familiar being, but who may arrive at this stage soon. Alternatively, a negative response could mean that the expectant parent somewhat lacks the imaginative capacity necessary to build a sense of 'intimate knowledge', as discussed in section 6.7, and has increased need for object tangibility to achieve confidence in their insight into the infant's motives. Such impediments could ultimately leave the expectant parent unable to conjure up a sense of close intimacy with the unborn child throughout the pregnancy, with this only being achievable for them after the birth. However, even

in these circumstances, it would be unfair to presume that such feelings would put the relationship that they went on to develop with the child after birth at risk.

A primary aim of measuring the PFT would be to identify individuals at risk of a dysfunctional postnatal relationship to allow for early intervention. However, it is hypothesised that bracketing an antenatal tie as dysfunctional based on such tools could result in undue negative categorisation for expectant parents who would have otherwise spontaneously 'caught up' with their peers in their ways of thinking about the child, either later in the pregnancy or early in the postpartum period. Shaming a parent by assigning them a negative categorisation could affect their perception of their ability to relate to the child, which could, in turn, affect their future relationship. This possibility is especially likely considering that, over the transition to parenthood, individuals are often already sensitive about their parenting abilities (Lee et al., 2012). Although it is impossible to confirm without access to further data, the varied parental opinions about the fetus observed in the current research likely represent a spectrum of adaptive perspectives, modelled through the circumstances in which they were formed.

The research field relating to the PFT has been plagued by inconsistencies in the identification of predictors, correlates and consequences of the tie (Cannella, 2005; Alhusen, 2008). The observations cited above may go a long way in explaining these contradictory findings. This is aside from other recognised pitfalls in the measurement of PFT through existing self-report tools, such as the influence of social desirability bias (Hjelmstedt et al., 2007).

While health care professionals need to be concerned about the way expectant parents cope with their transition to parenthood, it may be time to abandon attempts to develop or refine self-report tools aiming to measure the PFT. In resisting the temptation to translate the subjective experience of conceiving and connecting to the unborn child into any form of objective assessment, practitioners could instead focus on talking in-depth to each expectant parent about their experiences in this regard. This would allow an individualised approach to addressing any concerns they, or the clinicians caring for them, may have.

6.11 Reflections

In conducting qualitative inquiry, it is relevant to reflect on varied elements within the research context that may have impacted the findings. Sections 6.11.1-6.11.3 comprise of consideration of such salient issues.

6.11.1 Reflections on couples' power dynamics in pregnancy

For both women and men, pregnancy is experienced as a transitional phase during which the couples' dyadic relationship is adjusted and reintegrated to prepare for life as a triad (Jomeen, 2010). In this research, the participants' narratives were peppered with examples of power discourse, as the expectant parents struggled to establish new positions in relation to the unborn child and one other.

As discussed in section 6.3, some of the expectant fathers within the research talked about their fears of being downgraded in their partner's list of priorities. They begrudged that the child's presence meant that they would no longer be at

the centre of their partner's world. Some of the men talked about how these fears led to some resentment towards the unborn child. This male reaction to the fetus has also been noted by Gatrell (2005), with Raphael-Leff (2005) speaking about men's perception of the fetus as a competitor for the woman's attention.

Furthermore, men's narratives in the current research suggested that a frustrating decline in sexual activity during the pregnancy was due to fears that the child would be harmed. Raphael-Leff (2005) takes this proposition further to suggest that awareness of the fetus within the expectant mother may be a turn-off for some men, with the fetus being perceived as an interloper who took over the father's 'place' within the womb.

Men's ambivalent feelings were often compounded by a general sense that they existed on the pregnancy's side-lines, somewhat left out of the experience. As Raphael-Leff (2005) points out, when compared to women, expectant fathers do not generally receive much in the way of social recognition to acknowledge their impending fatherhood, and nor do they experience a physical transformation. Moreover, as described in sections 4.2.5 and 6.8, men do not have direct access to their unborn child during the pregnancy, but instead require the cooperation of the maternal gatekeeper to access the child.

For some men, labelled by Raphael-Leff (2005) as 'Participators', this exclusion can lead to 'womb-envy'; frustration and jealousy towards their female partners' more involved experience of pregnancy. These feelings were evident for some of the men within the current research. The men's bitterness was sometimes acted out through over-bearing or controlling behaviour directed at their partners, such as

constant monitoring of her actions and admonishment for activities not judged to be ideal. While these actions can be interpreted as fatherly protectiveness over the child, the language used in the narratives was, at times, combative, as if the couple were competing over who best knew how to care for the child. Raphael-Leff (2005) suggests that some expectant fathers may see themselves as spokesmen for the vulnerable being 'trapped' within the mother.

Interesting, too, was the expectant mothers' reactions to their partners' controlling behaviours. Often, when they perceived their partners to be overly intrusive, women resented their incessant preoccupation with the fetus, an issue also noted by Raphael-Leff (2005). The men's attitude was felt to devalue the woman, to show a lack of trust in her abilities, and to treat her like a fetal incubator instead of the competent mother she wished to be perceived as.

Furthermore, women often regarded 'mothering', or the caring function within the parenting dynamic, to be primarily their own. When adopting this interpretation, they tended to view men's intrusive behaviour as a 'take-over bid' as Raphael-Leff (2005) describes it. Jomeen (2010) asserts that women are sometimes territorial about their role as the child's principal carer. They do not wish to see this role challenged by the father, thus having mixed feelings about their partner's involvement in the pregnancy. Women may fear that letting men in could unfavourably alter the balance of power within the parental relationship, threatening their own position (Gatrell, 2005).

As Gatrell (2005) aptly points out, both men and women acknowledge that there is a kind of power connected with being the principal carer to children and having

a close relationship with them. For some of the couples within the research, the competition for a substantial stake of this power was evident within their narratives. While this role within the family has traditionally belonged to women, a similar level of commitment to their children is becoming increasingly common amongst men (Collier, 1995). Some of the women in the research were anxious that their identities as mothers were not eroded. At times, this was evidenced by their actions to limit the expectant fathers' involvement with the unborn child. While women may express a desire for greater parenting equality, this is sometimes complicated by a sense of loss (Jomeen, 2010).

These clashes between men and women over the pregnancy period are not the focus of the current research. However, the parental dyadic relationship inevitably influences how the PFT forms for each of the individuals within that union, and it is thus worth reflecting on. While the processes of building the tie to the fetus are mostly similar between men and women, the women's pregnant state and the presence of the child within her inherently causes an extent of misbalance, and means that some of the issues involved disproportionately affect either men or women. At a time when society is encouraging equivalence in parental roles, these differences, as well as conflicting ideas about the parental roles, can cause tension.

Reflecting on changing couple dynamics also serves a pertinent reminder that aspects of the parental narratives within the research may have been affected by the friction between the expectant parents and their efforts to balance their competing roles. This consideration complicates our understanding of the PFT, as it is impossible to untangle these influences. These dyadic and triadic relationship

dynamics are likely so intertwined that it is unfeasible to separate them into components.

6.11.2 Reflections on ambiguity in language

The present research concludes that, given current knowledge in the field, pathologising any feelings/behaviours associated with the parental-fetal tie would be premature, unhelpful and potentially harmful. None of the perceptions described by the expectant parents in this study give strong suggestion that they would have negative consequences, particularly for the later parental-child bond. On the contrary, the research suggests that there is a great deal of individuality in the distinct ways expectant parents conceptualise the unborn child and relate to him/her, but that these are likely to be variations of 'normal'. This variation is thought to be indicative of different coping mechanisms used in the transition to parenthood, as well as being reflective of the parental personality, upbringing, cultural context and other such particularities.

Yet, it is acknowledged that within the write-up of the thesis, the language used is, at times, somewhat ambiguous. While the recommendation not to overly medicalise the PFT is emphasised, there are also many instances where the participants talk in terms of the tie being either 'positive' or 'negative'. For example, there was a sense of shame in some of the narratives where the expectant parents spoke of having negative connotations associated with the child:

“I am associating the housework that I have to do now with the baby. Sometimes I say, “look what I got myself into, damn this baby I created!” But then, at the end of the day, that’s just an expression, you feel sorry that you said it afterwards.”

(Kurt, 2)

Similarly, there are also examples where the researcher herself talks in terms that suggest that judgement has been passed on how the PFT should look. For instance, there is talk of what constitutes a ‘genuine’ tie to the fetus (pg. 245), and suggestions as to factors which could ‘mar’ positive parental perceptions of the unborn child (pg.231).

The use of such wording suggests that ambiguity in the PFT is undesirable and that expectant parents should unreservedly regard their unborn child in a favourable light. However, in reality, there is currently no evidence that this is the case. Some negativity within the parental thought processes is likely to be expected, given the magnitude of the changes to which they are adapting. Thus, reflection is needed to examine where the (somewhat unconscious) presumed need for consistent positivity comes from, why it is so pervasive, and how it could have affected the research findings.

As touched upon in sections 4.2.7 and 4.4.4, these pervasive ideologies are likely heavily influenced by societal notions about what makes a ‘good’ parent, which seems to be naturally extended to the gestational period. In the western world, the ‘good’ mother is commonly regarded as naturally loving and unselfish (Hays,

1998), with the mother-child relationship needing to be continually warm and nurturing to promote the infant's mental well-being (Bowlby, 1958). Any negative emotions associated with the child are likely to be interpreted as unnatural (Perälä-Littunen, 2004). The mother is expected to happily give up her personal needs, desires and other identities to focus on fulfilling the ultimate goal of her life; motherhood (Perälä-Littunen, 2004). Of course, this socially constructed ideology is not relevant to all mothers, has been opposed by liberal feminism, and varies somewhat by cultural context. However, it is still the image most often promoted by psycho-social discourse and parenting texts (Perälä-Littunen, 2004).

The father's role in the family is seen as being more versatile than that of the mother (Peterson and Steinmetz, 2000). Yet, many of the men within the present research were committed to a model of shared, involved, responsible parenting in which parents of either gender would have similar roles and responsibilities in childrearing, and where the overall focus would be on meeting the child's needs, even if that came at the expense of neglecting ones' own desires (Perälä-Littunen, 2004).

This weighty and widespread societal pressure to regard ones' offspring positively has potential implications for the research findings. Although it is impossible to pinpoint precisely how the participant narratives were influenced, not least because much of it probably occurs subconsciously, social desirability bias almost certainly played a role. In that sense, it must be considered that the analysis somewhat reflects an idealised picture of the phenomenon, rather than a completely genuine picture of the PFT. The fact that the expectant fathers within

the sample were more vocal about negative aspects of the PFT may be the result of men feeling more able to have ambiguous feelings about their children than women do.

Furthermore, while the researcher consciously used reflexivity to examine her preconceived biases, contrasts in the language used in the write-up give evidence of how the subtle suggestions of societal discourse can permeate even when one keeps an eye out for them. As a member of society, the researcher too has 'soaked up' discourses about what parenthood should look like, and this is consequently reflected in the research output.

6.11.3 Reflections on being a midwife researcher

According to Frost et al. (2010), individual researcher perspectives inevitably influence their understanding of research data. The researcher views participant narratives through their own lens, a lens influenced by their personal biography. This outlook ultimately plays a role in the construction of the research results (Golafshani, 2003). Given this influence, researchers must be clear about their positions, experiences and perspectives. Personal subjectivity should not be a limiting factor in qualitative research, with open reflexivity allowing for clarity about biases potentially affecting the results (Ratner, 2002).

I, the researcher in this study, am a practising midwife working within a hospital setting. According to the ICM(2005), midwives view pregnancy and childbearing as inherently normal physiological processes. It is part of their role to promote and advocate for non-intervention in normal childbirth. However, conversely,

maternity services in Malta are mainly obstetric-led, therefore normalising elements of medicalisation and risk-focused care. I am aware that both of these contrasting philosophies have influenced how I regard the antenatal period, and almost certainly affected the research, influencing both the questions I asked in the interviews and my interpretation of the participant narratives. For instance, knowing the potential influence of medicalisation structures on my outlook, I consciously strove to avoid undue pathologisation of the PFT. However, reading back through the results, and as discussed in section 6.11.2, it is clear that elements of this still exist within the analysis. This pervasive way of looking at the perinatal period is deeply ingrained.

Midwifery philosophy also emphasises the profoundness of the childbearing experience for all family members, and stresses the holistic nature of the care that midwives provide to them (ICM, 2005). This stance helped me to see the development of the PFT as part of a larger picture in the transition to parenthood, and to recognise some of the influences affecting participant narratives, beyond taking them at face value, thus allowing the eliciting of further details to get to the core of the issue. In this sense, experience within the midwifery profession, and the familiarity of being with women and families, served me well in developing findings that genuinely and deeply resonated with the participants' reality.

As well as being a practising midwife, I am also a lecturer to students pursuing undergraduate midwifery studies. This position has contributed to substantial exposure to the prevalent and often competing societal discourses concerning gender roles within the family, as discussed in section 6.11.1. This is aside from

the fact that I am a women in full-time employment, whose mother was also in full-time employment during my childhood, and whose father took on a large portion of the childcare. All these influences have impacted the way I myself regard maternal and paternal roles within the family, and thus the lens through which I viewed the phenomenon concerning the parental-fetal tie.

Reflecting on how such influences shape the research is a useful endeavour. So personal and deeply-seated are our perspectives, that the extent of them will never be fully known, even to us. However, acknowledgement of our background allows the reader insight into the contextual intersecting relationships involved in the research, deepening their understanding of the work and increasing the credibility of the findings (Dodgson, 2019).

6.12 Conclusion

Findings of the present study are broadly in line with those of existing research in the field. However, the longitudinal and qualitative nature of the current research allowed for more detailed insight into the evolution of the PFT over the pregnancy than previously possible, thus moving theoretical understanding of the phenomenon forward.

The following chapter concludes the research with a summary of insights gleaned from the study. Implications for practice and further research are suggested, and the strengths and limitations of the project are highlighted.

Chapter 7 Conclusion

7.1 Introduction

This thesis has illuminated the complex and individualised path that expectant parents take in developing conceptualisations of, and sense of connection to, the unborn child over the gestational period. The concluding chapter gives a concise and reflective summary of the study, highlighting its strengths and limitations and giving recommendations for practice and further research. Original contributions to knowledge in the field are underlined, and consideration is given to how the findings influence knowledge gaps in the research area.

7.2 Research summary

Interest in the PFT primarily stems from the possibility that it can predict or account for the quality of the parental-infant bond that develops after birth, thereby offering the opportunity for early intervention where there is the risk of a later dysfunctional relationship (Siddiqui and Hagglof, 2000; Huth-Bocks et al., 2004a; Mercer, 2004). Furthermore, an understanding of this tie is thought to allow for better comprehension of parental reactions to fetal loss at various gestational phases (Condon, 1985).

However, disagreement within existing conceptualisations of PFA (Shieh et al., 2001; Laxton-Kane and Slade, 2002; Redshaw and Martin, 2013; Walsh et al., 2013; Birtwell et al., 2015), together with a dearth of research looking into the paternal aspect of the antenatal tie, indicated the need to generate new knowledge and

theory about this phenomenon. CGT (Charmaz, 2014) was used to explore data generated through semi-structured individual interviews conducted with a sample of 9 expectant mothers and their male partners in early, middle and late pregnancy.

The analysis resulted in the formation of a substantive theoretical model that seeks to explain the parental journey of fetal conceptualisation and connection, as described in chapter 5. The core category, 'navigating an unfamiliar and evolving tie', draws together the interlinked second-order categories within the model, namely 'internalising fetal presence', 'becoming emotionally invested', 'establishing familiarity' and 'yearning for more'. These categories represent overlapping stages that the expectant parents traversed in developing understandings of their tie to the unborn child.

The PFT is characterised as an evolving phenomenon which took a convoluted path to reach maturation. The intensity of each expectant parent's sense of emotional proximity to the unborn child was personal and determined by a complex combination of factors, including cultural, individual and interpersonal variables. However, coming to think of the fetus as a known other and as part of the intimate family unit were vital elements in achieving relatedness for all the expectant parents. Such an outlook was achieved through the development of maturing depictions of the unborn child in the parental mind, fuelled by an increasingly tangible fetus. Nevertheless, the sense of fetal connectivity that the parents developed was limited by restricted access to the fetus, as well as by the difficulty of perceiving reciprocation on the part of the unborn child.

7.3 Contributions to knowledge

As highlighted in the discussion chapter, the findings of the current study are mostly congruent with those of existing research in the field. Such harmony is reassuring, suggesting that many aspects of the PFT are mainly stable over time and across different cultural contexts. The similarities also offer scope for comparison, and opportunities to build upon what is already known about the PFT. However, it is also pertinent to ask oneself what the present study adds to the field of knowledge and how the results affect known issues in the area. Looking at the phenomenon through a new theoretical and personal lens allowed for original insights, which expand on and contemporise prior knowledge about the PFT. These insights are summarised in the following paragraphs.

The research, and the theoretical model that was developed based on its findings, emphasise the nature of the PFT as an evolving phenomenon, involving several phases of fetal conceptualisation and connection. The use of a longitudinal design with multiple data generation points allowed for a detailed understanding of the processes involved in this progression, including those of internalisation and familiarisation.

The theoretical model is the first in the field to have been developed based on in-depth accounts from both expectant mothers and fathers. The study confirms that expectant parents of either gender build conceptions of the fetus, and a sense of emotional proximity to him/her, in similar ways. However, the research also identified some vital differences in the experiences of the women and men which

were influenced both by the diversity in their physical experiences of the pregnancy, as well as by cultural discourse about gendered roles in parenting (section 6.8). These differences include concepts such as the effortful paternal tie in contrast with a more spontaneous maternal one, maternal feelings of possessiveness over the fetus, and the men's experience of having their fetal tie regulated by a gatekeeper.

The use of the sociological theoretical concepts of intimacy and kinship to underpin processes occurring within the PFT is also a novel contribution of the present research (section 6.7). Consideration of these concepts enhances our understanding of how expectant parents traverse the journey between regarding the fetus as a strange and unknown being, to coming to perceive the unborn child as a familiar and cherished part of the family. With the use of their imagination, the expectant parents were able to cultivate a sense of closeness with the unborn child by creatively adapting practices routinely used to build intimacy with significant others in everyday life. Efforts were also made to naturalise the foreignness of the antenatal tie by emphasising signs of biological relatedness, allowing the expectant parents to think of the unborn child as a kin member. Furthermore, the application of these sociological and anthropological notions to the antenatal tie serves to extend our comprehension of the concepts themselves, allowing us to appreciate them in a broader context than previously possible. When looked at through a wide lens, it is possible to see that socio-cultural ideas about intimacy and kinship permeate many aspects of social life and are not limited to the contexts to which they are commonly applied.

The importance of parental imagination in the building of the PFT is emphasised in the current research (section 6.6). Parental narratives made clear that it is through their imaginative depictions of the fetus that they were able to develop a sense of knowing them. These internal representations of the unborn child were often sparked by tangible signs of the fetus, such as viewing him/her on ultrasound or feeling them move. These clues then set in motion a process where the women and men developed increasingly elaborate images of the unborn child, thus often arriving at a point where they had clear ideas about the physical appearance and personality of the baby. However, not all parents were able to build such vivid depictions of the child. An inability or unwillingness to exercise the imaginative parental capacity often resulted in less concrete fetal conceptualisations during the pregnancy and a diminished sense of intimacy with the unborn child. However, it is unclear what implications holding these more abstract ideas of the unborn child may have for the parental-infant relationship in the postnatal period.

The research draws together knowledge about the barriers and setbacks that expectant parents sometimes face in building an emotional tie to the unborn child. Some of these impediments came to light in the current study, while others which had been previously identified were confirmed by the present research findings. These include fears relating to fetal loss, and apprehension pertaining to the possible influences of the infant's arrival on the parental dyadic relationship and wider lifestyle (section 6.3). Furthermore, the progression of the PFT was sometimes interrupted where fetal depictions built up over the pregnancy were challenged by revised information about the unborn child (section 6.4).

The study further identified factors which limited the degree of parental emotional proximity to the fetus and differentiated the antenatal tie from the parental-infant relationship that develops after the birth (section 6.5). The limited tangibility of the unborn child, together with restricted fetal reciprocation, was thought by the expectant parents to prevent the antenatal tie from being conceived as a genuine relationship. The tie was instead primarily conceived as a unidirectional sense of emotional proximity from the parental side. As discussed in section 6.5, this observation serves to reinforce arguments that the use of attachment theory, as conceived by Bowlby (1969), as a foundation on which to build theoretical models explaining the antenatal tie is inappropriate.

The characterisation of the PFT as existing on a continuum, varying substantially in quality and intensity between individuals, and being convoluted and non-linear in its development, has implications for how it is measured (section 6.10). Researchers have previously noted that existing tools are unable to accurately assess the depth and breadth of the relationship (Van den Bergh and Simons, 2009). However, based on the individualised nature of the antenatal tie identified in the current study, it is hypothesised that it may not be possible, or even desirable, to develop a tool that accurately measures the PFT, particularly cross-sectionally and through a self-report design. The continuum on which the antenatal tie exists means that attempting to rank one person's experience against another's is fraught with difficulties. The experience of each expectant parent in conceptualising the unborn child is unique, complex, constantly evolving and being continually revised by social and relational influences. The notion of

measuring the tie is thus fatally flawed; it is not a biological variable which can be objectively quantified. Results gained from measurement attempts are not only misleading but also potentially harmful to the development of the later parental-infant relationship, particularly in cases where the antenatal tie is deemed dysfunctional without warrant. The variability characterising the PFT is likely to partially explain the lack of consistent findings in prior attempts to determine the predictors, correlations and consequences of the PFT (Doan and Zimmerman, 2003; Yarcheski et al., 2009).

7.4 Methodological reflections

Charmaz (2014) posits that the effectiveness of GT research depends on the standard of the final product. She proposes four criteria for quality evaluation; namely credibility, originality, resonance and usefulness. In the following sections, these criteria are used to reflect on the value of the study and to mull over the strengths and limitations inherent in its design, with the benefit of hindsight. Much of the rationale for the methodological decisions taken can be found in chapter 3, and thus such considerations will be kept brief here.

7.4.1 Credibility

As discussed in section 3.5, credibility concerns the congruence between participants' experience and the researcher's interpretation of this (Given, 2008). This harmony is evidenced through the detailing of methodological procedures used for the exploration of the phenomenon under consideration, and the demonstration of the appropriateness of these methods (Given, 2008).

Data generation for the current research involved undertaking 52 interviews lasting an average of 42 minutes each. This allowed the researcher to gain intimate familiarity with the phenomenon under consideration, a factor that enhances the credibility of results (Charmaz, 2014). Carrying out three interviews with each participant allowed for a trusting researcher-participant relationship to build, encouraging openness and honesty in the resulting narratives, through achieving 'prolonged engagement' as proposed by Lincoln and Guba (1985). Spending lengthy periods in the field also helped the researcher to overcome her preconceptions, and facilitated co-construction of meanings with the interviewees (Lincoln and Guba, 1985). Retention rates were high, with only one couple not completing the third interview due to relocation.

The longitudinal nature of the research was a considerable strength of the research, and one of the factors that distinguished the study from much of the previous work in the field. Qualitative longitudinal research allows for a "nuanced understanding of phenomena which evolve through time" (Carduff et al., 2015:2). Given the progressive nature of parental conceptions of the fetus, this methodological choice provided a weighty advantage over prior cross-sectional research, which is limited to a snapshot view of the tie at a particular point in the pregnancy. Furthermore, theoretical saturation was achieved at each data generation time point, as well as across the study as a whole, demonstrating the sufficiency of generated data.

Concerning saturation, however, it is acknowledged that, given limited diversity in the research sample, the theoretical model primarily pertains to the experiences

of heterosexual first-time expectant parents in a stable relationship, pregnant with a singleton fetus. Restrictions on sample diversity kept the research manageable in scope. However, it is recognised that these methodological decisions somewhat restrict the reach of the research. This limitation is expanded on further in section 7.4.3.

The conduct of individual rather than joint interviews with each couple is also considered a feature of the study which contributed to its credibility. As the study sought each participant's personal experience of developing fetal conceptions, they needed to be able to express their views freely. It is recognised that when couples are interviewed together, their answers may be presented in a way that is in line with the partner's perceived views (Zipp and Toth, 2002), negatively affecting the 'truth' of their divulged experiences. However, it is acknowledged that because many of the participants chose to have their interviews done in their own homes, their partners were sometimes present, and occasionally contributed opinions or reactions to one another's narratives. This factor may have had some influence on the authenticity of the results.

Research credibility is evidenced through the use of participant excerpts to corroborate the study's findings (Given, 2008), a technique used in chapter 4. Moreover, to give the reader further confidence in the integrity of the interpretive process, examples of coded transcripts (figure 3.1), memos (figure 3.3) and conceptual maps (figure 3.4) used in the analytic process are included in the methodology chapter.

7.4.2 Originality

The originality of the research concerns how it is able to “challenge, extend, or refine current ideas, concepts, and practices” (Charmaz, 2014:337) in the research area. The contributions to knowledge afforded by the current study have been summarised in section 7.3.

7.4.3 Resonance

Fulfilling the criteria of resonance requires the researcher’s insightful engagement with the social phenomenon under consideration, enabling the detection of nuances within the data (Given, 2008). In GT, this process is in some ways congruent with that of theoretical sensitivity (Glaser, 1978), which involves “seeing possibilities, establishing connections, and asking questions” of the data (Charmaz, 2014:244).

Theoretical sensitivity was promoted in the current study through the conduct of intensive interviews. Conducting intensive interviews allowed the researcher to gain access to the participants’ complex mental worlds, allowing for their thoughts, feelings, and perceptions to be captured (Goodman, 2001). It was this method of data generation that allowed for intricate particularities of the PFT to be identified. The research report strived to convey the parental experience of building fetal conceptualisations and connection in full, allowing the reader to gain a detailed understanding of the processes involved.

Negative case analysis, described by Given (2008) as “purposely sought or spontaneously appearing pieces of data that differ from the researcher’s

expectations, assumptions, or working theories”, also promotes theoretical sensitivity, and forms part of the constant comparative method enshrined in GT analysis. Individuality within the PFT meant that it was relatively common to identify cases which seemed to diverge from the rest, and in some cases, threaten the soundness of the developing theory. The researcher strove to embrace the diversity and probe further into such cases, as well as testing the emergent ideas with other participants. This technique ultimately improved the research rigour and allowed for a more thorough understanding of both uniformity and heterogeneity in the PFT. Liminal experiences are included within the research report, with variations in participant understanding of the phenomenon highlighted.

Member-checking, achieved through asking participants to verify interpretations and conclusions resulting from the research, allows for confirmation that the theory truly resonates with the concerned parties (Given, 2008). This process was considered, but ultimately decided against. Being that it was known that the phenomenon under consideration was likely to evolve over the pregnancy, it was thought possible that participants’ ways of thinking about the unborn child may change so significantly that they may not recognise the analysis as being representative of their earlier experience. This risk was highlighted by Birt et al. (2016).

An aspect of establishing resonance in interpretive research concerns the study's potential to be valuable across several contexts, allowing readers to intuitively adopt aspects of the findings and adapt them to their situation (Tracy, 2010).

Methodological choices within the current research, discussed below, either enhanced 'transferability' of findings or diminished it.

Processes of theoretical sampling led the researcher to recruit participants who came from different countries of origin. This strategy was thought necessary to explore initial ideas about the influence of societal discourse within particular cultural settings on the PFT. This methodological choice increased the likelihood that the research findings may be transferrable to cultural contexts outside the one where the study was conducted. It also promoted the comprehensiveness of the developed theory in explaining the PFT.

Also based on theoretical sampling, attempts were made to recruit participants from various socio-economic backgrounds. To facilitate this process, recruitment was done from multiple locations, including a private antenatal clinic, a public antenatal clinic and an antenatal ward in a general hospital. However, despite these efforts, the participants were, on average, of a higher socio-economic class and educational level than would be expected by chance, a factor that possibly affects the resonance of findings for expectant parents of a lower social class. This recruitment anomaly is likely to be reflective of the category of people who are more willing to participate in research.

Participants were enrolled in the study as couples. This methodological choice allowed insight into how couples' dyadic dynamics may have influenced the PFT. It also kept the study focused and manageable in scope. However, this methodological decision had implications for diversity within the sample. The preclusion of single expectant parents, persons in same-sex relationships or those

in less stable unions may be considered a factor that limited the study's resonance for individuals who do not share the participant's circumstances.

Recruitment was a lengthy process, with a moderate proportion of the couples approached by the gatekeepers declining to participate. The main reasons given for refusal were that participation was too big a commitment, that the female partner was not feeling physically well enough to participate in the early stages of pregnancy, or that the male partner preferred not to engage in interviews. It is acknowledged that the couples who were ultimately recruited may differ in significant but unknown ways from those who refused, with these differences potentially impacting how they built the PFT. It is thus possible that aspects of the formulated theory would not resonate with all expectant parents.

7.4.4 Usefulness

Usefulness concerns the practical applications or ramifications of the constructed theory (Charmaz, 2006). It is foreseen that the generation of a new, straightforward and easy-to-grasp substantive theory that explains how parents conceptualise and connect with the unborn child will be useful to both expectant parents and the health care practitioners caring for them.

Knowledge of the processes involved in the development of PFT, as well as the highlighting of the individuality present, may be comforting to expectant parents. It may reassure them that their thoughts and feelings relating to the fetus represent an acceptable variation of what is 'normal', rather than putting pressure

on themselves to feel intrinsically connected to the unborn child from the early stages of pregnancy.

The substantive theoretical model will also allow midwives and other practitioners caring for expectant parents to understand better the varied reactions that women and men may have to circumstances such as spontaneous fetal loss, termination of pregnancy, or other pregnancy complications that could affect their unborn child.

Nonetheless, the research raises as many questions as it answers, sparking interest in many further potential areas of study. An area of particular interest lies in exploring how the processes observed in the building of the PFT may develop after the birth of the child. Implications of the study for further research are detailed in the next section (7.5).

7.5 Recommendations

The developed theory serves as a foundation for suggested changes in policy, practice and education that govern how expectant parents are cared for over their transition to parenthood. Moreover, the study findings serve to inform the direction of future research in the field of the parental-fetal tie and those related to it.

7.5.1 Recommendations for policy governing healthcare provider educational programmes

Midwifery education and continuous professional development

It is recommended that existing and new midwifery education programmes should be amended and designed to incorporate sessions concerning the development of the PFT. From the researcher's personal experience, knowledge about this topic is currently severely limited amongst practitioners. These sessions could be planned as a component of modules relating to antenatal care.

Information conveyed during these sessions should include:

- The stages through which the PFT develops over the pregnancy;
- The interpersonal individuality that should be expected in the development of the PFT ;
- Parental concerns that may limit the progression of the PFT and ways to address them;
- The sociology of intimacy and kinship and the importance of these concepts to the PFT and family relations in general;
- The similarities and differences in the ways that expectant mothers and fathers conceptualise and connect to the unborn child;
- Promoting the PFT;
- Avoiding the over-medicalisation of the PFT.

Furthermore, continuous professional development sessions/seminars targeting practising midwives, obstetricians, and other health care professionals involved in

pregnancy care should be developed and organised regularly to convey knowledge concerning this topic.

7.5.2 Recommendations for policy governing maternity-related health services

Antenatal education curricula

Antenatal education curricula for programmes targeted at expectant mothers and fathers should also be adapted to incorporate information about the PFT. Information conveyed should be similar to that listed above (section 7.5.1), albeit delivered by the educator in lay language. Such knowledge would familiarise expectant parents with the stages of the PFT, but also serve to reassure them that interpersonal variability in the process is to be expected.

Furthermore, it would be useful for parentcraft educators to facilitate a non-judgemental discussion relating to thoughts and feelings about the unborn child amongst expectant parents within such classes, ideally in small groups. Such a discussion would encourage the expectant parents to reflect on and share their experiences of conceptualising and relating to the fetus, and may serve to quell any concerns that they may have about the quality of their fetal tie. Alternatively, such dialogue may encourage expectant parents to recognise and raise concerns about their experiences in fetal conceptualisation and connection, allowing them to be referred for further evaluation.

During the data generation interviews, expectant fathers, in particular, often expressed their appreciation of having an avenue through which to voice their thoughts about the unborn child (section 3.3.5). Such an opportunity was

especially valued given that the men often felt unable to discuss such topics in everyday social situations. Thus, aside from existent parentcraft classes, it is felt that men's groups should be organised to give expectant fathers an opportunity to safely discuss their experiences of the pregnancy with similar others. This would encourage men to build a support network and to feel actively involved in the pregnancy process, thus encouraging their engagement with the unborn child. These groups would ideally be facilitated by other men, with experienced fathers being ideal coordinators.

7.5.3 Recommendations for family policy

Many of the expectant fathers in the current research reported feeling distant from the pregnancy process. They experienced a delay in becoming immersed in the experience, when compared to their female counterparts (sections 4.2.3, 4.3.3 & 4.4.2). They further talked about feeling disconnected from the unborn child when distracted by work commitments and when away from their female partner for long periods (section 4.2.3). Due to work commitments, some of the men also reported regret at having had to miss important antenatal appointments which were thought of as opportunities to connect to the unborn child. It is thus recommended that legislation governing family policy should be adapted to protect fathers' rights to be more present with their family, through promoting the use of flexi-hours and remote work opportunities.

Moreover, some of the men within the study still perceived there to be a clear distinction between maternal and paternal roles in parenting. The father continued to be regarded as the breadwinner, and the mother as the primary

nurturer of the child, despite her often being in full-time employment. These views affected the ways in which the men positioned themselves in relation to the unborn child (section 4.2.3). These ideological gender differences in family responsibilities are encouraged by the gap in maternity and paternity leave provisions in the postpartum period. It is high time that legislation is changed to allow parents to share their postpartum parental leave as they see fit, allowing men to take on a larger share of childcare responsibilities, and encouraging the elimination of related inequalities.

7.5.4 Recommendations for midwifery practice

Based on findings relating to expectant fathers' perceived distance from the pregnancy, it is suggested that, during antenatal contact opportunities, midwives and other healthcare professionals caring for expectant parents should do their utmost to include the father. His integral role in the pregnancy process should be acknowledged, and his needs and concerns should be addressed along with those of the expectant mother. This may promote the father's engagement with the pregnancy and with the unborn child.

The current study has shown that how individuals conceptualise and connect with their unborn child is intrinsically linked to wider processes in the transition to parenthood, including the developing relationship dynamics between the expectant parents (sections 4.2.6 & 4.3.5). Thus, as suggested in section 6.3, it is proposed that interventions seeking to enhance the PFT should include an element of couples' counselling. Such interventions could address any fears that may be affecting the way that expectant parents feel about the unborn child,

particularly those that relate to the infants' potential impact on the parental relationship (sections 4.3.6 & 4.4.4).

The study further identified the critical role of developing a sense of familiarity with the unborn child in building a sense of emotional proximity to him/her (sections 4.2.4, 4.3.3 & 4.4.1). Based on this finding, it is proposed that midwives and other health care professionals caring for expectant parents should take opportunities to enhance perceptions of fetal familiarity wherever possible. Fetal familiarity could be promoted through evidence-based education about fetal development and, in particular, about the perceptive abilities of the unborn child and his/her capacity to respond to parental actions at different stages of the gestation. Such knowledge, in turn, could give expectant parents more confidence in the efficacy of their fetal contact bids. It is possible that visualisation exercises, where parents are asked to hold or look at a tangible object related to the unborn child, such as an ultrasound image or piece of clothing, and to think about the child and family life after the birth, could also enhance perceptions of the child as a familiar other and a part of the intimate family unit.

As discussed in section 6.10, given the identified individuality in the PFT, it is not suggested that the PFT is formally measured. However, midwives and other health care professionals can use contact opportunities during pregnancy to talk to expectant parents in-depth about how they feel about the unborn child and seek to address any concerns they may have. Should any expectant parents show signs of distress or express any concerning thoughts about the fetus, they can be referred to the perinatal mental health team for treatment and follow-up.

7.5.5 Recommendations for further research

As discussed in section 6.4, the building of increasingly intricate fetal depictions emerged as an important avenue through which expectant parents developed an internal sense of closeness to the unborn child. However, when those depictions were challenged, it disrupted the course of the parental-tie (section 4.3.3). Given these findings, it would be intriguing to explore how expectations about the unborn child built up over the pregnancy evolve after the birth, and how that affects the development of the parental-infant bond, particularly when imagined depictions of the infant prove to be inaccurate.

Furthermore, as suggested in section 6.3, it would be relevant to look into how worry and protective tendencies observed during pregnancy develop after birth, and how they relate to the parenting of the child. Similar research could explore the longitudinal progression of maternal feelings of possessiveness over the unborn child.

Section 7.4.3 addressed the relative homogeneity of the research sample in the current study, with participants primarily being of Caucasian ethnicity, middle- or upper-class background, and well-educated. All were adults expecting their first child and were in stable heterosexual relationships. It is thus suggested that similar research is done to explore fetal conceptualisations and connections in more diverse populations. In particular, it is hypothesised that the building of the PFT in cases where the expectant parents are not in a conventional partnership or marriage with one another may differ significantly from that identified in the current research, especially for expectant fathers. Exploring how the development

of PFT compares between the first and subsequent pregnancies would also be a worthwhile endeavour.

7.6 Conclusion

The research addressed the question, 'How do expectant parents conceptualise and relate to the unborn child over a first pregnancy?'. Based on the study findings, a substantive theoretical model was developed using CGT (Charmaz, 2014) to provide an answer to that question. The model describes the PFT as a phenomenon which is largely equivalent between expectant mothers and fathers, that evolves over the pregnancy and which exists on a continuum rather than being static or homogeneous amongst individuals. Nevertheless, it was shown that, as the fetus becomes increasingly tangible, expectant mothers and fathers are increasingly able to come to terms with his/her presence, and, through a process of familiarisation, gain a sense of emotional proximity to the unborn child. The intensity of PFT, however, continues to be restricted by limits in fetal tangibility and reciprocity, which prevent it from being conceived as a genuine relationship.

The research findings will be valuable to expectant parents as they navigate their way through the transition to parenthood, a journey which is fraught with expectations about how parents should feel about their offspring. It will comfort them to know that not all expectant parents are infatuated with their unborn child from the outset, and that variability in the process of building the PFT is expected. Health care professionals caring for these women and men will be able to better

understand and empathise with individualised parental reactions to circumstances that affect the unborn child at different stages of the pregnancy, and will be aware that the PFT process should not be over-medicalised.

Reference list

- Abasi, E., Tafazzoli, M., Esmaily, H. & Hasanabadi, H. (2013) The effect of maternal-fetal attachment education on maternal mental health. *Turkish Journal of Medical Sciences*, 43 (5), 815-820.
- Abasi, E., Tahmasebi, H., Zafari, M., Gholamreza & Takami, N. (2012) Assessment on effective factors of maternal-fetal attachment in pregnant women. *Life Science Journal*, 9 (1 SUPPL.), 68-75.
- Abela, A., Casha, C., Borg Xuereb, R., Clark, M., Inguanez, J. & Sammut Scerri, C. (2012) The needs of Maltese families with dependent children: A focus group study among professionals. *Bank of Valletta Review*, 45 (Spring Issue), 55-86.
- Ahern, N. R. & Ruland, J. P. (2003) Maternal-fetal attachment in African-American and Hispanic-American women. *Journal of Perinatal Education*, 12 (4), 27-35.
- Ainsworth, M. D. S. (1964) Patterns of attachment behaviour shown in interaction with his mother. *Merrill-Palmer Quarterly* 10 (1), 51-58.
- Ainsworth, M. D. S. (1967) *Infancy in Uganda: Infant care and the growth of attachment*. Baltimore: John Hopkins University Press.
- Ainsworth, M. D. S. (1989) Attachments beyond infancy. *American Psychologist*, 44 (4), 709-716.
- Ainsworth, M. D. S. & Wittig, B. A. (1969) Attachment and exploratory behaviour of one-year-olds in a strange situation. In Foss, B. M. (ed) *Determinants of infant behaviour*, 4. London: Methuen, 111-136.
- Akarsu, R. H. & Rathfisch, G. (2018) The effect of pregnancy yoga on the pregnant's psychosocial health and prenatal attachment. *Indian Journal of Traditional Knowledge*, 17 (4), 732-740.
- Akbarzade, M., Setodeh, S., Sharif, F. & Zare, N. (2014) The effect of fathers' training regarding attachment skills on maternal-fetal attachments among primigravida women: A randomized controlled trial. *International Journal Of Community Based Nursing And Midwifery*, 2 (4), 259-267.
- Akbarzadeh, M., Moattari, M. & Abootalebi, M. (2017) Effect of the BASNEF model on maternal-fetal attachment in the pregnant women referring to the prenatal clinics affiliated to Shiraz University of Medical Sciences. *Iranian Journal of Neonatology*, 8 (3), 31-37.
- Alhusen, J. L. (2008) A literature update on maternal-fetal attachment. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing*, 37 (3), 315-328.
- Alhusen, J. L., Gross, D., Hayat, M. J., Rose, L. & Sharps, P. (2012a) The role of mental health on maternal-fetal attachment in low-income women. *JOGNN: Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 41 (6), E71-E81.
- Alhusen, J. L., Gross, D., Hayat, M. J., Woods, A. B. & Sharps, P. W. (2012b) The influence of maternal-fetal attachment and health practices on neonatal outcomes in low-income, urban women. *Research in Nursing & Health*, 35 (2), 112-120.
- Alhusen, J. L., Hayat, M. J. & Gross, D. (2013) A longitudinal study of maternal attachment and infant developmental outcomes. *Archives Of Women's Mental Health*, 16 (6), 521-529.
- Alvarenga, P., Dazzani, M. V. M., Da Rocha Lordelo, E., Dos Santos Alfaya, C. A. & Piccinini, C. A. (2013) Predictors of sensitivity in mothers of 8-month-old infants. *Paideia*, 23 (56), 311-319.
- Ammaniti, M. (1991) Maternal representations during pregnancy and early infant-mother interactions. *Infant Mental Health Journal*, 12 (3), 246-255.
- Ammaniti, M., Baumgartner, E., Candelori, C., Perucchini, P., Pola, M., Tambelli, R. & Zampino, F. (1992) Representations and narratives during pregnancy. *Infant Mental Health Journal*, 13 (2), 167-182.
- Ammaniti, M., Tambelli, R. & Odorisio, F. (2013) Exploring maternal representations during pregnancy in normal and at-risk samples: The use of the Interview of Maternal Representations during pregnancy. *Infant Mental Health Journal*, 34 (1), 1-10.

- Armstrong, D. (2000) *Modification of the Prenatal Attachment Inventory for use with fathers*. Lexington, KY: University of Kentucky.
- Armstrong, D. S. (2002) Emotional distress and prenatal attachment in pregnancy after perinatal loss. *Journal of Nursing Scholarship*, 34 (4), 339-345.
- Arnott, B. & Meins, E. (2008) Continuity in mind-mindedness from pregnancy to the first year of life. *Infant Behavior & Development*, 31 (4), 647-654.
- Atluru, A., Appleton, K. & Plavsic, S. K. (2012) Maternal-fetal bonding: Ultrasound imaging's role in enhancing this important relationship. *Donald School Journal of Ultrasound in Obstetrics and Gynecology*, 6 (4), 408-411.
- Baghdari, N., Sahebzad, E. S., Kheirkhah, M. & Azmoude, E. (2016) The effects of pregnancy-adaptation training on maternal-fetal attachment and adaptation in pregnant women with a history of baby loss. *Nursing and Midwifery Studies*, 5 (2), e28949.
- Baillie, C., Hewison, J. & Mason, G. (1999) Should ultrasound scanning in pregnancy be routine? *Journal of Reproductive and Infant Psychology*, 17 (2), 149-157.
- Balaji, A. B., Claussen, A. H., Smith, D. C., Visser, S. N., Morales, M. J. & Perou, R. (2007) Social support networks and maternal mental health and well-being. *Journal of Women's Health*, 16 (10), 1386-1396.
- Barbour, R. (2014) *Introducing qualitative research: A student's guide*, 2nd edition. London: Sage Publications.
- Barone, L., Lionetti, F. & Dellagiulia, A. (2014) Maternal-fetal attachment and its correlates in a sample of Italian women: A study using the Prenatal Attachment Inventory. *Journal of Reproductive and Infant Psychology*, 32 (3), 230-239.
- Bellieni, C. V., Ceccarelli, D., Rossi, F., Buonocore, G., Maffei, M., Perrone, S. & Petraglia, F. (2007) Is prenatal bonding enhanced by prenatal education courses? *Minerva Ginecologica*, 59 (2), 125-129.
- Belsky, J. (1984) The determinants of parenting: A process model. *Child Development*, 83-96.
- Belsky, J. (2005) The development and evolutionary psychology of intergenerational transmission of attachment. In Carter, S. C., Ahnert, L., Grossmann, K. E., Hrdy, S. B., Lamb, M. E., Porges, S. W. & Sachser, N. (eds) *Attachment and bonding: A new synthesis*. Berlin: MIT, 169-198.
- Belsky, J., Jaffee, S. R., Sligo, J., Woodward, L. & Silva, P. A. (2005) Intergenerational transmission of warm-sensitive-stimulating parenting: A prospective study of mothers and fathers of 3-year-olds. *Child Development*, 76 (2), 384-396.
- Benedek, T. (1959) Parenthood as a developmental phase. *Journal of the American Psychoanalytic Association*, 7 389-417.
- Benoit, D. & Parker, K. C. (1994) Stability and transmission of attachment across three generations. *Child Development*, 65 (5), 1444-1456.
- Bernier, A. & Dozier, M. (2003) Bridging the attachment transmission gap: The role of maternal mind-mindedness. *International Journal of Behavioral Development*, 27 (4), 355-365.
- Bielawska-Batorowicz, E. & Siddiqui, A. (2008) A study of prenatal attachment with Swedish and Polish expectant mothers. *Journal of Reproductive and Infant Psychology*, 26 (4), 373-384.
- Birks, M. & Mills, J. (2011) *Grounded theory: A practical guide*. London: Sage Publications.
- Birt, L., Scott, S., Cavers, D., Campbell, C. & Walter, F. (2016) Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research*, 26 (13), 1802-1811.
- Birtwell, B., Hammond, L. & Puckering, C. (2015) 'Me and my Bump': An interpretative phenomenological analysis of the experiences of pregnancy for vulnerable women. *Clinical Child Psychology and Psychiatry*, 20 (2), 218-238.
- Borg Xuereb, R. (2008) *The needs of Maltese first-time parents during their transition to parenthood: Implications for the development of an educational programme*. Unpublished PhD thesis, University of Malta.

- Boukydis, C. F., Treadwell, M. C., Delaney-Black, V., Boyes, K., King, M., Robinson, T. & Sokol, R. (2006) Women's responses to ultrasound examinations during routine screens in an obstetric clinic. *Journal of Ultrasound in Medicine*, 25 (6), 721-728.
- Bowen, G. A. (2008) Naturalistic inquiry and the saturation concept: A research note. *Qualitative research*, 8 (1), 137-152.
- Bowlby, J. (1958) The nature of the child's tie to his mother. *International Journal of Psycho-Analysis*, 39 (5), 350-373.
- Bowlby, J. (1969) *Attachment, separation and loss*. New York: Basic Books.
- Bowlby, J. (1973) *Attachment and loss. Vol.2: Separation*. New York: Basic Books.
- Bowlby, J. (1984) Caring for the young: Influences on development. In Cohen, R. S., Cohler, B. J. & Weissman, S. H. (eds) *Parenthood: A psychodynamic perspective*. New York: The Guilford Press, 269-284.
- Brandon, A. R., Pitts, S., Denton, W. H., Stringer, C. A. & Evans, H. M. (2009) A history of the theory of prenatal attachment. *Journal Of Prenatal & Perinatal Psychology & Health*, 23 (4), 201-222.
- Brandon, A. R., Trivedi, M. H., Hynan, L. S., Miltenberger, P. D., Labat, D. B., Rifkin, J. B. & Stringer, C. A. (2008) Prenatal depression in women hospitalized for obstetric risk. *Journal of Clinical Psychiatry*, 69 (4), 635-643.
- Breckenridge, J. & Jones, D. (2009) Demystifying theoretical sampling in grounded theory research. *Grounded Theory Review*, 8 (2), 113-126.
- Brennan, A., Marshall-Lucette, S., Ayers, S. & Ahmed, H. (2007) A qualitative exploration of the Couvade syndrome in expectant fathers. *Journal of Reproductive and Infant Psychology*, 25 (1), 18-39.
- Bretherton, I. & Munholland, K. A. (2008) Internal working models in attachment relationships: Elaborating a central concept in attachment theory. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research, and clinical applications*, 2nd edition. New York: The Guilford Press, 102-130.
- Bringer, J. D., Johnston, L. H. & Brackenridge, C. H. (2004) Maximizing transparency in a doctoral thesis: The complexities of writing about the use of QSR* NVIVO within a grounded theory study. *Qualitative research*, 4 (2), 247-265.
- Bryant, A. & Charmaz, K. (2007) *The SAGE handbook of Grounded Theory*. London: Sage Publications.
- Buckley, C. A. & Waring, M. J. (2013) Using diagrams to support the research process: Examples from grounded theory. *Qualitative Research*, 13 (2), 148-172.
- Burke, C. A. (2007) *The effects of an 18-hour prenatal attachment program on maternal emotional attachment*. Unpublished PhD thesis, Capella University.
- Butler, M. M., Fraser, D. M. & Murphy, R. J. (2008) What are the essential competencies required of a midwife at the point of registration? *Midwifery*, 24 (3), 260-269.
- Cannella, B. L. (2005) Maternal-fetal attachment: An integrative review. *Journal of Advanced Nursing*, 50 (1), 60-68.
- Carduff, E., Murray, S. A. & Kendall, M. (2015) Methodological developments in qualitative longitudinal research: The advantages and challenges of regular telephone contact with participants in a qualitative longitudinal interview study. *BMC Research Notes*, 8:142.
- Cassidy, J. (2000) The complexity of the caregiving system: A perspective from attachment theory. *Psychological Inquiry*, 11 (2), 86-91.
- Cassidy, J. (2008) The nature of the child's ties. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research and clinical applications*, 2nd edition. New York: Giford Press, 3-22.
- Celik, M. & Ergin, A. (2019) The effect on pregnant women's prenatal attachment of a nursing practice using the first and second Leopold's maneuvers. *Japan Journal of Nursing Science*, 17 (2), e12297.

- Chang, H. C., Yu, C. H., Chen, S. Y. & Chen, C. H. (2015) The effects of music listening on psychosocial stress and maternal-fetal attachment during pregnancy. *Complementary Therapies in Medicine*, 23 (4), 509-515.
- Chang, S., Kenney, N. J. & Chao, Y. Y. (2010) Transformation in self-identity amongst Taiwanese women in late pregnancy: A qualitative study. *International Journal of Nursing Studies*, 47 (1), 60-66.
- Charmaz, K. (2000) Teachings of Anselm Strauss: Remembrances and reflections. *Sociological Perspectives*, S163-S174.
- Charmaz, K. (2003) Grounded Theory: Objectivist and constructivist methods. In A. Bryant & Charmaz, K. (eds) *The SAGE handbook of Grounded Theory*. London: Sage Publication, 1-29.
- Charmaz, K. (2006) *Constructing Grounded Theory*. London: Sage Publications.
- Charmaz, K. (2008) Constructionism and the Grounded Theory. In Holstein, J. A. & Gubrium, J. F. (eds) *Handbook of constructionist research*. New York: The Guilford Press, 397-412.
- Charmaz, K. (2014) *Constructing grounded theory*, 2nd edition. London: Sage Publications.
- Chrzan-Dętkoś, M. & Łockiewicz, M. (2015) Maternal romantic attachment, and antenatal and postnatal mother–infant attachment in a sample of Polish women. *European Journal of Developmental Psychology*, 12 (4), 429-442.
- Clarke, A. E. (2005) *Situational analysis: Grounded Theory after the postmodern turn*. London: Sage Publications.
- Cohen, L. & Slade, A. (2000) The psychology and psychopathology of pregnancy: Reorganization and transformation. In Zeanah, C. H. (ed) *Handbook of infant mental health*, 2nd edition. New York: Guilford Press, 20-36.
- Colin, V. L. (1996) *Human Attachment*. New York: McGraw-Hill.
- Collier, R. (1995) *Masculinity, Law and the Family*. London: Routledge.
- Condon, J. T. (1985) The parental-foetal relationship: A comparison of male and female expectant parents. *Journal of Psychosomatic Obstetrics & Gynecology*, 4 (4), 271-284.
- Condon, J. T. (1993) The assessment of antenatal emotional attachment: Development of a questionnaire instrument. *British Journal of Medical Psychology*, 66 (2), 167-183.
- Condon, J. T. & Corkindale, C. (1997) The correlates of antenatal attachment in pregnant women. *British Journal of Medical Psychology*, 70 (4), 359-372.
- Condon, J. T., Corkindale, C., Boyce, P. & Gamble, E. (2013) A longitudinal study of father-to-infant attachment: Antecedents and correlates. *Journal of Reproductive and Infant Psychology*, 31 (1), 15-30.
- Cooke, P. (2005) Helping women to make their own decisions. In Raynor, M. D., Marshall, J. E. & Sullivan, A. (eds) *Decision making in midwifery practice*. Edinburgh: Elsevier Health Sciences, 127-142.
- Cooley, C. H. (1902) *Human Nature and the Social Order*. New York: Charles Scribner's Sons.
- Corbin, J. & Strauss, A. (2008) *Basics of qualitative research: Techniques and procedures for developing Grounded Theory*, 3rd edition. London: Sage Publications.
- Corter, C. M. & Fleming, A. S. (2002) Psychobiology of maternal behavior in human beings. In Bornstein, M. H. (ed) *Handbook of parenting: Biology and ecology of parenting, Volume 2*, 2nd edition. New Jersey: Lawrence Erlbaum Associates, 141-182.
- Coté, J. J., Badura-Brack, A. S., Walters, R. W., Dubay, N. G. & Bredehoeft, M. R. (2020) Randomized controlled trial of the effects of 3D-printed models and 3D ultrasonography on maternal-fetal attachment. *JOGNN: Journal Of Obstetric, Gynecologic, And Neonatal Nursing*, 49 (2), 190-199.
- Cote-Arsenault, D., Schwartz, K., Krowchuk, H. & McCoy, T. P. (2014) Evidence-based intervention with women pregnant after perinatal loss. *The American Journal of Maternal-Child Nursing*, 39 (3), 177-186.
- Cowan, P. A., Bradburn, I. & Cowan, C. P. (2005) *Parents' working models of attachment: The intergenerational context of parenting and children's adaptation to school*. New Jersey: Erlbaum.

- Coyl, D. D., Roggman, L. A. & Newland, L. A. (2002) Stress, maternal depression, and negative mother–infant interactions in relation to infant attachment. *Infant Mental Health Journal*, 23 (1-2), 145-163.
- Cranley, M. S. (1981) Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research*, 30 (5), 281-284.
- Creswell, J. (2012) *Qualitative inquiry and research design: Choosing among five traditions*, 3rd edition. London: Sage Publications.
- Crowell, J. A., Treboux, D. & Waters, E. (2002) Stability of attachment representations: The transition to marriage. *Developmental Psychology*, 38 (4), 467-479.
- Curry, L. A., Nembhard, I. M. & Bradley, E. H. (2009) Qualitative and mixed methods provide unique contributions to outcomes research. *Circulation*, 119 (10), 1442-1452.
- Cutcliffe, J. R. (2000) Methodological issues in grounded theory. *Journal of Advanced Nursing*, 31 (6), 1476-1484.
- Dallos, R. & Vetere, A. (2005) *Researching psychotherapy and counselling*. Berkshire: McGraw-Hill International.
- Damato, E. G. (2000) Maternal-fetal attachment in twin pregnancies. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing*, 29 (6), 598-605.
- Damato, E. G. (2004a) Predictors of prenatal attachment in mothers of twins. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing*, 33 (4), 436-445.
- Damato, E. G. (2004b) Prenatal attachment and other correlates of postnatal maternal attachment to twins. *Advances in Neonatal Care*, 4 (5), 274-291.
- Darvill, R., Skirton, H. & Farrand, P. (2010) Psychological factors that impact on women's experiences of first-time motherhood: A qualitative study of the transition. *Midwifery*, 26 (3), 357-366.
- Davidson, J. (2006) Non-probability (non-random) sampling. In Jupp, V. (ed) *The SAGE dictionary of social research methods*. London: Sage Publications.
- Dayton, C. J., Levendosky, A. A., Davidson, W. S. & Bogat, G. A. (2010) The child as held in the mind of the mother: The influence of prenatal maternal representations on parenting behaviors. *Infant Mental Health Journal*, 31 (2), 220-241.
- de Almeida, C. P., Sa, E., Cunha, F. & Pires, E. P. (2013) Violence during pregnancy and its effects on mother-baby relationship during pregnancy. *Journal of Reproductive and Infant Psychology*, 31 (4), 370-380.
- de Cock, E. S., Henrichs, J., Vreeswijk, C. M., Maas, A. J., Rijk, C. H. & van Bakel, H. J. (2015) Continuous feelings of love? The parental bond from pregnancy to toddlerhood. *Journal of Family Psychology*, 30 (1), 125-134.
- de Jong-Pleij, E. A., Ribbert, L. S., Pistorius, L. R., Tromp, E., Mulder, E. J. & Bilardo, C. M. (2013) Three-dimensional ultrasound and maternal bonding: A third trimester study and a review. *Prenatal Diagnosis*, 33 (1), 81-88.
- Delanty, G. & Strydom, P. (eds) (2003) *Philosophies of social science: The classic and contemporary readings*. Berkshire: Open University Press.
- Delaram, M., Lobat, J. Z. & Sahand, S. (2018) The effects of fetal movements counting on maternal-fetal attachment: A randomised controlled trial. *Journal of Clinical and Diagnostic Research*, 12 (5), 28-31.
- Della Vedova, A. M. & Burro, R. (2017) Surveying prenatal attachment in fathers: The Italian adaptation of the Paternal Antenatal Attachment Scale (PAAS-IT). *Journal of Reproductive and Infant Psychology*, 35 (5), 493-508.
- Della Vedova, A. M., Dabrassi, F. & Imbasciati, A. (2008) Assessing prenatal attachment in a sample of Italian women. *Journal of Reproductive & Infant Psychology*, 26 (2), 86-98.
- Denzin, N. K. (2002) The interpretive process. In Huberman, A. M. & Miles, M. B. (eds) *The qualitative researcher's companion*. London: Sage Publications, 349-366.
- Dermott, E. (2008) *Intimate fatherhood: A sociological analysis*. Oxon: Routledge.
- DeWolff, M. S. & Van Ijzendoorn, M. H. (1997) Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68 (4), 571-591.

- Diamond, M. J. (1995) Someone to watch over me: The father as the original protector of the mother-infant dyad. *Psychoanalysis & Psychotherapy*, 12 89-102.
- Diniz, E., Koller, S. H. & Volling, B. L. (2015) Social support and maternal depression from pregnancy to postpartum: The association with positive maternal behaviours among Brazilian adolescent mothers. *Early Child Development and Care*, 185 (7), 1053-1066.
- Diniz, E., Volling, B. L. & Koller, S. H. (2014) Social support moderates association between depression and maternal-fetal attachment among pregnant Brazilian adolescents. *Journal of Reproductive and Infant Psychology*, 32 (4), 400-411.
- Dipietro, J. A. (2010) Psychological and psychophysiological considerations regarding the maternal-fetal relationship. *Infant And Child Development*, 19 (1), 27-38.
- Doan, H. M. & Zimerman, A. (2002) Prenatal attachment: Where do we go from here? *International Journal of Prenatal and Perinatal Psychology and Medicine*, 14:177-188.
- Doan, H. M. & Zimerman, A. M. (2003) Conceptualizing prenatal attachment: Toward a multidimensional view. *Journal of Prenatal & Perinatal Psychology & Health*, 18 (2), 109-129.
- Dodgson, J. E. (2019) Reflexivity in qualitative research. *Journal of Human Lactation*, 35 (2), 220-222.
- Dozier, M. (2000) Motivation for caregiving from an ethological perspective. *Psychological Inquiry*, 11 (2), 97-100.
- Draper, J. (2002a) 'It was a real good show': The ultrasound scan, fathers and the power of visual knowledge. *Sociology of Health & Illness*, 24 (6), 771-795.
- Draper, J. (2002b) 'It's the first scientific evidence': Men's experience of pregnancy confirmation. *Journal of Advanced Nursing*, 39 (6), 563-570.
- Draper, J. (2003a) Blurring, moving and broken boundaries: Men's encounters with the pregnant body. *Sociology of Health & Illness*, 25 (7), 743-767.
- Draper, J. (2003b) Men's passage to fatherhood: An analysis of the contemporary relevance of transition theory. *Nursing Inquiry*, 10 (1), 66-78.
- Drew, C. J., Hardman, M. L. & Hosp, J. L. (2008) Research design pitfalls. *Designing and conducting research in education*. Thousand Oaks, California: SAGE Publications, 209-240.
- Dubber, S., Reck, C., Müller, M. & Gawlik, S. (2014) Postpartum bonding: The role of perinatal depression, anxiety and maternal-fetal bonding during pregnancy. *Archives of Women's Mental Health*, 18 (2), 187-195.
- Dunkel-Schetter, C., Gurung, R., Lobel, M. & Wadhwa, P. (2001) Stress processes in pregnancy and birth: Psychosocial biological, and sociocultural influences. In Baum, A., Revenson, T. A. & Singer, J. E. (eds) *Handbook of health psychology*. Mahwah: Lawrence Erlbaum Associates, 495-518.
- Edhborg, M., Nasreen, H. E. & Kabir, Z. N. (2011) Impact of postpartum depressive and anxiety symptoms on mothers' emotional tie to their infants 2-3 months postpartum: A population-based study from rural Bangladesh. *Archives of Womens Mental Health*, 14 (4), 307-316.
- Ekelin, M., Crang-Svalenius, E. & Dykes, A.-K. (2004) A qualitative study of mothers' and fathers' experiences of routine ultrasound examination in Sweden. *Midwifery*, 20 (4), 335-344.
- Ekrami, F., Mohammad-Alizadeh Charandabi, S., Babapour Kheiroddin, J. & Mirghafourvand, M. (2020) Effect of counseling on maternal-fetal attachment in women with unplanned pregnancy: A randomized controlled trial. *Journal of Reproductive and Infant Psychology*, 38 (2), 151-165.
- Elsenbruch, S., Benson, S., Rütke, M., Rose, M., Dudenhausen, J., Pincus-Knackstedt, M. K., Klapp, B. F. & Arck, P. C. (2007) Social support during pregnancy: Effects on maternal depressive symptoms, smoking and pregnancy outcome. *Human Reproduction*, 22 (3), 869-877.
- Escobedo, C., Guerrero, J., Lujan, G., Ramirez, A. & Serrano, D. (2007) Ethical issues with informed consent. *Bio-Ethics*, Fall (1), 1-8.

- Eswi, A. & Khalil, A. (2012) Prenatal attachment and fetal health locus of control among low risk and high risk pregnant women. *World Applied Sciences Journal*, 18 (4), 462-471.
- Evans, G. L. (2013) A novice researcher's first walk through the maze of Grounded Theory: Rationalization for classical Grounded Theory. *The Grounded Theory Review*, 12 (1), 37-55.
- Featherman, M. S., Valacich, J. S. & Wells, J. D. (2006) Is that authentic or artificial? Understanding consumer perceptions of risk in e-service encounters. *Information Systems Journal*, 16 (2), 107-134.
- Feldman, J. B. (2007) The effect of support expectations on prenatal attachment: An evidence-based approach for intervention in an adolescent population. *Child and Adolescent Social Work Journal*, 24 (3), 209-234.
- Fenwick, J., Bayes, S. & Johansson, M. (2012) A qualitative investigation into the pregnancy experiences and childbirth expectations of Australian fathers-to-be. *Sexual & Reproductive Healthcare*, 3 (1), 3-9.
- Figueiredo, B. & Costa, R. (2009) Mother's stress, mood and emotional involvement with the infant: 3 months before and 3 months after childbirth. *Archives of Womens Mental Health*, 12 (3), 143-153.
- Finnbogadóttir, H., Svalenius, E. C. & Persson, E. K. (2003) Expectant first-time fathers' experiences of pregnancy. *Midwifery*, 19 (2), 96-105.
- Flick, U. (2007) *Designing qualitative research*. London: Sage Publications.
- Flykt, M., Punamäki, R. L., Belt, R., Biringen, Z., Salo, S., Posa, T. & Pajulo, M. (2012) Maternal representations and emotional availability among drug-abusing and nonusing mothers and their infants. *Infant Mental Health Journal*, 33 (2), 123-138.
- Foley, S. & Hughes, C. (2018) Great expectations? Do mothers' and fathers' prenatal thoughts and feelings about the infant predict parent-infant interaction quality? A meta-analytic review. *Developmental Review*, 48:40-54.
- Fonagy, P. & Target, M. (2005) Bridging the transmission gap: An end to an important mystery of attachment research? *Attachment & Human Development*, 7 (3), 333-343.
- Frost, N., Nolas, S. M., Brooks-Gordon, B., Esin, C., Holt, A., Mehdizadeh, L. & Shinebourne, P. (2010) Pluralism in qualitative research: The impact of different researchers and qualitative approaches on the analysis of qualitative data. *Qualitative Research*, 10 (4), 441-460.
- Fylan, F. (2005) Semi-structured interviewing. In Miles, J. & Gilbert, P. (eds) *A handbook of research methods for clinical and health psychology*. Oxford: Oxford University Press, 65-78.
- Gatrell, C. (2005) *Hard labour: The sociology of parenthood*. Berkshire: Open University Press.
- Gatt, M. & Cardona, T. (2019) NOIS Annual Report, 2018. National Obstetric Information System, Directorate for Health Information and Research.
- George, C. & Solomon, J. (1996) Representational models of relationships: Links between caregiving and attachment. *Infant Mental Health Journal*, 17 (3), 198-216.
- George, C. & Solomon, J. (1999) The development of caregiving: A comparison of attachment theory and psychoanalytic approaches to mothering. *Psychoanalytic Inquiry*, 19 (4), 618-646.
- George, C. & Solomon, J. (2008) The caregiving system: A behavioural systems approach to parenting. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research, and clinical applications*, 2nd edition. New York: The Guilford Press, 833-856.
- Georgsson Öhman, S. & Waldenström, U. (2010) Effect of first-trimester ultrasound screening for Down syndrome on maternal-fetal attachment: A randomized controlled trial. *Sexual & Reproductive Healthcare: Official Journal Of The Swedish Association Of Midwives*, 1 (3), 85-90.
- Ghezaljah, T. N. & Emami, A. (2009) Grounded theory: Methodology and philosophical perspective. *Nurse Researcher*, 17 (1), 15-23.
- Giddens, A. & Sutton, P. W. (2017) *Sociology*, 8th edition. Cambridge: Polity Press.

- Given, L. M. (ed) (2008) *The SAGE encyclopedia of qualitative research methods*. London: Sage Publications.
- Glaser, B. G. (1978) *Theoretical sensitivity: Advances in the methodology of grounded theory*. Mill Valley: Sociology Press.
- Glaser, B. G. (1992) *Basics of grounded theory analysis*. Mill Valley: Sociology Press.
- Glaser, B. G. (1998) *Doing grounded theory: Issues and discussions*. Mill Valley: Sociology Press.
- Glaser, B. G. (2001) *The grounded theory perspective: Conceptualization contrasted with description*. Mill Valley: Sociology Press.
- Glaser, B. G. (2002) Constructivist grounded theory? *Forum: Qualitative Social Research*, 3 (3), 1-14.
- Glaser, B. G. & Holton, J. (2005) Staying open: The use of theoretical codes in grounded theory. *The Grounded Theory Review*, 5 (1), 1-20.
- Glaser, B. G. & Strauss, A. L. (1967) *The discovery of grounded theory: Strategies for qualitative research*. London: Transaction Publishers.
- Goecke, T. W., Voigt, F., Faschingbauer, F., Spangler, G., Beckmann, M. W. & Beetz, A. (2012) The association of prenatal attachment and perinatal factors with pre- and postpartum depression in first-time mothers. *Archives of Gynecology and Obstetrics*, 286 (2), 309-316.
- Golafshani, N. (2003) Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8 (4), 597-607.
- Goodman, H. (2001) In-depth interviews. In Thyler, B. A. (ed) *The handbook of social work research methods*. Thousand Oaks, CA: SAGE Publications, 308-319.
- Goodwin, D. (2006) Ethical issues. In Pope, C. & Mays, N. (eds) *Qualitative research in health care*, 3rd edition. Oxford: Blackwell Publishing, 53-62.
- Greenfield, A. M. (2017) *Choices made by women in pregnancy, birth and the early postnatal period, after a previous traumatic birth*. Unpublished PhD thesis: University of Hull.
- Grossman, K., Grossman, K. E., Kindler, H. & Zimmermann, P. (2008) A wider view of attachment and exploration: The influence of mothers and fathers on the development of psychological security from infancy to young adulthood. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research, and clinical applications*, 2nd edition. New York: The Guilford Press, 857-879.
- Grossmann, K., Grossmann, K. E., Fremmer-Bombik, E., Kindler, H. & Scheuerer-Engelisch, H. (2002) The uniqueness of the child–father attachment relationship: Fathers' sensitive and challenging play as a pivotal variable in a 16-year longitudinal study. *Social Development*, 11 (3), 301-337.
- Guba, E. G. & Lincoln, Y. S. (1989) *Fourth generation evaluation*. London: Sage Publications.
- Guba, E. G. & Lincoln, Y. S. (1994) Competing paradigms in qualitative research. In Denzin, N. K. & Lincoln, Y. S. (eds) *Handbook of qualitative research*. London: Sage Publications, 105-117.
- Güney, E. & Uçar, T. (2019) Effect of the fetal movement count on maternal–fetal attachment. *Japan Journal of Nursing Science*, 16 (1), 71-79.
- Habib, C. & Lancaster, S. (2006) The transition to fatherhood: Identity and bonding in early pregnancy. *Fathering*, 4 (3), 235-253.
- Habib, C. & Lancaster, S. (2010) Changes in identity and paternal-foetal attachment across a first pregnancy. *Journal of Reproductive and Infant Psychology*, 28 (2), 128-142.
- Haedt, A. & Keel, P. (2007) Maternal attachment, depression, and body dissatisfaction in pregnant women. *Journal of Reproductive and Infant Psychology*, 25 (4), 285-295.
- Harach, L. D. & Kuczynski, L. J. (2005) Construction and maintenance of parent–child relationships: Bidirectional contributions from the perspective of parents. *Infant and Child Development: An International Journal of Research and Practice*, 14 (4), 327-343.
- Hart, R. & McMahon, C. A. (2006) Mood state and psychological adjustment to pregnancy. *Archives Of Women's Mental Health*, 9 (6), 329-337.

- Harwood, K., McLean, N. & Durkin, K. (2007) First-time mothers' expectations of parenthood: What happens when optimistic expectations are not matched by later experiences? *Developmental Psychology*, 43 (1), 1-12.
- Hays, S. (1998) *The cultural contraindications of motherhood*. London: Yale University Press.
- Heath, H. & Cowley, S. (2004) Developing a grounded theory approach: A comparison of Glaser and Strauss. *International Journal of Nursing Studies*, 41 (2), 141-150.
- Hedrick, J. (2005) The lived experience of pregnancy while carrying a child with a known, nonlethal congenital abnormality. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 34 (6), 732-740.
- Heidrich, S. M. & Cranley, M. S. (1989) Effect of fetal movement, ultrasound scans, and amniocentesis on maternal-fetal attachment. *Nursing Research*, 38 (2), 81-84.
- Higginbottom, G. M., Safipour, J., Mumtaz, Z., Chiu, Y., Paton, P. & Pillay, J. (2013) "I have to do what I believe": Sudanese women's beliefs and resistance to hegemonic practices at home and during experiences of maternity care in Canada. *BMC Pregnancy and Childbirth*, 13, 51.
- Hilfinger Messias, D. K. & DeJoseph, J. F. (2007) The personal work of a first pregnancy: Transforming identities, relationships, and women's work. *Women & Health*, 45 (4), 41-64.
- Hillier, C. A. & Slade, P. (1989) The impact of antenatal classes on knowledge, anxiety and confidence in primiparous women. *Journal of Reproductive and Infant Psychology*, 7 (1), 3-13.
- Hjelmstedt, A. & Collins, A. (2008) Psychological functioning and predictors of father-infant relationship in IVF fathers and controls. *Scandinavian Journal of Caring Sciences*, 22 (1), 72-78.
- Hjelmstedt, A., Widström, A. & Collins, A. (2006) Psychological correlates of prenatal attachment in women who conceived after in vitro fertilization and women who conceived naturally. *Birth: Issues in Perinatal Care*, 33 (4), 303-310.
- Hjelmstedt, A., Widström, A. & Collins, A. (2007) Prenatal attachment in Swedish IVF fathers and controls. *Journal of Reproductive & Infant Psychology*, 25 (4), 296-307.
- Holloway, I. & Wheeler, S. (2013) *Qualitative research in nursing and healthcare*, 3rd edition. West Sussex: John Wiley & Sons.
- Holton, J. A. (2007) The coding process and its challenges. In Bryant, A. & Charmez, K. (eds) *The SAGE handbook of grounded theory*. London: Sage Publications, 265-289.
- Honjo, S., Arai, S., Kaneko, H., Ujiie, T., Murase, S., Sechiyama, H., Sasaki, Y., Hatagaki, C., Inagaki, E., Usui, M., Miwa, K., Ishihara, M., Hashimoto, O., Nomura, K., Itakura, A. & Inoko, K. (2003) Antenatal depression and maternal-fetal attachment. *Psychopathology*, 36 (6), 304-311.
- Howell, S. (2001) Self-conscious kinship: Some contested values in Norwegian transnational adoption. In Franklon, S. & Mckinnon, S. (eds) *Relative values: Reconfiguring kinship studies*. Durham: Duke University Press, 203-223.
- Howell, S. (2003) Kinning: The creation of life trajectories in transnational adoptive families. *Journal of the Royal Anthropological Institute*, 9 (3), 465-484.
- Howell, S. (2009) Adoption of the unrelated child: Some challenges to the anthropological study of kinship. *Annual Review of Anthropology*, 38 149-166.
- Hróbjartsson, A., Emanuelsson, F., Thomsen, A. S. S., Hilden, J. & Brorson, S. (2014) Bias due to lack of patient blinding in clinical trials. A systematic review of trials randomizing patients to blind and nonblind sub-studies. *International Journal of Epidemiology*, 43 (4), 1272-1283.
- Hsu, T. L. & Chen, C. H. (2001) Stress and maternal-fetal attachment of pregnant women during their third trimester. *The Kaohsiung Journal Of Medical Sciences*, 17 (1), 36-45.
- Huth-Bocks, A. C., Levendosky, A. A., Bogat, G. A. & Von Eye, A. (2004a) The impact of maternal characteristics and contextual variables on infant-mother attachment. *Child Development*, 75 (2), 480-496.

- Huth-Bocks, A. C., Levendosky, A. A., Theran, S. A. & Bogat, G. A. (2004b) The impact of domestic violence on mothers' prenatal representations of their infants. *Infant Mental Health Journal*, 25 (2), 79-98.
- Illouz, E. (2007) *Cold intimacies: The making of emotional capitalism*. Cambridge: Polity Press.
- International Confederation of Midwives (ICM) (2005) *Philosophy and Model of Midwifery Care*. Available online: <https://www.internationalmidwives.org/assets/files/definitions-files/2018/06/eng-philosophy-and-model-of-midwifery-care.pdf> [Accessed: 10/01/21].
- Iphofen, R. (2005) Ethical issues in qualitative health research. In Holloway, I. (ed) *Qualitative research in health care*. Berkshire: Open University Press, 17-35.
- Jackson, R., Ameratunga, S., Broad, J., Connor, J., Lethaby, A., Robb, G., Wells, S., Glasziou, P. & Heneghan, C. (2006) The GATE frame: Critical appraisal with pictures. *Evidence Based Nursing*, 9 (3), 68-71.
- Jamieson, L. (1998) *Intimacy: Personal relationships in modern societies*. Cambridge: Polity Press.
- Jamieson, L. (2011) Intimacy as a concept: Explaining social change in the context of globalisation or another form of ethnocentrism? *Sociological Research Online*, 16 (4), 151-163.
- Jangjoo, S., Lotfi, R., Assareh, M. & Kabir, K. (2019) Effect of counselling on maternal-foetal attachment in unwanted pregnancy: A randomised controlled trial. *Journal of Reproductive and Infant Psychology*, 38 (2), 151-165.
- Jesse, D. E., Walcott-McQuigg, J., Mariella, A. & Swanson, M. S. (2005) Risks and protective factors associated with symptoms of depression in low-income African American and Caucasian women during pregnancy. *Journal of Midwifery & Women's Health*, 50 (5), 405-410.
- Ji, E. K., Pretorius, D. H., Newton, R., Uyan, K., Hull, A. D., Hollenbach, K. & Nelson, T. R. (2005) Effects of ultrasound on maternal-fetal bonding: A comparison of two- and three-dimensional imaging. *Ultrasound in Obstetrics and Gynecology*, 25 (5), 473-477.
- Johnson, S., Burrows, A. & Williamson, I. (2004) 'Does my bump look big in this?': The meaning of bodily changes for first-time mothers-to-be. *Journal of Health Psychology*, 9 (3), 361-374.
- Jomeen, J. (2010) *Choice, control, and contemporary childbirth: Understanding through women's stories*. Oxford: Radcliffe Publishing.
- Jones, J. D., Cassidy, J. & Shaver, P. R. (2015) Adult attachment style and parenting. In Simpson, J. A. & Rholes, W. S. (eds) *Attachment theory and research: New directions and emerging themes*. New York: The Guilford Press, 234-260.
- Jurkane-Hobein, I. (2015) Imagining the absent partner: Intimacy and imagination in long-distance relationships. *Innovative Issues and Approaches in Social Sciences*, 8 (1), 223-241.
- Kaiser, K. (2012) Protecting confidentiality. In Gubrium, J., Holstein, J., Marvasti, A. & McKinney, K. (eds) *The SAGE handbook of interview research: The complexity of the craft*, 2nd edition. London: Sage Publications, 457-465.
- Kao, C.-H. & Long, A. (2004) First-time Taiwanese expectant fathers' life experiences during the third trimester of pregnancy. *Journal of Nursing Research*, 12 (1), 60-65.
- Kimmel, A. J. (1988) Confidentiality and the right to privacy. In Kimmel, A. J. (ed) *Ethics and values in applied social research*. London: Sage Publications, 85-104.
- Kleinveld, J. H., Timmermans, D. R., Berg, M., Eijk, J. T. & Kate, L. P. (2007) Does offering and performing prenatal screening influence women's attachment to their unborn child? A longitudinal randomized controlled trial. *Prenatal Diagnosis*, 27 (8), 757-764.
- Kleinveld, J. H., Timmermans, D. R., de Smit, D. J., J Adér, H., van der Wal, G. & ten Kate, L. P. (2006) Does prenatal screening influence anxiety levels of pregnant women? A longitudinal randomised controlled trial. *Prenatal Diagnosis*, 26 (4), 354-361.
- Kordi, M., Fasanghari, M., Asgharipour, N. & Esmaily, H. (2016) Effect of guided imagery on maternal fetal attachment in nulliparous women with unplanned pregnancy. *Journal of Midwifery and Reproductive Health*, 4 (4), 723-731.

- Krause, K. (2013) *Relationship predictors of prenatal maternal representations of the child and parenting experiences one year after birth*. Unpublished PhD Thesis, Eastern Michigan University.
- Krpan, K. M., Coombs, R., Zinga, D., Steiner, M. & Fleming, A. S. (2005) Experiential and hormonal correlates of maternal behavior in teen and adult mothers. *Hormones and Behavior*, 47 (1), 112-122.
- Kunkel, G. F. & Doan, H. M. (2003) Fetal attachment and depression: Measurement matters. *Journal of Prenatal & Perinatal Psychology & Health*, 18 (2), 149-166.
- LaChance Adams, S. (2014) *Mad mothers, bad mothers, and what a "good" mother would do: The ethics of ambivalence*. New York: Columbia University Press.
- Lai, B. P. Y. & Tang, C. S. K. (2008) The negative impact of maternal bulimic symptoms on parenting behavior. *Journal of Psychosomatic Research*, 65 (2), 181-189.
- Lai, B. P. Y., Tang, C. S. K. & Tse, W. K. L. (2005) Prevalence and psychosocial correlates of disordered eating among Chinese pregnant women in Hong Kong. *Eating Disorders: The Journal of Treatment & Prevention*, 13 (2), 171-186.
- Lalor, J. G., Begley, C. M. & Galavan, E. (2008) A grounded theory study of information preference and coping styles following antenatal diagnosis of foetal abnormality. *Journal of Advanced Nursing*, 64 (2), 185-194.
- Lamb, M. E. (2010) How do fathers influence children's development? Let me count the ways. In Lamb, M. E. (ed) *The role of the father in child development*, 5th edition. New Jersey: John Wiley & Sons, 1-26.
- Lamb, M. E. & Lewis, C. (2010) The development and significance of the father-child relationships in two-parent families. In Lamb, M. E. (ed) *The role of the father in child development*, 5th edition. New Jersey: John Wiley & Sons, 94-153.
- Lapaire, O., Alder, J., Peukert, R., Holzgreve, W. & Tercanli, S. (2007) Two- versus three-dimensional ultrasound in the second and third trimester of pregnancy: Impact on recognition and maternal-fetal bonding. A prospective pilot study. *Archives of Gynecology and Obstetrics*, 276 (5), 475-479.
- Larney, B., Cousens, P. & Nunn, K. P. (1997) Maternal representation reassessed. *Clinical Child Psychology and Psychiatry*, 2 (1), 125-144.
- LaRossa, R., Bennett, L. A. & Gelles, R. J. (1981) Ethical dilemmas in qualitative family research. *Journal of Marriage and the Family*, 43 (2), 303-313.
- Latifses, V., Estroff, D. B., Field, T. & Bush, J. P. (2005) Fathers massaging and relaxing their pregnant wives lowered anxiety and facilitated marital adjustment. *Journal of Bodywork and Movement Therapies*, 9 (4), 277-282.
- Lavi, I., Gard, A. M., Hagan, M., Van Horn, P. & Lieberman, A. F. (2015) Child-parent psychotherapy examined in a perinatal sample: Depression, posttraumatic stress symptoms and child-rearing attitudes. *Journal of Social and Clinical Psychology*, 34 (1), 64-82.
- Lawson, K. L., Robertson-Frey, T. & Turriff-Jonasson, S. (2004) Maternal serum screening and prenatal bonding. *Journal of Reproductive and Infant Psychology*, 22 (3), 235-236.
- Lawson, K. L. & Turriff-Jonasson, S. I. (2006) Maternal serum screening and psychosocial attachment to pregnancy. *Journal Of Psychosomatic Research*, 60 (4), 371-378.
- Laxton-Kane, M. & Slade, P. (2002) The role of maternal prenatal attachment in a woman's experience of pregnancy and implications for the process of care. *Journal of Reproductive and Infant Psychology*, 20 (4), 253-266.
- Lee, M. A., Schoppe-Sullivan, S. J. & Dush, C. M. K. (2012) Parenting perfectionism and parental adjustment. *Personality and Individual differences*, 52 (3), 454-457.
- Legard, R., Keegan, J. & Ward, K. (2003) In-depth interviews. In Ritchie, J. & Lewis, J. (eds) *Qualitative research practice: A guide for social science students and researchers*. London: Sage Publications, 138-169.
- Leifer, M. (1977) Psychological changes accompanying pregnancy and motherhood. *Genetic Psychology Monographs*, 95 (1), 55-96.

- Lewis, J. (2003) Design issues. In Ritchie, J. & Lewis, J. (eds) *Qualitative research practice: A guide for social science students and researchers*. London: Sage Publications, 47-76.
- Lewis, M. W. (2009) The interactional model of maternal-fetal attachment: An empirical analysis. *Journal of Prenatal & Perinatal Psychology & Health*, 23 (1), 49-65.
- Lieberman, A. F. & Van Horn, P. (1998) Attachment, trauma, and domestic violence: Implications for child custody. *Child and Adolescent Psychiatric Clinics of North America*, 7 (2), 423-443.
- Lincoln, Y. S. & Guba, E. G. (1985) *Naturalistic inquiry*. London: Sage Publications.
- Lindgren, K. (2001) Relationships among maternal-fetal attachment, prenatal depression, and health practices in pregnancy. *Research in Nursing & Health*, 24 (3), 203-217.
- Lindgren, K. (2003) A comparison of pregnancy health practices of women in inner-city and small urban communities. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing*, 32 (3), 313-321.
- Lopes, D. R., van Putten, K. & Moormann, P. P. (2015) The impact of parental styles on the development of psychological complaints. *Europe's Journal of Psychology*, 11 (1), 155-168.
- Lorensen, M., Wilson, M. E. & White, M. A. (2004) Norwegian families: Transition to parenthood. *Health Care For Women International*, 25 (4), 334-348.
- Loughnan, S. A., Sie, A., Hobbs, M. J., Joubert, A. E., Smith, J., Haskelberg, H., Mahoney, A. E. J., Kladnitski, N., Holt, C. J., Milgrom, J., Austin, M.-P., Andrews, G. & Newby, J. M. (2019) A randomized controlled trial of 'MUMentum Pregnancy': Internet-delivered cognitive behavioral therapy program for antenatal anxiety and depression. *Journal of Affective Disorders*, 243, 381-390.
- Lumley, J. (1982) Attitudes to the fetus among primigravidae. *Journal of Paediatrics and Child Health*, 18 (2), 106-109.
- Lyons-Ruth, K. & Spielman, E. (2004) Disorganized infant attachment strategies and helpless-fearful profiles of parenting: Integrating attachment research with clinical intervention. *Infant Mental Health Journal*, 25 (4), 318-335.
- Maas, A. J. B. M., Vreeswijk, C. M. J. M., Braeken, J., Vingerhoets, A. J. J. M. & van Bakel, H. J. A. (2014) Determinants of maternal fetal attachment in women from a community-based sample. *Journal of Reproductive and Infant Psychology*, 32 (1), 5-24.
- Madigan, S., Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., Moran, G., Pederson, D. R. & Benoit, D. (2006) Unresolved states of mind, anomalous parental behavior, and disorganized attachment: A review and meta-analysis of a transmission gap. *Attachment & Human development*, 8 (2), 89-111.
- Magee, S. R., Bublitz, M. H., Orazine, C., Brush, B., Salisbury, A., Niaura, R. & Stroud, L. R. (2014) The relationship between maternal-fetal attachment and cigarette smoking over pregnancy. *Maternal and Child Health Journal*, 18 (4), 1017-1022.
- Malone, J. C., Levendosky, A. A., Dayton, C. J. & Bogat, G. A. (2010) Understanding the 'ghosts in the nursery' of pregnant women experiencing domestic violence: Prenatal maternal representations and histories of childhood maltreatment. *Infant Mental Health Journal*, 31 (4), 432-454.
- Manfredi, C., Caselli, G., Rovetto, F., Rebecchi, D., Ruggiero, G. M., Sassaroli, S. & Spada, M. M. (2011) Temperament and parental styles as predictors of ruminative brooding and worry. *Personality and Individual Differences*, 50 (2), 186-191.
- Martin, C. R. & Redshaw, M. (2010) Psychological well-being in pregnancy: Food for thought? *Journal of Reproductive and Infant Psychology*, 28 (4), 325-327.
- Mason, J. (2005) Semistructured Interview. In Lewis-Beck, M. S., Bryman, A. & Futing Liao, T. (eds) *The SAGE encyclopedia of social science research methods*. London: Sage Publications, 1021-1022.
- Mason, M. (2010) Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 11 (3), 1-19.

- Maxwell, J. A. (2006) *Qualitative research design: An interactive approach*, 2nd edition. London: SAGE.
- McCallin, A. M. (2003) Grappling with the literature in a grounded theory study. *Contemporary Nurse*, 15 (12), 61-69.
- McCann, T. V. & Clark, E. (2004) Grounded theory in nursing research: Part 1 - methodology. *Nurse Researcher*, 11 (2), 7-18.
- McCaslin, M. L. (2008) Pragmatism. In Given, L. M. (ed) *The SAGE encyclopedia of qualitative research methods*. London: Sage Publications, 672-676.
- McCormick, C. B. & Kennedy, J. H. (1994) Parent-child attachment working models and self-esteem in adolescence. *Journal of Youth and Adolescence*, 23 (1), 1-18.
- McFarland, J., Salisbury, A., Battle, C., Hawes, K., Halloran, K. & Lester, B. (2011) Major depressive disorder during pregnancy and emotional attachment to the fetus. *Archives of Women's Mental Health*, 14 (5), 425-434.
- McGhee, G., Marland, G. R. & Atkinson, J. (2007) Grounded theory research: Literature reviewing and reflexivity. *Journal of Advanced Nursing*, 60 (3), 334-342.
- McKee, M. D., Cunningham, M., Jankowski, K. R. & Zayas, L. (2001) Health-related functional status in pregnancy: Relationship to depression and social support in a multi-ethnic population. *Obstetrics & Gynecology*, 97 (6), 988-993.
- McMahon, C., Camberis, A. L., Berry, S. & Gibson, F. (2016) Maternal mind-mindedness: Relations with maternal-fetal attachment and stability in the first two years of life: Findings from an Australian prospective study. *Infant Mental Health Journal*, 37 (1), 17-28.
- Meleis, A. I., Sawyer, L. M., Im, E.-O., Messias, D. K. H. & Schumacher, K. (2000) Experiencing transitions: An emerging middle-range theory. *Advances in Nursing Science*, 23 (1), 12-28.
- Mercer, R. T. (2004) Becoming a mother versus maternal role attainment. *Journal of Nursing Scholarship*, 36 (3), 226-232.
- Mercer, R. T., Kay, M. & Tomlinson, P. S. (1986) Predictors of maternal role attainment at one year postbirth. *Western Journal of Nursing Research*, 8 (1), 9-32.
- Merriam, S. B. (2009) *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass.
- Mikulincer, M. & Shaver, P. R. (2008) Adult attachment and affect regulation. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research, and clinical applications*, 2nd edition. New York: The Guilford Press, 503-531.
- Miller, T. (2011) Falling back into gender? Men's narratives and practices around first-time fatherhood. *Sociology*, 45 (6), 1094-1109.
- Mills, J., Bonner, A. & Francis, K. (2006) Adopting a constructivist approach to grounded theory: Implications for research design. *International Journal of Nursing Practice*, 12 (1), 8-13.
- Modh, C., Lundgren, I. & Bergbom, I. (2011) First time pregnant women's experiences in early pregnancy. *International Journal of Qualitative Studies on Health and Well-being*, 6 (2), 1-11.
- Moher, D., Liberati, A., Tetzlaff, J. & Altman, D. G. (2009) Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*, 151 (4), 264-269.
- Moher D., Hopewell S., Schulz K.F., Montori V., Gøtzsche P.C., Devereaux P.J., Elbourne, D., Egger, M. & Altman, D. G. (2010) CONSORT 2010 explanation and elaboration: Updated guidelines for reporting parallel group randomised trials. *BMJ*, 340, c869.
- Morgan, D. H. J. (2013) *Rethinking Family Practices*. Hampshire: Palgrave Macmillan.
- Morse, J. M. & Field, P. A. (1995) *Qualitative research methods for health professionals*, 2nd edition. London: Sage Publications.
- Moss, B. F. & Schwebel, A. I. (1993) Defining intimacy in romantic relationships. *Family relations*, 31-37.

- Müller, M. E. (1990) *The development and testing of the Muller Prenatal Attachment Inventory*. Doctoral dissertation, University of California.
- Müller, M. E. (1993) Development of the Prenatal Attachment Inventory. *Western Journal of Nursing Research*, 15 (2), 199-215.
- Müller, M. E. & Ferketich, S. (1992) Assessing the validity of the dimensions of prenatal attachment. *Maternal-Child Nursing Journal*, 20 (1), 1-10.
- Murdock, G. P. (1949) *Social Structure*. The Macmillan Co.
- Murray, L., Cooper, P. & Fearon, P. (2014) Parenting difficulties and postnatal depression: Implications for primary healthcare assessment and intervention. *Community Practitioner*, 87 (11), 34-38.
- Muzik, M., Hamilton, S. E., Lisa Rosenblum, K., Waxler, E. & Hadi, Z. (2012) Mindfulness yoga during pregnancy for psychiatrically at-risk women: Preliminary results from a pilot feasibility study. *Complementary Therapies in Clinical Practice*, 18 (4), 235-240.
- National Institute for Health and Care Excellence (NICE) (2012) *Methods for the development of NICE public health guidance [PMG4]*. Available online: <https://www.nice.org.uk/article/pmg4/resources/non-guidance-methods-for-the-development-of-nice-public-health-guidance-third-edition-pdf>.
- National Statistics Office (NSO) (2019) Key Figures for Malta - Visuals and Words. Malta: National Statistics Office.
- Neuman, W. L. (2005) *Social research methods: Quantitative and qualitative approaches*, 5th edition. Boston: Allyn and Bacon.
- Newham, J. & Alderdice, F. (2017) If gender matters in maternity care, does it matter in maternity care research? *Journal of Reproductive and Infant Psychology*, 35 (3), 209-211.
- Nichols, M. R., Roux, G. M. & Harris, N. R. (2007) Primigravid and multigravid women: Prenatal perspectives. *Journal of Perinatal Education*, 16 (2), 21-32.
- Nishikawa, M. & Sakakibara, H. (2013) Effect of nursing intervention program using abdominal palpation of Leopold's maneuvers on maternal-fetal attachment. *Reproductive Health*, 10 (1), 1-7.
- Nosrati, A., Mirzakhani, K., Golmakani, N., Esmaeily, H. & Nekah, S. M. A. (2019) The effect of expectant fathers' training on paternal-fetal attachment. *Journal of Midwifery & Reproductive Health*, 7 (2), 1594-1601.
- NVivo (2014) Qualitative data analysis software. QSR International Pty Ltd.
- Ohman, S. G. & Waldenstrom, U. (2010) Effect of first-trimester ultrasound screening for Down Syndrome on maternal-fetal attachment: A randomized controlled trial. *Sexual & Reproductive Healthcare*, 1 (3), 85-90.
- Oppenheim, D. & Koren-Karie, N. (2002) Mothers' insightfulness regarding their children's internal worlds: The capacity underlying secure child-mother relationships. *Infant Mental Health Journal*, 23 (6), 593-605.
- Ossa, X., Bustos, L. & Fernandez, L. (2012) Prenatal attachment and associated factors during the third trimester of pregnancy in Temuco, Chile. *Midwifery*, 28 (5), e689-e696.
- Pallant, J. F., Haines, H. M., Hildingsson, I., Cross, M. & Rubertsson, C. (2014) Psychometric evaluation and refinement of the Prenatal Attachment Inventory. *Journal of Reproductive and Infant Psychology*, 32 (2), 112-125.
- Parahoo, K. (2014) *Nursing research: Principles, process and issues*, 3rd edition. Hampshire: Palgrave Macmillan.
- Parke, R. D. (2000) Factors associated with fathers' caregiving activities and sensitivity with young children. *Journal of Family Psychology*, 14 (2), 200-219.
- Parkin, D. & Stone, L. (2004) *Kinship and family: An anthropological reader*. Malden, USA: Wiley-Blackwell.
- Perälä-Littunen, S. (2004) *Cultural images of a good mother and a good father in three generations*. University of Jyväskylä.

- Persico, G., Antolini, L., Vergani, P., Costantini, W., Nardi, M. T. & Bellotti, L. (2017) Maternal singing of lullabies during pregnancy and after birth: Effects on mother–infant bonding and on newborns' behaviour. Concurrent cohort study. *Women and Birth*, 30 e217-e220.
- Peterson, G. W. & Steinmetz, S. K. (2000) The diversity of fatherhood: Change, constancy, and contradiction. *Marriage & Family Review*, 29 (4), 315-322.
- Pope, C. & Mays, N. (2006) *Qualitative research in health care*, 3rd edition. West Sussex: John Wiley & Sons.
- Popper, K. (2005) *The logic of scientific discovery*. London: Routledge.
- Pretorius, D. H., Gattu, S., Ji, E. K., Hollenbach, K., Newton, R., Hull, A., Carmona, S., D'Agostini, D. & Nelson, T. R. (2006) Preexamination and postexamination assessment of parental-fetal bonding in patients undergoing 3-/4-dimensional obstetric ultrasonography. *Journal of Ultrasound in Medicine*, 25 (11), 1411-1421.
- Priel, B. & Besser, A. (2000) Adult attachment styles, early relationships, antenatal attachment, and perceptions of infant temperament: A study of first-time mothers. *Personal Relationships*, 7 (3), 291-310.
- Priel, B. & Besser, A. (2001) Bridging the gap between attachment and object relations theories: A study of the transition to motherhood. *British Journal of Medical Psychology*, 74, 85-100.
- Raphael-Leff, J. (2005) *Psychological processes of childbearing*. London: The Anna Freud Centre.
- Ratner, C. (2002) Subjectivity and objectivity in qualitative methodology. *Forum: Qualitative Social Research*, 3 (3), Art. 16.
- Reading, A. E., Cox, D. N., Sledmere, C. M. & Campbell, S. (1984) Psychological changes over the course of pregnancy: A study of attitudes toward the fetus/neonate. *Health Psychology*, 3 (3), 211-221.
- Redshaw, M. & Martin, C. (2013) Babies, 'bonding' and ideas about parental 'attachment'. *Journal of Reproductive and Infant Psychology*, 31 (3), 219-221.
- Rees, C. (2011) *An introduction to research for midwives*, 3rd edition. Elsevier Health Sciences.
- Righetti, P. L., Dell'Avanzo, M., Grigio, M. & Nicolini, U. (2005) Maternal/paternal antenatal attachment and fourth-dimensional ultrasound technique: A preliminary report. *British Journal of Psychology* 96 (Pt 1), 129-137.
- Rincy, K. & Nalini, S. J. (2014) Effect of fetal movement counting on prenatal attachment and maternal worries among primigravidae. *Asian Journal of Nursing Education & Research*, 4 (2), 224-227.
- Ross, E. (2012) Maternal-fetal attachment and engagement with antenatal advice. *British Journal of Midwifery*, 20 (8), 566-575.
- Rothman, B. K. (1986) *The tentative pregnancy*. New York: Viking Penguin.
- Rowe, H., Fisher, J. & Quinlivan, J. (2009) Women who are well informed about prenatal genetic screening delay emotional attachment to their fetus. *Journal Of Psychosomatic Obstetrics And Gynaecology*, 30 (1), 34-41.
- Rubin, R. (1967a) Attainment of the maternal role. Part 2: Models and referents. *Nursing Research*, 16 (4), 342-346.
- Rubin, R. (1967b) Attainment of the maternal role. Part I: Processes. *Nursing Research*, 16 (3), 237-245.
- Rubin, R. (1976) Maternal tasks in pregnancy. *Journal of Advanced Nursing*, 1 (5), 367-376.
- Rubin, R. (1984) *Maternal identity and the maternal experience*. New York: Springer.
- Ruschel, P., Zielinsky, P., Grings, C., Pimentel, J., Azevedo, L., Paniagua, R. & Nicoloso, L. H. (2014) Maternal-fetal attachment and prenatal diagnosis of heart disease. *European Journal Of Obstetrics, Gynecology, And Reproductive Biology*, 174, 70-75.
- Rustico, M. A., Mastromatteo, C., Grigio, M., Maggioni, C., Gregori, D. & Nicolini, U. (2005) Two-dimensional vs. two- plus four-dimensional ultrasound in pregnancy and the effect on maternal emotional status: A randomized study. *Ultrasound In Obstetrics & Gynecology*, 25 (5), 468-472.

- Saastad, E., Israel, P., Ahlborg, T., Gunnes, N. & Frøen, J. F. (2011) Fetal movement counting - effects on maternal-fetal attachment: A multicenter randomized controlled trial. *Birth: Issues in Perinatal Care*, 38 (4), 282-293.
- Sahlins, M. (2011) What kinship is (part one). *Journal of the Royal Anthropological Institute*, 17 (1), 2-19.
- Salehi, K., Salehi, Z. & Shaali, M. (2017) The effect of education of fetal movement counting on maternal-fetal attachment in the pregnant women: A randomized controlled clinical trial. *International Journal of Pediatrics*, 5 (4), 4699-4706.
- Sandbrook, S. (2009) *Love or protection? Defining and measuring maternal-fetal attachment from the woman's perspective*. Unpublished PhD thesis, University of Wolverhampton.
- Sandbrook, S. P. & Adamson-Macedo, E. N. (2004) Maternal-fetal attachment: Searching for a new definition. *Neuroendocrinology Letters*, 25 (Suppl 1), 169-182.
- Scherer, S., Urech, C., Hösl, I., Tschudin, S., Gaab, J., Berger, T. & Alder, J. (2014) Internet-based stress management for women with preterm labour: A case-based experience report. *Archives of Women's Mental Health*, 17 (6), 593-600.
- Schneider, D. M. (1980) *American kinship: A cultural account*, 2nd edition. Chicago: The University of Chicago Press.
- Schneider, Z. (2002) An Australian study of women's experiences of their first pregnancy. *Midwifery*, 18 (3), 238-249.
- Scott, J. (2014) *Oxford dictionary of sociology*, 4th edition. Oxford: Oxford University Press.
- Sedgmen, B., McMahon, C., Cairns, D., Benzie, R. J. & Woodfield, R. L. (2006) The impact of two-dimensional versus three-dimensional ultrasound exposure on maternal-fetal attachment and maternal health behavior in pregnancy. *Ultrasound in Obstetrics & Gynecology*, 27 (3), 245-251.
- Seimyr, L., Sjögren, B., Welles-Nyström, B. & Nissen, E. (2009) Antenatal maternal depressive mood and parental-fetal attachment at the end of pregnancy. *Archives of Women's Mental Health*, 12 (5), 269-279.
- Setodeh, S., Pourahmad, S. & Akbarzadeh, M. (2017) A study of the efficacy of fathers' attachment training on paternal-fetal attachment and parental anxiety. *Family Medicine & Primary Care Review*, 19 (4), 393-398.
- Seymour, J., Dix, G. & Eardley, T. (1995) *Joint accounts: Methodology and practice in research interviews with couples*. York: Social Policy Research Unit, University of York.
- Shaho, R. (2010) Kurdish women's experiences and perceptions of their first pregnancy. *British Journal of Midwifery*, 18 (10), 650-657.
- Shahoei, R., Riji, H. M. & Saeedi, Z. A. (2011) Kurdish pregnant women's feelings: A qualitative study. *Midwifery*, 27 (2), 215-220.
- Shaver, P. R. & Fraley, R. C. (2008) Attachment, loss, and grief: Bowlby's views and current controversies. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research, and clinical applications*, 2nd edition. New York: The Guilford Press, 48-77.
- Shieh, C. & Kravitz, M. (2002) Maternal-fetal attachment in pregnant women who use illicit drugs. *JOGNN: Journal Of Obstetric, Gynecologic, And Neonatal Nursing*, 31 (2), 156-164.
- Shieh, C., Kravitz, M. & Wang, H. H. (2001) What do we know about maternal-fetal attachment? *The Kaohsiung Journal Of Medical Sciences*, 17 (9), 448-454.
- Shin, H. S. & Kim, J. H. (2011) Music therapy on anxiety, stress and maternal-fetal attachment in pregnant women during transvaginal ultrasound. *Asian Nursing Research*, 5 (1), 19-27.
- Shreffler, K. M., Tiemeyer, S., Ciciolla, L. & Croff, J. M. (2019) Effect of a mindfulness-based pilot intervention on maternal-fetal bonding. *International Journal of Women's Health*, 11 377-380.
- Siddiqui, A. & Hagglof, B. (2000) Does maternal prenatal attachment predict postnatal mother-infant interaction? *Early Human Development*, 59 (1), 13-25.
- Siddiqui, A., Hagglof, B. & Eisemann, M. (1999) An exploration of prenatal attachment in Swedish expectant women. *Journal of Reproductive and Infant Psychology*, 17 (4), 369-380.

- Siddiqui, A., Hagglof, B. & Eisemann, M. (2000) Own memories of upbringing as a determinant of prenatal attachment in expectant women. *Journal of Reproductive & Infant Psychology*, 18 (1), 67-74.
- Simmons, B. L., Gooty, J., Nelson, D. L. & Little, L. M. (2009) Secure attachment: Implications for hope, trust, burnout, and performance. *Journal of Organizational Behavior*, 30 (2), 233-247.
- Sjögren, B., Edman, G., Widsdröm, A. M., Mathiesen, A. S. & Uvnäs-Moberg, K. (2004) Maternal foetal attachment and personality during first pregnancy. *Journal of Reproductive and Infant Psychology*, 22 (2), 57-69.
- Slade, A., Belsky, J., Aber, J. L. & Phelps, J. L. (1999) Mothers' representations of their relationships with their toddlers: Links to adult attachment and observed mothering. *Developmental Psychology*, 35 (3), 611-619.
- Slade, A. & Cohen, L. J. (1996) The process of parenting and the remembrance of things past. *Infant Mental Health Journal*, 17 (3), 217-238.
- Slade, A., Grienenberger, J., Bernbach, E., Levy, D. & Locker, A. (2005) Maternal reflective functioning, attachment, and the transmission gap: A preliminary study. *Attachment & Human Development*, 7 (3), 283-298.
- Snape, D. & Spencer, L. (2003) The foundations of qualitative research. In Ritchie, J. & Lewis, J. (eds) *Qualitative research practice: A guide for social science students and researchers*. London: Sage Publications 1-26.
- Solmeyer, A. R. & Feinberg, M. E. (2011) Mother and father adjustment during early parenthood: The roles of infant temperament and coparenting relationship quality. *Infant Behavior & Development*, 34 (4), 504-514.
- Solomon, J. & George, C. (1996) Defining the caregiving system: Toward a theory of caregiving. *Infant Mental Health Journal*, 17 (3), 183-197.
- Spinelli, M. G., Endicott, J., Leon, A. C., Goetz, R. R., Kalish, R. B., Brustman, L. E., Carmona, Y. R., Meyreles, Q., Vega, M. & Schulick, J. L. (2013) A controlled clinical treatment trial of interpersonal psychotherapy for depressed pregnant women at 3 New York City sites. *The Journal Of Clinical Psychiatry*, 74 (4), 393-399.
- Starks, H. & Trinidad, S. B. (2007) Choose your method: A comparison of Phenomenology, Discourse Analysis, and Grounded Theory. *Qualitative Health Research*, 17 (10), 1372-1380.
- Stevenson-Hinde, J. (1994) An ethological perspective. *Psychological inquiry*, 5 (1), 62-65.
- Strathearn, L., Fonagy, P., Amico, J. & Montague, P. R. (2009) Adult attachment predicts maternal brain and oxytocin response to infant cues. *Neuropsychopharmacology*, 34 (13), 2655-2666.
- Strauss, A. & Corbin, J. (1990) *Basics of qualitative research: Grounded theory procedures and techniques*. London: Sage Publications.
- Strauss, A. & Corbin, J. M. (1998) *Basics of qualitative research: Grounded theory procedures and techniques*, 2nd edition. London: Sage Publications.
- Strauss, A. L. (1987) *Qualitative analysis for social scientists*. New York: Cambridge University Press.
- Streubert, H. J. & Carpenter, D. R. (2011) *Qualitative research in nursing: Advancing the humanistic imperative*, 5th edition. Philadelphia: Lippincott Williams & Wilkins.
- Styvén, M. E. (2010) The need to touch: Exploring the link between music involvement and tangibility preference. *Journal of Business Research*, 63 (9-10), 1088-1094.
- Swain, M. (2005) *Kinship structure of the Saora*. Unpublished PhD thesis, Utkal University.
- Taylor, S. J., Bogdan, R. & DeVault, M. (2016) *Introduction to qualitative research methods: A guidebook and resource*, 4th edition. New Jersey: John Wiley & Sons.
- Teddie, C. & Tashakkori, A. (2009) *Foundations of mixed method research*. London: Sage Publications.

- Telfer, J. (1999) Individual but incomplete: Adoption, identity and the quest for the wholeness. In Rygvold, A. L., Dalen, M. & Sætersdal, B. (eds) *Mine—yours—theirs: Adoption, changing kinship and family patterns*. Oslo: University of Oslo, 247-265.
- Temple, B., Edwards, R. & Alexander, C. (2006) Grasping at context: Cross language qualitative research as secondary qualitative data analysis. *Journal*, 7 (4),
- Theran, S. A., Levendosky, A. A., Anne Bogat, G. & Huth-Bocks, A. C. (2005) Stability and change in mothers' internal representations of their infants over time. *Attachment & Human Development*, 7 (3), 253-268.
- Thomas, N., Komiti, A. & Judd, F. (2014) Pilot early intervention antenatal group program for pregnant women with anxiety and depression. *Archives Of Women's Mental Health*, 17 (6), 503-509.
- Toosi, M., Akbarzadeh, M. & Ghaemi, Z. (2017) The effect of relaxation on mother's anxiety and maternal–fetal attachment in primiparous IVF mothers. *Journal of the National Medical Association*, 109 (3), 164-171.
- Tracy, S. J. (2010) Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative inquiry*, 16 (10), 837-851.
- Tracy, S. J. (2013) *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. New Jersey: John Wiley & Sons.
- Treboux, D., Crowell, J. A. & Waters, E. (2004) When "new" meets "old": Configurations of adult attachment representations and their implications for marital functioning. *Developmental Psychology*, 40 (2), 295-314.
- Tuli, F. (2011) The basis of distinction between qualitative and quantitative research in social science: Reflection on ontological, epistemological and methodological perspectives. *Ethiopian Journal of Education and Sciences*, 6 (1), 97-108.
- Udry-Jørgensen, L., Darwiche, J., Germond, M., Wunder, D. & Vial, Y. (2015) Anxiety, depression, and attachment before and after the first-trimester screening for Down syndrome: Comparing couples who undergo ART with those who conceive spontaneously. *Prenatal Diagnosis*, 35 (13), 1287-1293.
- Ulin, P. R., Robinson, E. T. & Tolley, E. E. (2005) *Qualitative methods in public health: A field guide for applied research*. San Francisco: Jossey-Bass.
- Urquhart, C. (2007) The evolving nature of grounded theory method: The case of the information systems discipline. In Bryant, A. & Charmaz, K. (eds) *The SAGE handbook of grounded theory*. London: Sage Publications, 339-360.
- Ustunsoz, A., Guvenc, G., Akyuz, A. & Oflaz, F. (2010) Comparison of maternal-and paternal-fetal attachment in Turkish couples. *Midwifery*, 26 (2), e1-e9.
- Valentine, G. (1999) Doing household research: Interviewing couples together and apart. *Area*, 31 (1), 67-74.
- van Bakel, H. J. A., Maas, A. J. B. M., Vreeswijk, C. M. J. M. & Vingerhoets, A. J. J. M. (2013) Pictorial representation of attachment: Measuring the parent-fetus relationship in expectant mothers and fathers. *BMC Pregnancy And Childbirth*, 13 (138), 1-9.
- van Bussel, J. C. H., Spitz, B. & Demyttenaere, K. (2010) Reliability and validity of the Dutch version of the Maternal Antenatal Attachment Scale. *Archives of Women's Mental Health*, 13 (3), 267-277.
- Van den Bergh, B. & Simons, A. (2009) A review of scales to measure the mother-foetus relationship. *Journal of Reproductive and Infant Psychology*, 27 (2), 114-126.
- Van den Bergh, B. R., Mulder, E. J., Mennes, M. & Glover, V. (2005) Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: Links and possible mechanisms. A review. *Neuroscience & Biobehavioral Reviews*, 29 (2), 237-258.
- van Ijzendoorn, M. (1995) Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117 (3), 387-403.
- van Ijzendoorn, M. H. & Sagi-Schwartz, A. (2008) Cross-cultural patterns of attachment: Universal and contextual dimensions. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of*

- attachment: Theory, research, and clinical applications*, 2nd edition. New York: The Guilford Press, 880-905.
- Venuti, L. (1998) *The scandals of translation: Towards an ethics of difference*. London: Routledge.
- Vizziello, G. F., Antonioli, M. E., Cocci, V. & Invernizzi, R. (1993) From pregnancy to motherhood: The structure of representative and narrative change. *Infant Mental Health Journal*, 14 (1), 1-16.
- Vogt, W. P. & Johnson, R. B. (2005) *Dictionary of statistics & methodology: A nontechnical guide for the social sciences*, 4th edition. London: Sage Publications.
- Vreeswijk, C. M. J. M. (2014) *From pregnancy to parenthood: Father's and mother's representations of their (unborn) infants*. Ridderkerk: Ridderprint.
- Vreeswijk, C. M. J. M., Maas, A. J. B. M., Rijk, C. H. A. M. & van Bakel, H. J. A. (2014) Fathers' experiences during pregnancy: Paternal prenatal attachment and representations of the fetus. *Psychology of Men & Masculinity*, 15 (2), 129-137.
- Wadephul, F. (2013) *3D ultrasound in pregnancy: Discourses, women's experiences and psychological understanding*. Unpublished PhD thesis, University of Hull.
- Walls, P., Parahoo, K. & Fleming, P. (2010) The role and place of knowledge and literature in grounded theory. *Nurse Researcher*, 17 (4), 8-17.
- Walsh, J. (2010) Definitions matter: If maternal-fetal relationships are not attachment, what are they? *Archives Of Women's Mental Health*, 13 (5), 449-451.
- Walsh, J., Hepper, E. G., Bagge, S. R., Wadephul, F. & Jomeen, J. (2013) Maternal-fetal relationships and psychological health: Emerging research directions. *Journal of Reproductive and Infant Psychology*, 31 (5), 490-499.
- Walsh, J., Hepper, E. G. & Marshall, B. J. (2014) Investigating attachment, caregiving, and mental health: A model of maternal-fetal relationships. *BMC Pregnancy and Childbirth*, 14 (383), 1-9.
- Warren, S. & Brewis, J. (2004) Matter over mind? Examining the experience of pregnancy. *Sociology*, 38 (2), 219-236.
- Wartolowska, K., Beard, D. & Carr, A. (2018) Blinding in trials of interventional procedures is possible and worthwhile (version 2). *F1000Research*, 6 (1663), 1-16.
- Weaver, R. H. & Cranley, M. S. (1983) An exploration of paternal-fetal attachment behavior. *Nursing Research*, 32 (2), 68-72.
- Weinfeld, N. S., Sroufe, L. A., Egeland, B. & Carlson, E. (2008) Individual differences in infant-caregiver attachment: Conceptual and empirical aspects of security. In Cassidy, J. & Shaver, P. R. (eds) *Handbook of attachment: Theory, research, and clinical applications*. New York: The Guilford Press, 78-101.
- Weis, K. L. & Ryan, T. W. (2012) Mentors offering maternal support: A support intervention for military mothers. *JOGNN: Journal Of Obstetric, Gynecologic, And Neonatal Nursing*, 41 (2), 303-314.
- Westdahl, C., Milan, S., Magriples, U., Kershaw, T. S., Rising, S. S. & Ickovics, J. R. (2007) Social support and social conflict as predictors of prenatal depression. *Obstetrics and Gynecology*, 110 (1), 134-140.
- White, O., McCorry, N., Scott-Heyes, G., Dempster, M. & Manderson, J. (2008) Maternal appraisals of risk, coping and prenatal attachment among women hospitalised with pregnancy complications. *Journal of Reproductive and Infant Psychology*, 26 (2), 74-85.
- Widarsson, M., Engström, G., Tydén, T., Lundberg, P. & Hammar, L. M. (2015) 'Paddling upstream': Fathers' involvement during pregnancy as described by expectant fathers and mothers. *Journal of Clinical Nursing*, 24 (7-8), 1059-1068.
- Wiles, R. (2013) *What are qualitative research ethics?* London: Bloomsbury Publishing.
- Williams, A. (2001) A literature review on the concept of intimacy in nursing. *Journal of Advanced Nursing*, 33 (5), 660-667.

- Wilson, M. E., White, M. A., Cobb, B., Curry, R., Greene, D. & Popovich, D. (2000) Family dynamics, parental-fetal attachment and infant temperament. *Journal of Advanced Nursing*, 31 (1), 204-210.
- Wu, W. R. & Hung, C. H. (2019) Impact of a peer virtual community on pregnant women's well-being: A repeated-measure and quasi-experimental study. *Journal of Advanced Nursing*, 75 (5), 1099-1107.
- Yarcheski, A., Mahon, N. E., Yarcheski, T. J., Hanks, M. M. & Cannella, B. L. (2009) A meta-analytic study of predictors of maternal-fetal attachment. *International Journal Of Nursing Studies*, 46 (5), 708-715.
- Yuan, L., Gu, Z., Peng, H. & Zhao, L. (2018) A paternal-fetal attachment pilot intervention on mental health for pregnant mothers. *NeuroQuantology*, 16 (1), 71-76.
- Zachariah, R. (1994) Maternal-fetal attachment: Influence of mother-daughter and husband-wife relationships. *Research in Nursing & Health*, 17 (1), 37-44.
- Zachariah, R. (2004) Attachment, social support, life stress, and psychological well-being in pregnant low-income women: A pilot study. *Clinical Excellence for Nurse Practitioners*, 8 (2), 60-67.
- Zachariah, R. (2009) Social support, life stress, and anxiety as predictors of pregnancy complications in low-income women. *Research in Nursing & Health*, 32 (4), 391-404.
- Zechmeister, I. (2001) Foetal images: The power of visual technology in antenatal care and the implications for women's reproductive freedom. *Health Care Analysis*, 9 (4), 387-400.
- Zipp, J. F. & Toth, J. (2002) She said, he said, they said: The impact of spousal presence in survey research. *Public Opinion Quarterly*, 66 (2), 177-208.

Appendix A - Completed example of 'Graphical Appraisal Tool for Epidemiological Studies (GATE)' used in the narrative literature review

Quality Appraisal of Intervention Studies¹ ++ = good, + = mixed, - = poor, nr = not reported, na = not applicable Cells are colour-coded to demonstrate the relationship with the summary questions below.		
Study identification (include full citation details)	Shin, H. S. & Kim, J. H. (2011) Music therapy on anxiety, stress and maternal-fetal attachment in pregnant women during transvaginal ultrasound.	
Study design:	Before and After Study	
Evaluation criteria	Quality ++ +- nr na	Guidance topic: NA Assessed by: Nicole Borg Cunen
Section 1: Population		
Population	1.1 Is the source population or source area well described?	- The source population and area are not well described.
	1.2 Is the eligible population or area representative of the source population or area?	+ This is difficult to determine given that the source is not well described. However recruitment from a large general hospital gives a degree of confidence.
	1.3 Do the selected participants or areas represent the eligible population or area?	+ Sampling method is not described and recruitment rate is not specified, However the eligibility criteria are defined and appropriate.
Section 2: Method of allocation to intervention (or comparison)		
Intervention (& Comparison)	2.1 Allocation to intervention (or comparison). How was selection bias minimised?	- Non-random allocation to groups. Likely to have confounded results, particularly as groups were not concurrent.
	2.2 Were interventions (and comparisons) well described and appropriate?	+ Intervention relatively well described, but comparison care was not.
	2.3 Was the allocation concealed?	+ Allocation was not concealed. It is unclear whether the person determining allocation could have influenced results.
	2.4 Were participants and/or investigators blind to exposure and comparison?	+ Blinding of participants or sonographer was not possible - The sonographer may have unwittingly provided differing care to those in the intervention group. Participants were unaware of the study design and of the group that they had been assigned to.
	2.5 Was the exposure to intervention and comparison adequate?	+ Although this aspect of the study is not reported, given the nature of the intervention, it is not expected that there was reduced exposure in either group.
	2.6 Was contamination acceptably low?	++ The paper does not report any contamination.
	2.7 Were the other interventions similar in both groups?	++ As far as is reported the two groups appear to have received similar care apart from the intervention.
	2.8 Were all participants accounted for at study conclusion?	++ High completion rate (97.1%). There appears to have been similar number of dropouts between groups.
	2.10 Did the setting reflect usual UK practice?	NA
	2.11 Did the intervention or control comparison reflect usual practice?	NA
	Section 3: Outcomes	
Outcomes	3.1 Were outcome measures reliable?	+ Self-report questionnaire that had been translated into Korean, had already been used in other research, with adequate Cronbach alpha.
	3.2 Were all outcome measurement complete?	+ Participants who did not complete the questionnaire were excluded from the study. There is no report of missing questionnaire items.
	3.3 Were all important outcomes assessed?	++ The outcomes assessed were adequate to meet the stated aim, and allow the reader to assess the benefits/risks of the intervention.
	3.4 Were outcomes relevant?	+ Although more objective measures e.g. saliva samples could have been used on some measures, the self-report tools used measured the variables of interest, albeit with a risk of social desirability bias.
Time	3.5 Were there similar follow-up times in exposure and comparison groups?	++ Yes, the follow-up was of the same length for both groups.
	3.6 Was follow-up time meaningful?	- No, the outcome was assessed immediately after the intervention.
Section 4: Analyses		
Results	4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++ Demographic variables were similar at baseline, as were baseline scores on all measures.
	4.2 Was intention to treat (ITT) analysis conducted?	+ There is no mention of ITT analysis. However since there were very few drop-outs (not included in analysis) this is unlikely to have had a significant effect on results.
	4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	++ Power analysis performed and sample size was adequate.
	4.4 Were the estimates of effect size given or calculable?	+ Effect size is not given, but there were no significant differences between groups for the outcome of interest, meaning that there is not strong evidence that the intervention had an effect. Confidence intervals are also omitted.
	4.5 Were the analytical methods appropriate?	+ The use of an independent t-test and a chi-squared test seem to be appropriate. However it is unclear why an independent t-test (and not a paired t-test) was used to compare pre- and post- test results.
	4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+ No. There were no significant differences between groups for the outcome of interest.
Section 5: Summary		
Summary	5.1 Are the study results internally valid (i.e unbiased)?	+ Overall the study appeared to have mixed internal validity, with the biggest concerns relating to a lack of blinding of sonographers. non-
	5.2 Are the findings generalisable to the source population (i.e externally valid)?	- External validity is overall poor with the biggest concerns relating to a failure to specify sampling method and recruitment rate, and a lack of follow-up.

¹Appraisal form derived from 'The GATE frame: critical appraisal with pictures' by Jackson, R. et al., Evid Based Med. 2006 Apr;11(2)

Appendix B – Supplementary tables detailing papers included in the narrative literature review

Ultrasound and Screening Tests						
Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Boukydis et al. (2006), USA	To evaluate the impact of prenatal ultrasound consultation on maternal-fetal attachment, knowledge of fetal behaviour, and development and reduction of anxiety in pregnant women scheduled for routine ultrasound screens	A RCT comparing a group of women who had a standard ultrasound screen plus an extended consultation (UC) to a control group who received a standard ultrasound screen only (SC) 52 low-risk expectant mothers, recruited at a gestational age of between 16-26 weeks UC: 28 SC: 24	MFAS completed immediately prior to, and following the ultrasound examination	The UC group received a standard ultrasound screen, with the addition of extended consultation on fetal development, maternal and familial responses, and maternal-fetal interaction. The procedure consisted of an introduction (1-15 mins), ultrasound consultation (16–20 mins), and post-consultation debriefing (15–20 minutes). The consultation consisted of demonstration of physical features and some organs, determination of sex, if wanted and feasible, exploration of fetal position, exploration of spontaneous fetal movements, and open-ended self-initiated exploration by mother Patients in the SC group did not view the scan until the end of the required procedure, at which time they were shown the fetus (5–6 minutes) A single research sonographer conducted all the UC sessions. All scans in the SC group were done by 1 of 4 full-time sonographers	Recruitment Rate: Not Specified Completion Rate: Not Specified The ultrasound consultation group had a significant positive change in maternal-fetal attachment scores MFAS scored increased significantly from before to after the ultrasound examination for the UC condition ($p < .05$). The scores for the SC group did not change significantly from before to after the ultrasound examination	Random assignment to groups (method not specified) No baseline differences in demographic characteristics between groups
Quality Rating						Limitations
Internal Validity: + External Validity: -						Small sample size No documented power analysis No follow-up Non-probability sample No blinding Recruitment and completion rate not specified Ultrasound modality is unclear

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Coté et al. (2020), USA	To determine whether the addition of 3D-printed models improves maternal–fetal attachment in healthy pregnancies more than 3D ultrasonography alone	<p>A RCT comparing a group of expectant mothers who received a 3D ultrasound and a 3D printed model of the fetal face to a group of expectant mothers who received a 3D ultrasound only</p> <p>96 expectant mothers aged between 19-45, recruited at a gestational age of 26-31 weeks, fluent in English, with normal findings on the fetal anatomic survey, who had received an ultrasound scan at approximately 20 weeks but no additional medical or entertainment ultrasonography after that</p> <p>EG:48 CG:48</p>	MAAS completed pre-intervention and 14 days post-ultrasound examination (1 week after receiving 3D model or at a comparable time point)	<p>Both groups received a 20-minute 3D/4D ultrasound examination, performed by a ultrasonographer. The ultrasonographer had neutral interactions with the participants and specifically targeted the fetal face. All participants watched the screening in real time on a large-screen television. Neither group was permitted to take pictures, nor did they receive any thermal printed images.</p> <p>For the intervention group, the digital image was then extracted from the 3D ultrasound machine and converted to a stereolithography (STL) file. The image was printed by a 3D printer with biodegradable plastic and polylactic acid. One week after the initial ultrasound examination, these participants were asked to return to the clinic and received a small shadow box that contained the 3D-printed model of the face of the fetus produced from the ultrasonographic data</p>	<p>Recruitment Rate: 96/857 (11.2% of those assessed for eligibility) Completion Rate: 93/96 (96.9%)</p> <p>There were no statistically significant between-group differences in global MAAS score pre-intervention (mean difference = -0.54, 95% CI [-3.24, 2.15], $p = .278$).</p> <p>The global MAAS score in both groups increased from baseline to follow-up by an average of 6.81 points (95% CI [5.59, 8.03]), from 76.54 to 83.35</p> <p>The time-by-group interaction effect indicated that change in MAAS global score from baseline for the 3D-printed model group was 3.75 points greater than the score for the ultrasonography only group (95% CI [1.40, 6.10], $p = .002$)</p>	<p>Randomised allocation into groups using computer-generated block allocation</p> <p>Multi-site recruitment</p> <p>Research flow chart</p> <p>Intention to treat analysis</p> <p>High completion rate</p> <p>Documented power analysis</p>
Quality Rating						Limitations
Internal Validity: +						Non-probability sample
External Validity: +						Very low recruitment rate
						No blinding
						The control group had significantly fewer multigravidae in it than the intervention group
						Few details are given about the source population
						Short follow-up period

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
de Jong-Pleij et al., (2013), The Netherlands	To compare the effect of third trimester three-dimensional and four-dimensional (3D/4D) versus two-dimensional (2D) ultrasound (US) of the fetal face on maternal bonding	A before and after study comparing a group of women who received a 3D/4D ultrasound scan, to a control group who received at 2D ultrasound scan 152 low-risk, healthy Caucasian expectant mothers, with a singleton pregnancy, who had not experienced a prior 3D/4D ultrasound scan. Recruited from midwifery practices at the time of the dating scan or routine second trimester anomaly scan. The intervention was carried out at a gestational age of between 28-36 weeks. The control group was recruited following the recruitment of the experimental group EG: 76 CG: 76	MAAS, translated into Dutch and validated by Van Bussel et al. (2010), completed 1-2 weeks before (MAAS1), and 1-2 weeks after (MAAS2), the US examination	The 3D/4D ultrasound group received a 3D/4D ultrasound scan, where rendered images of the face were shown to the mother The 2D ultrasound group received a 2D ultrasound scan In both groups, a basic US examination was performed including assessment of the amniotic fluid volume, placental location, fetal position, biometry and an anatomical survey. Approximately 5 minutes was spent looking at the face when it could be best visualised during the examination. Maximum examination time was 30 minutes. Sonographers explained the specific age-related appearances of the fetuses The ultrasounds were performed by specifically instructed experienced ultrasonographers certified in performing anomaly scans	Recruitment Rate:152/160 (95%) Completion Rate: 133/152 (87.5%) The MAAS2 scores (global, Q and T) were, for both groups, significantly higher than the MAAS1 scores ($p < 0.0001$ in all cases) The MAAS1 and MAAS2 (sub)scores were strongly correlated (range of Rs 0.753–0.833; $p < 0.0001$ for all relationships) There were no significant differences in MAAS1 or MAAS2 (sub)scores, or the increase in MAAS (sub)scores, between the 3D/4D and 2D groups In the 3D/4D group visibility and recognition of the fetal face was significantly positively correlated with the increase in MAAS score ($p = 0.003$ and $p = 0.042$, respectively)	Documented power analysis
Quality Rating						Limitations
Internal Validity: + External Validity: +						Non-concurrent group interventions (time difference of approximately 1 year) Non-random assignment to groups Non-probability sample Previous exposure to 2D ultrasound investigations Large variation in the gestational age No blinding Baseline differences in demographic characteristics between groups (controlled for in analysis)

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Kleinfeld et al., (2007), The Netherlands	To investigate whether offering prenatal screening and receiving a negative screening outcome influences women's attachment to their unborn child	A multi-site RCT comparing 3 groups: A group who was offered nuchal translucency measurement (NTM), a group who was offered maternal serum screening (MST), and a control group who was not offered any screening	A self-developed questionnaire assessing prenatal attachment, the Pregnancy Involvement List (PIL), administered before screening was offered (T1), after the offer (T2), after receiving the negative screening result (or at a comparable time point)(T3), and in the last trimester of pregnancy (T4)	Women in both the intervention groups received information about prenatal screening by means of a booklet sent to their home, and a consultation by the women's midwife or gynaecologist	Recruitment Rate: 2986/4077 (73.2%) Completion Rate: 1846/2986 (61.8%) At baseline, no differences in attachment level was observed between screening acceptors and screening decliners ($F(1, 1028) = 0.14, p = .71$, partial eta squared = .000). Women who had been offered screening ($n = 1031$) showed more attachment ($F(1, 1415) = 19.42, p < .001$) compared to women who had not been offered screening ($n = 387$). This difference disappeared later in pregnancy. After the screening result was received, when correcting for differences at T2, no significant difference was seen in attachment between negatively NTM screened women, negatively MST screened women, and screening decliners. Women who had not been offered screening had significantly higher attachment scores compared to negatively MST screened women ($t(1365) = 3.47$, Bonferroni $p = .003$, partial eta squared = .011), but not compared to negatively NTM screened women or screening decliners. In the last trimester of pregnancy, no significant difference was observed in attachment scores between negatively NTM screened women, negatively MST screened women and screening decliners. Those who had not been offered screening had significantly lower attachment levels compared to negatively NTM screened women ($t(1366) = -3.39$, Bonferroni $p = .004$) and compared to screening decliners ($t(1366) = -3.29$, Bonferroni $p = .006$), but not compared to negatively MST screened women ($t(1366) = -1.15$, Bonferroni $p = 1.0$)(partial eta squared = .011)	Large sample size Random allocation to groups (method not specified) Multi-centre trial Research flow chart
Quality Rating		2,986 Dutch-speaking expectant mothers, at a gestational age of ≤ 16 weeks. They were recruited from 44 midwifery and gynaecology practices	PAI in the last trimester of pregnancy (T4)	No further information is given about the intervention		Limitations
Internal Validity: -		Only those who were aged less than 36 and who received a negative result for screening were included in the analysis. Those in the control group who received screening outside the study were excluded	The PIL correlated reasonably well with the PAI ($r(1369) = .62, p < 0.001$)		All results had low effect sizes	No documented power analysis Non-probability sample Use of self-developed, non-validated tool Unclear whether the PAI had been translated and validated High attrition rate Pregnancy duration differed between groups (controlled for in the analysis)
External Validity: +		NTM: 686 (included in analysis) MST: 648 (included in analysis) Control: 512 (included in analysis)				No blinding

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Lapaire et al., (2007), Switzerland	To assess the impact of three-dimensional (3D) versus two-dimensional (2D) ultrasound (US) on maternal–fetal bonding	Prospective randomised controlled pilot study comparing a group of women who received a 3D US followed by a 2D US, to a group who received at 2D US followed by a 3D US	Self-designed questionnaire assessing prenatal attachment, developed by a psychologist and experts in prenatal ultrasound	Group 1 received a 2D US, followed by a 3D US Group 2 received a 3D US, followed by a 2D US The scans included a general overview of the intrauterine pregnancy, followed by measurements of the biparietal and frontooccipital diameter, abdominal circumference and femur length. The placenta was scanned and the amniotic fluid volume was estimated. The operator aimed to specifically visualise fetal structures such as the face. Each examination took approximately 30 minutes, and was accompanied by simultaneous explanations. The examinations were performed in the same room, in a quiet and relaxed atmosphere	Recruitment Rate: Not Specified Completion Rate: Not Specified Dimensionality of the scan did not have an effect on maternal bonding ($F = 0.06$, $p < 0.9$)	Random assignment to groups via a computer-generated numbered list No baseline differences in demographic characteristics between groups
Quality Rating		60 German-speaking expectant mothers, with a unremarkable medical history and a singleton, low risk pregnancy	Completed after each examination (following 2D US and 3D US)	The ultrasounds were performed by a single, trained operator	82% of the participants, irrespective of the order of the examinations, reported a higher preference for 3D US images, either due to closeness to reality or better perceptibility	Limitations
Internal Validity: - External Validity: -		The intervention was carried out between the 23rd and 34th week of gestation				Non-probability sample No documented power analysis Use of self-developed, non-validated tool Recruitment rate and completion rate not specified No baseline measurement No follow-up Previous exposure to 2D ultrasound investigations Unclear how many women were in each group, or how many partners participated No blinding No wash-out period

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Öhman and Waldenström, (2010), Sweden	To investigate how ultrasound screening for Down syndrome in the first trimester, compared with a routine ultrasound examination in the second trimester, affected maternal–fetal attachment in mid-pregnancy	A RCT comparing a group of pregnant women who underwent fetal screening for Down syndrome in gestational weeks 12–14, to a control group who underwent a routine ultrasound scan in gestational week 15–20	Modified version of MFAS completed at gestational week 24, following the intervention period	<p>The women in the experimental group received an ultrasound examination between gestational weeks 12–14, which included screening for Down Syndrome through measurement of fetal nuchal translucency, which resulted in the calculation of a risk score</p> <p>The control group received a routine ultrasound scan between gestational weeks 15–20, which did not include measurement of fetal nuchal translucency. However, those women in the control group who were 35 years and older were offered amniocentesis to detect chromosomal abnormalities</p> <p>For both groups the allocated time for the ultrasound was 30 minutes</p> <p>All the ultrasounds were performed by 46 midwives with a median of 11 years' experience of mid-gestation routine ultrasound examinations. An obstetrician was involved in cases of suspicious anomaly. Both midwives and obstetricians were educated in nuchal translucency measurement prior to the commencement of the study</p>	<p>Recruitment Rate: Not Specified Completion Rate: 1803/2026 (89%)</p> <p>There were significant differences between the two groups with regards to MFAS total mean scores following the intervention (total mean score 3.50 (SD 0.54) compared with 3.44 (SD 0.55) in the control group ($p = 0.04$)), with the experimental group scoring significantly higher</p> <p>The mean scores on all subscales of the MFAS were slightly higher in the intervention group, but only statistically significant regarding “differentiation of self from fetus” ($p = 0.01$)</p> <p>The number of women in the intervention group who were informed that they ran a high risk of DS was too small (3.7%) to affect the results</p>	Random allocation to groups in blocks through computerised randomisation program
Quality Rating		2026 Swedish-speaking expectant mothers, recruited from antenatal clinics, at, or prior to, 13 gestational weeks				Limitations
<p>Internal Validity: +</p> <p>External Validity: +</p>						
		EG: 1030 CG: 996				

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Limitations
Pretorius et al., (2006), USA	To determine whether there was a change in parental bonding, and couples' attitudes toward their fetus, after undergoing 3-/4-dimensional ultrasonography (3D/4D US)	A non-comparative study 189 participants (124 expectant mothers and 65 expectant fathers), at a gestational age of between 18-28 weeks, expecting a healthy fetus as determined by a prior 2D ultrasound examination	MFAS administered before the 3D/4D ultrasound examination and after the examination	A 3D ultrasound examination, generally performed immediately after the 2D ultrasound examination, or alternatively at a later date. Male participants were present for the examination	Recruitment Rate: Not Specified Completion Rate: 142/189 (75.1%) A positive change in PFA scores was noted over the course of the intervention. This change was statistically significant for both men ($p = .007$) and women ($p < .0001$)	No control group Non-probability sample No recording of demographic data Use of an unvalidated modified measure for male participants -Unclear why the validated PFAS was not used Recruitment rate not specified Unclear how the previous 2D scan may have influenced results No follow-up
Quality Rating			The wording of the tool was modified for the male participants	Sonographers, physicians, or both pointed out normal anatomic structures of the fetus during the examination. Images of the face, limbs, and thorax were taken during the 3D/4D US examination, which lasted approximately 30 minutes. Patients were given photographs and a brief video of their examination		
Internal Validity: - External Validity: -			The ultrasounds were performed by experienced sonographers under the supervision of physicians			

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Righetti et al., (2005), Italy	To investigate the role of fourth-dimensional (4D) ultrasound scanning on antenatal attachment development, in pregnant women and their partners	A RCT comparing a group of couples who received a 4D ultrasound scan, to a control group who received a 2D ultrasound scan 112 individuals (56 couples), where the female partner was at a gestational age of between 19-23 weeks gestation, and was experiencing a low-risk pregnancy. They were recruited while waiting to undergo a routine second trimester ultrasound scan in a hospital obstetrics and gynaecology ward 4D: 44 individuals (included in analysis) 2D: 44 individuals (included in analysis)	MAAS/PAAS administered before the ultrasound scan (time 1) and 2 weeks later (time 2)	Women in the 4D group received a four-dimensional ultrasound, during which her partner was present	<p>Recruitment Rate: Not Specified Completion Rate: 88/112 (78.6%)</p> <p>In both groups of women, the analysis indicated a significant pre-post main effect on global attachment and quality of attachment, $F(1, 42) = 11.155, p < 0.005$ and $F(1, 42) = 5.361, p < 0.05$, but not for intensity of attachment</p> <p>For men there was no significant pre-post main effect on paternal-fetal attachment for in either group</p> <p>All multivariate tests of the ultrasound scanning method main effect were not significant for the global attachment score, $F(1, 42) = 0.779, p < 0.383$, for the quality of attachment, $F(1, 42) = 0.711, p = 0.404$, or for the preoccupation of attachment $F(1, 42) = 0.458, p = 0.502$</p> <p>No significant interaction is shown between the pre-post measures and the treatment conditions as regard the global scores $F(1, 42) = 2.534, p = 0.119$, the quality and preoccupation scores $F(1, 42) = 1.382, p = 0.246$; $F(1, 42) = 0.414, p = 0.523$</p>	Random assignment to groups (method not specified)
Quality Rating				Limitations		
<p>Internal Validity: +</p> <p>External Validity: +</p>				<p>Non-probability sample</p> <p>Recruitment rate not specified</p> <p>Unclear whether tool was translated/ administered in Italian, and whether it was validated</p> <p>Intervention poorly described</p> <p>No blinding</p>		

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths	
Rustico et al., (2005), Italy	To assess whether the addition of four-dimensional (4D) ultrasound to a conventional two-dimensional (2D) scan in the second/third trimester of pregnancy facilitates maternal recognition of specific fetal structures and movements, and causes an emotional impact, as subjectively perceived by the woman	A RCT comparing a group of women who received a 2D plus a 4D ultrasound, to a control group who received at 2D ultrasound only	MAAS completed by a subgroup of 46 women following the ultrasound scan	Group 1 received a 2D ultrasound	Recruitment Rate: Not Specified Completion Rate: Not Specified There were no significant differences in post-intervention MAAS mean scores between the two groups However, in the group who experienced the 4D scan there were more women with positive quality, intensity and global attachment (48%, 64%, and 68% respectively) than among those women who only underwent a 2D scan (29%, 43% and 43% respectively)	Documented power analysis	
Quality Rating		100 expectant mothers in their second or third trimester of pregnancy. They were recruited from a centre for maternal-fetal medicine, having booked a 2D ultrasound		Group 2 received a 2D and a 4D ultrasound		For both groups the ultrasound scan involved examination of standard planes, which are routinely obtained at fetal ultrasound scans, as well as specific visualisation of fetal structures and movements which might arouse emotions: the face, limbs, feet, hands and fingers, any vigorous movements of the head, trunk and limbs, in addition to more subtle ones (facial expressions, hand-to-mouth movements)	No baseline differences in demographic characteristics between groups
Internal Validity: - External Validity: -		2D+4D: 48 (25 completed MAAS) 2D: 52 (21 completed MAAS)		Each examination took approximately 20 minutes		The ultrasounds were performed by two operators, each with 3 months experience using the 4D technique	Limitations
						Non-probability sample Only a subgroup of 46 women completed the MAAS Unclear whether tool was translated/administered in Italian, and whether it was validated No baseline measurement No blinding No specification of recruitment and completion rates No follow-up	

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Sedgmen et al., (2006), Australia	To explore the impact of timing and type of ultrasound, particularly three-dimensional (3D), exposure on maternal – fetal attachment and maternal health behaviour during pregnancy	A non-randomised controlled trial comparing a group of women who received both a 2D and 3D ultrasound scan, to a control group who received at 2D ultrasound scan 116 adult pregnant women, expecting their first child, recruited at a gestational age of 12-18 weeks, when presenting for a routine ultrasound scan at hospital. Those women where the scan revealed a higher risk for fetal anomaly were later excluded The final sample consisted of participants at two distinct gestational ages, 12–14 weeks (<i>n</i> = 24; 17 first-time, 7 repeat) and 18–22 weeks (<i>n</i> = 44; 17 first-time, 27 repeat) 2D: 38 (included in analysis) 2D + 3D: 30 (included in analysis)	MAAS administered prior to ultrasound examination (time 1) and 5-7 days later (time 2)	The 3D ultrasound group received a 2D ultrasound scan and a 3D ultrasound scan. The 3D ultrasound provided a surface-rendered image, which produced high-quality 3D 'lifelike' images of the fetus, especially of the facial features The 2D ultrasound group received a 2D ultrasound scan only. The 2D real-time ultrasound provided standard images, with movement visible if the fetus was active at the time of examination The 12–14 week screen took approximately 20 minutes, and the 18–20 week screen took 40 minutes, depending on the position of the baby at the time of the ultrasound examination The ultrasounds were performed by experienced sonographers and radiographers. They provided verbal feedback about the US image	Recruitment Rate: 116/137 (84.7%) Completion Rate: 68/116 (58.6%) There were no significant differences in MAAS scores between the 2D and 3D ultrasound groups at Time 1 The MAAS global score showed a significant increase from Time 1 to Time 2, $F(1, 68) = 26.79, p < 0.01$, for both groups The subgroup of women who were experiencing their first ultrasound scan at 12-14 weeks gestation initially had lower global scores on the MAAS than the subgroup experiencing a repeat ultrasound at 18-22 weeks The MAAS global score showed a significant interaction effect for the pattern of change for 12 weeks/first-timers and 18 weeks/repeats, $F(1, 41) = 4.87, p < 0.01$, with a greater difference between the subgroups at Time 1 than those at Time 2. The increase in the MAAS global score after ultrasound was much greater for the 12 weeks/first-timers than it was for the 18 weeks/ repeat subgroup The patterns of change over time on the MAAS were not significantly different for the 2D and 3D ultrasound groups	'Arbitrary' assignment to groups (method not specified)
Quality Rating						Limitations
Internal Validity: +						Non-probability sample
External Validity: +						Small sample size
						No reported power analysis
						High attrition rate
						No blinding

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Udry-Jørgensen et al., (2015), Switzerland	To describe the emotional status of parents to be before and after the first-trimester combined prenatal screening test.	<p>A before and after study comparing a group of expectant parents who had received in vitro fertilisation/ intracytoplasmic sperm injection treatment to a group of expectant parents who had conceived spontaneously</p> <p>A total of 103 couples recruited upon pregnancy confirmation at a routine doctor's appointment. Those couples where the scan revealed a high risk for trisomy 21 were later excluded.</p> <p>Conceived via assisted reproductive technology: 52 couples Natural conception: 51 couples</p>	A french translation of the MAAS or PAAS administered prior to the first-trimester combined prenatal screening test at around 12 weeks of gestational age (T1) and just after receiving the results at approximately 14 weeks of gestational age (T2).	All participants were offered the same first-trimester combined screening test, followed by a diagnostic test (choriocentesis or amniocentesis) when there was a high risk of trisomy 21.	<p>Recruitment Rate: 103/109 (94.4%) Completion Rate: 96/103 (93.2%)</p> <p>There was a significant increase in MAAS/PAAS scores from T1 to T2 for both women, $F(1, 85) = 18.27$, $p < 0.001$, and men $F(1, 81) = 14.92$, $p < 0.001$ in both groups.</p> <p>There were no significant differences in MAAS/PAAS scores between groups at either time point.</p>	High recruitment and completion rates
Quality Rating						Limitations
<p>Internal Validity: +</p> <p>External Validity: -</p>						<p>No control group</p> <p>No documented power analysis</p> <p>Non-probability sample</p> <p>The internal consistency of French version of the MAAS/PAAS scales was only satisfactory.</p> <p>Few details are given about the intervention</p> <p>Few details are given about the source population</p>

Results Table - Fetal Awareness Interventions						
Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Celik & Ergin, (2019), Turkey	To determine the effect on pregnant women's prenatal attachment of a nursing practice using the first and second Leopold's maneuvers	A RCT comparing a group of expectant mothers who took part in a intervention involving Leopold's manoeuvres to a group who did not participate in the intervention	A Turkish translation of the PAI, completed pre-intervention at 28 weeks gestation, at 32 weeks gestation and post-intervention at 36 weeks gestation	<p>During a pregnancy class, the intervention group received education about fetal development and the first and second Leopold's maneuvers. A brochure with this information was also given.</p> <p>Leopold's maneuvers were administered in the 28th week of the women's pregnancy and re-administered in the 32nd and 36th weeks of pregnancy. The women were instructed to try the manoeuvres themselves and to listen to the fetal heartbeat.</p> <p>The intervention took 45-60 min with a maximum of five participants per session</p> <p>It is not clear who facilitated the intervention</p>	<p>Recruitment Rate:106/108 (98.1%) Completion Rate:100/106 (94.3%)</p> <p>There were no statically significant between-group differences in mean PAI scores at the 28th week of pregnancy EG: 63.58 ± 8.48 vs. CG: 64.26 ± 8.11 ($p > .05$)</p> <p>The experimental group's mean PAI scores in the 32nd and 36th weeks of pregnancy were significantly higher than those of the control group ($p = .001$ and $p < .01$). At 32 weeks EG: 71.18 ± 7.87 vs. CG: 65.66 ± 8.51. At 36 weeks EG: 76.10 ± 6.76 vs. CG: 67.10 ± 7.80</p>	<p>Randomised allocation to groups (using a computerised system)</p> <p>No significant differences were found between the groups at baseline</p> <p>High recruitment and completion rates</p> <p>Research flow chart</p> <p>Control group care is described</p>
Quality Rating		106 literate expectant mothers, aged between 18-40 years, with spontaneous singleton pregnancies, recruited in the 28th gestational week. They had no medical or psychiatric conditions and no pregnancy complications	The questionnaires were administered by the researcher during a face-to-face interview			Limitations
Internal Validity: +						Non-probability sampling
External Validity: +		EG:53 CG:53				Questionnaires administered in face-to-face interview leading to increased risk of social desirability bias
						Single recruitment site
						No documented power analysis
						No blinding
						Unclear who facilitated intervention

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Delaram et al. (2018), Iran	To determine the effects of fetal movements counting on maternal-fetal attachment	A RCT comparing a group of expectant mothers who counted fetal movements for 9 weeks to a group of expectant mothers who received standard antenatal care which does not involve fetal movement counting 208 married, nulliparous expectant mothers in the second trimester of a singleton pregnancy recruited from health centres providing prenatal care, with no fetal malformations as assessed on an ultrasound examination done at 26 weeks gestation	A Persian translation of the PAI completed pre-intervention at 28 weeks gestation and post-intervention at 37 weeks gestation	The women in the intervention group were given an information brochure which informed them how to count fetal movements daily, in the morning, and record them on a chart. The women were instructed to carry out the fetal movement counting between the 28th and the 37th gestational weeks. To encourage compliance, a member of the research team contacted the women by telephone every 2 weeks.	Recruitment Rate: 208/246 (84.6%) Completion Rate: 208/208 (100%) 92% of the women in the intervention group had completed the fetal movement chart at least 4 times a week At 28 weeks of gestation, the mean PAI scores were 90.23 ± 9.64 in the intervention group and 90.00 ± 10.04 in the control group. The difference was not significant (mean difference = 0.230 , $p = 0.866$) No significant differences in PAI mean scores was found at 37 weeks of gestation between the two groups (intervention group: 93.75 ± 7.59 vs control group: 92.78 ± 9.90 (mean difference = 0.961 , $p = 0.433$).	Random allocation into groups (using a random numbers table) No significant differences found between the groups at baseline High recruitment and completion rates Research flow chart
Quality Rating						Limitations
Internal Validity: +						No blinding
External Validity: +		EG:104 CG:104				Non-probability sampling
						No documented power analysis
						Limited description of intervention

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Guney & Ucar, (2019), Turkey	To determine the effect of fetal movement counting on maternal-fetal attachment	A RCT comparing a group of expectant mothers who received training on fetal movement counting and counted fetal movements regularly for 4 weeks to a group of women who received standard antenatal care and routinely observed fetal movements. 157 expectant mothers, between 28-32 weeks of gestation with a singleton and naturally conceived pregnancy, with no significant health or pregnancy complications, recruited from 6 family health centres in the East of Turkey.	Turkish version of the MAAS completed prior to the intervention and immediately after the intervention end 4 weeks later	Women in the intervention group received individual training on fetal movement counting in a single session lasting 15-20 minutes. The fetal movement count training was based on the "count-to-10 method". The pregnant women were instructed to count and record 10 movements of their fetus within a 2 hour period when the unborn child was awake and when the mother was calm, satiated, with an empty bladder and lying down in a lateral position with her hands on her abdomen After the training was complete, a fetal movement monitoring chart was given to each woman. This included a table to help the participants to record their fetal movements daily. The researcher called the participants 2 weeks into the intervention to arrange an appointment at the family health centre to check for the accurate interpretation and regular performance of counting. The pregnant women in the experimental group were once more invited to the family health centre 4 weeks after the training to collect the post-test data The pregnant women in the control group returned to the family health care 4 weeks after completing the pre-test measures to complete the post-test data. They otherwise received standard care.	Recruitment Rate: 157/171 (91.8%) Completion Rate: 110/157 (70.1%) No statistically significant differences were found between the MAAS total and sub-dimension pre-test mean scores in the experimental and control groups ($p > 0.05$) The post-test means and SD in the total scores of the MAAS were 72.25 (7.16) and 78.41 (6.65) for the control and intervention groups respectively, with the difference in scores found to be statistically significant ($p < 0.001$). With regards to sub-scale scores, the intervention group had significantly higher scores than the control group in both the "time spent in attachment" sub-scale ($p < 0.001$) and in the "quality of attachment" sub-scale ($p < 0.002$)	Documented and fulfilled power analysis No pre-intervention differences between groups Basic random probability sampling High recruitment rate Research flow chart Multi-site recruitment (within a single city) Detailed description of intervention Random allocation into groups (using a computerised system)
Quality Rating						Limitations
Internal Validity: +						No blinding
External Validity: +		EG:79 CG:78				No follow-up Unclear who facilitated the intervention It is not clear what standard advice women in this region are given about monitoring fetal movement

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Kordi et al., (2016), Iran	To determine the effect of guided imagery on maternal-fetal attachment in nulliparous women with unplanned pregnancy	A non-RCT comparing a group of expectant mothers who received a guided imagery intervention to a group who received routine care 70 nulliparous expectant mothers with an unplanned singleton pregnancy at 33 weeks gestation. Women were recruited from 10 health centres. Those with pregnancy complications, a history of infertility and education in medical sciences and psychology were excluded EG:35 CG:35	MFAS assessed pre-intervention and two weeks later, post-intervention It is unclear whether the tool was translated and validated for use in the research	In the intervention group one session of guided imagery on maternal role was performed in 34 th week of pregnancy in groups of 4-7 participants. The techniques for, and effects of, guided imagery were taught at health centers. Afterwards, the mothers were asked to take a few deep breaths, switch off their phones, and focus their attention on the CD of maternal role imagery and imagine their maternal role throughout the mental imagery, which lasted for 20 minutes. Guided imagery CDs were then given to mothers to be performed at home twice a week for two weeks The intervention facilitator is not specified The content of the guided imagery is not specified	Recruitment Rate: Not specified Completion Rate: 67/70 (95.7%) The MFAS mean score of was similar in the two groups before training ($p = 0.966$) MFAS mean scores over the study period in both the intervention ($p < 0.001$) and control groups ($p = 0.005$) MFAS mean score were significantly different between the intervention (94.26 ± 6.7) and control (90.22 ± 9.5) groups after the intervention ($p = 0.046$). The mean score of changes in MFAS was significantly higher in the intervention group than in the control group ($p = 0.004$)	Multi-site recruitment Documented power analysis High completion rate No significant differences between the groups at baseline
Quality Rating						Limitations
Internal Validity: +						Pseudo-randomised allocation into groups No research flow chart Non-probability sample Recruitment rate not specified No follow-up after intervention conclusion The intervention facilitator is not specified The content of the guided imagery is not detailed No blinding No information about the routine care received by the control group Unclear whether the tool was translated and validated
External Validity: +						

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Nishikawa & Hisataka Sakakibara, (2013), Japan	To investigate whether a nursing intervention program using abdominal palpation would improve maternal-fetal relationships of pregnant women	An observational study comparing a group of pregnant women who chose to receive a nursing intervention involving abdominal palpation utilising Leopold's maneuvers in addition to ordinary health-related advice, to a control group who received ordinary health-related advice	PAI (translated and validated by Tujino et al. (2005)) completed in the 30th (baseline), 32nd, 34th, and 36 weeks gestation	<p>The intervention program was intended to help the pregnant participants to sense the fetal position in the uterus by performing an abdominal examination through Leopold's Manoeuvres</p> <p>The fetal position was demonstrated by taking the hand of each participant and touching the buttocks and the back of the fetus together, so that expectant mothers were able locate the large and small body parts of the fetuses. After the practice was completed, a group discussion was held for about 20 minutes with all of the participants regarding whether they were able to sense the position of the fetus, and their thoughts toward the fetus. Each intervention program took approximately 1 to 1.5 h. Sessions were held at 30, 32, and 34 weeks' of gestation</p> <p>The intervention program was conducted by three midwives</p> <p>The control group participated in the pre-mothers' classes, with 3 being held between the 2-3 trimester, each lasting approximately 1.5 hours</p>	<p>Recruitment Rate: 227/384 (59.1%) Completion Rate: 108/227 (47.6%)</p> <p>At the baseline (30 weeks' gestation), PAI scores did not differ significantly between the intervention group and the control group</p> <p>PAI scores increased significantly at the 32nd, 34th, and 36th weeks' gestation time points, compared to baseline, for both groups</p> <p>There were significant differences between the two groups with regards to PAI scores at 34 and 36 weeks gestation ($p < 0.01$ and $p < 0.05$, respectively), with the experimental group scoring significantly higher</p>	<p>Repeated measures design</p> <p>Study flow chart</p> <p>No significant differences were found between the groups at baseline</p>
Quality Rating						Limitations
Internal Validity: -		227 Japanese partnered pregnant women, aged less than 40 years, with singleton uncomplicated pregnancies, recruited between 16-28 weeks gestation	The experimental group completed the measure following abdominal palpation for the later three time points			Low recruitment rate and high attrition rate
External Validity: +		EG: 88 CG: 139				<p>Non-random, self-selection of group assignment</p> <p>No documented power analysis</p> <p>No blinding</p> <p>Non-probability sample</p>

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Persico et al., (2017), Italy	To explore the potential of maternal singing of lullabies during pregnancy and after birth in developing and strengthening the relationship between the mother and baby	<p>Non-RCT comparing a group of women who were encouraged to sing lullabies to their babies during pregnancy and after birth, with a control group left free to sing whenever they desired</p> <p>196 Italian-speaking expectant mothers aged 18 years or older, with uncomplicated singleton pregnancies, recruited during the first session of an antenatal class at approximately 24 gestational weeks</p> <p>EG:97 CG:99</p>	<p>PAI completed at baseline (24 gestational weeks) and at 36 gestational weeks</p> <p>Unclear whether a translated version of the tool was used</p> <p>Singing frequency was assessed in the intervention group</p> <p>The control group was asked whether they sung to their unborn child regularly</p> <p>Data was collected in face-to-face interviews</p>	<p>At the first session of antenatal classes, women in the singing cohort received the text of nine lullabies. The recommended lullabies were given by the musicologist who included traditional, loving and playful songs. Women learned and practised all nine lullabies without accompaniment, together with the midwife, before each antenatal session.</p> <p>After four weeks, women were invited to choose one or two lullabies as a “leitmotiv” for their own babies and to continue singing at home, in their own time, paying attention to their emotions and their babies’ behaviour.</p> <p>The topic of singing lullabies was not covered in standard antenatal classes attended by women in the concurrent cohort. Women in concurrent cohort were, however, left free to singing whatever type of lullabies they wanted.</p> <p>The same midwife consistently facilitated the intervention</p>	<p>Recruitment Rate: 196/205 (95.6%) Completion Rate: 168/196 (85.7%)</p> <p>90.6% of women reported positive emotions after singing, such as: serenity, relaxation or a feeling of being on the same wavelength as their baby</p> <p>The PAI total mean score at 24 and 36 weeks gestational age were not significantly different across the cohorts ($p = 0.692$)</p> <p>8% of women in the control groups spontaneously sang lullabies every day</p>	<p>Documented power analysis</p> <p>High recruitment and completion rates</p> <p>Research flow chart</p> <p>Intention-to-treat analysis</p> <p>Intervention well described</p>
Quality Rating						Limitations
Internal Validity: +						Pseudo-randomised allocation into groups
External Validity: +						Questionnaires administered in face-to-face interview leading to increased risk of social desirability bias
						No blinding
						Single site recruitment

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Rincy and Nalini, (2014), India	To identify the effect of fetal movement counting on maternal-fetal attachment and maternal worries	A RCT comparing a group of women who received instructions to monitor fetal movement and maintain a kick chart, along with routine care, to a control group who received routine antenatal teaching	PAI administered pre-test, and following intervention period (day 14)	The women in the experimental group received formal instruction to monitor fetal movement and maintain a kick chart, twice daily for 14 days (i.e., 28 times for 14 days), along with routine antenatal care. A kick chart performance sheet, and a ribbon to knot when the mother perceived fetal movements during the counting time were given to each mother in the study group.	Recruitment Rate: Not Specified Completion Rate: Not Specified There was a statistically significant improvement in PAI scores in the experimental group between pretest and posttest ($p < 0.001$) No statistical significance difference was seen within the control group between pretest and posttest In the post-test, the independent t-test showed a significant statistical difference between the groups ($p < 0.001$), with the experimental group having higher PAI scores	Random assignment to groups (using lottery method)
Quality Rating						Limitations
Internal Validity: + External Validity: -		A consecutive sample of 100 adult, married, primigravidae, expectant mothers, with gestational ages of between 32-36 weeks. Participants had low-risk pregnancies and could understand English and Tamil EG: 50 CG: 50				No research flow chart No specification of recruitment and completion rates Non-probability sample No reported sample size calculation No blinding It is unclear who administered the intervention Sample was limited to those speaking Tamil and English

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Saastad et al., (2011), Norway	To test whether maternal-fetal attachment differed between a group of mothers who systematically performed fetal movement counting, and a group of mothers who followed standard antenatal care, where routine fetal movement counting was discouraged	<p>A multicenter RCT comparing a group of women assigned to systematic fetal movement counting from pregnancy week 28, to a control group receiving standard antenatal care</p> <p>1,155 Norwegian-speaking women without serious pregnancy and fetal anomalies. They were recruited from 9 hospitals during a routine ultrasound appointment in the second trimester of pregnancy</p> <p>EG: 478 (included in analysis) CG: 473 (included in analysis)</p>	PAI, translated into Norwegian for the purposes of the study, administered in pregnancy week 35 in the post-intervention period	Women in the intervention group received an information brochure that included instructions on how to use and interpret fetal movement charts, and were asked to count fetal movements daily from gestational week 28, by recording the time required to perceive 10 movements. The women were contacted by a midwife or an obstetrician 1-2 weeks following commencement to ensure correct interpretation of counting method instruction.	<p>Recruitment Rate: Not Specified Completion Rate: 951/1,155 (82.3%)</p> <p>No difference was found between the groups in the scores on prenatal attachment; the means and standard deviations were 59.54 (9.39) and 59.43 (9.35) for the intervention and the control groups, respectively ($p = 0.747$). The mean difference between the groups was 0.20 (95% CI: 1.02–1.42)</p> <p>When compared with women in the control group, a higher proportion of women in the intervention group answered “almost always” or “often” on the item “I can make the baby move”.</p>	<p>Large sample size</p> <p>Random allocation to groups (through computer-generated random allocation list)</p> <p>Research flow chart</p> <p>Documented power analysis</p> <p>Multi-site recruitment</p> <p>Intention to treat analysis</p>
Quality Rating						Limitations
Internal Validity: +						Non-probability sample
External Validity: +						Omission of pre-test measurement of parental-fetal attachment
						Lack of cultural diversity

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Salehi et al. (2017), Iran	To evaluate the effect of early education in fetal movement counting in the second trimester on maternal-fetal attachment	<p>A RCT comparing a group of mothers who received training on fetal movement counting and counted fetal movements daily for 4 weeks to a group of women who received routine prenatal care</p> <p>58 literate Iranian expectant mothers between the ages of 18-35 years, expecting their first child in a naturally achieved singleton pregnancy, recruited at 20-22 weeks gestation. Women with medical complications, a history of psychological problems, drug abuse or recent traumatic events were excluded. Women were also excluded in the case of non-compliance with fetal movement counting for more than 1 week, and if they developed severe complications during the study period</p>	<p>MFAS completed pre-intervention and immediately post-intervention</p> <p>Unclear if a translated version of the tool was used</p>	<p>Face-to-face training about counting and recording daily fetal movements</p> <p>Between the 24th and the 28th week of pregnancy, the expectant mothers were expected to count and record fetal movements daily. This was done while lying down on their left side for 30 minutes after breakfast.</p> <p>Training was conducted by the researcher</p>	<p>Recruitment Rate: Not specified Completion Rate: 52/58 (89.7%)</p> <p>Pre-intervention, the mean score of MFA scale in the intervention group was 86.63 ± 11.62 and in the control group was 87.48 ± 10.31. There was no significant difference between the mean group scores ($p > 0.05$).</p> <p>Post-intervention, the mean score of MFA scale in the intervention group (96.30 ± 10.81) was significantly higher than that in the control group (88.64 ± 10.31) ($p < 0.001$)</p> <p>The mean score on the MFAS only showed a significant change from before to after the intervention in the intervention group ($p < 0.001$, $t = 5.24$)</p>	<p>Random allocation into groups (using a random numbers table)</p> <p>Single blinding (of the person performing analysis)</p> <p>Documented power analysis</p> <p>Random selection of recruitment sites (within the same geographical area)</p> <p>High completion rate</p> <p>No significant differences were found between the groups at baseline</p>
Quality Rating						Limitations
Internal Validity: +						Non-probability sampling
External Validity: +		EG:23 (included in analysis) CG:29 (included in analysis)				Small sample size
						Recruitment rate not specified
						No follow-up
						Unclear if a translated version of the MFAS tool was used

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Shreffler et al., (2019), USA	To explore the effects of a two-week mindfulness-based intervention designed to enhance maternal-fetal bonding among pregnant women	A pilot RCT comparing 4 groups of women. Group 1 received fetal Doppler heartrate monitors. Group 2 received four texts per week with mindfulness tasks designed to enhance feelings of maternal attachment. Group 3 received both of the above interventions. Group 4 was the control group 34 pregnant girls and women aged between 15-40, in the second trimester of their pregnancy, and planning to keep the unborn child, recruited from 2 prenatal clinics serving high proportions of Medicaid patients. EG1: 8 EG2: 11 EG3: 6 CG: 9	MFAS completed pre-intervention and 2 weeks later, immediately post-intervention	The participants who received fetal Doppler monitors were trained on appropriate use and instructed to listen to their baby's heartbeat for at least 1 min per day over the two-week period The mindfulness exercises were sent via text messages with instructions for the specific exercise assigned that day. All participants in the mindfulness groups received the same text message. Text messages were sent at the same time of day for all groups (mid-evening). Women were asked to "take a few moments alone and complete the following task", which were different and included: deep breathing, meditation, prenatal massage, responding to kicks, nursery rhymes, telling the baby about a cherished person in their life, planning an activity with the baby, and reading a story to the baby.	Recruitment Rate: 34/177 (19.2%) Completion Rate: 34/34 (100%) The intervention groups did not differ significantly from each other on pre-intervention MFAS scores. It is unclear whether the control group score differed significantly from those of the intervention groups at this stage All intervention groups reported higher levels of post-MFAS relative to the control group, but the difference was not statistically significant When considering pre-post intervention change, results indicate a significant increase in MFAS scores over the study period for the Doppler + Mindfulness group ($\Delta S = 4.83, p < 0.05$, Cohen's $d = 0.59$). After adjusting for baseline MFAS, women in the Doppler + Mindfulness group had significantly higher levels of MFAS than the control group, $F(1, 28) = 5.39, p < 0.05$.	Randomised allocation into groups (method not specified) No significant differences were found between the groups at baseline High completion rate Two recruitment sites
Quality Rating						
Internal Validity: -						
External Validity: -						Limitations
						Non-probability sampling Very small sample Very low recruitment rate No research flow chart No documented power analysis No blinding Unclear who facilitated the intervention No follow-up No information about control group care Access to a personal fetal Doppler was not controlled for

Results Table - Relaxation Strategies						
Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Akarsu & Rathfisch (2018), Turkey	To identify the effect of pregnancy yoga on the pregnant's psychosocial health and prenatal attachment	A RCT comparing a group of women who did supervised yoga sessions and received routine antenatal care to a group of women who received routine antenatal care A sample of 70 primiparous women. aged between 20-35, who were between 14-26 weeks of gestation, with a low risk pregnancy and no chronic disease or past yoga experience	PAI completed prior to intervention and 8 weeks later, immediately post intervention It is unclear whether the tool was translated or completed in English	Participants in the intervention group did yoga for 40 minutes, twice a week, for a period of 8 weeks, in groups of 5-6 Yoga was practised under the supervision of one of the researchers in group who was a certified yoga instructor	Recruitment Rate: 70/104 (67.3%) Completion Rate: 63/70 (90%) At baseline the PAI mean scores were similar between groups ($p > .05$) PAI scores increased significantly for both groups over the study period ($p < .001$) At the end of intervention the PAI mean scores of the experimental group were significantly higher than those of the control group ($p < .05$)	Documented power analysis Random allocation to groups Detailed description of intervention No significant differences between groups in terms of demographic characteristics Research flow chart
Quality Rating						Limitations
Internal Validity: +						Small sample size Adherence to intervention unclear No blinding Non-probability sample Single recruitment site Unclear whether English version of PAI was used or whether this was translated Narrow participant age range
External Validity: -		EG: 35 CG: 35				

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Chang et al., (2015), Taiwan	To examine the effects of music listening on psychosocial stress and maternal-fetal attachment during pregnancy	<p>A RCT comparing a group of women who received routine prenatal care and music listening, to a control group who received routine prenatal care only</p> <p>A convenience sample of 320 Chinese-speaking, adult expectant mothers, recruited at a gestational age of ≥ 17 weeks, from an antenatal clinic of a medical centre, with no history of prior fetal loss</p>	Chinese merged version of the MFAS and PAI (translated and validated by Hsu and Chen (2001)) administered pre- and post-intervention period to both groups of women	<p>Participants in the experimental group received pre-recorded music compact discs (CDs) to listen to, in addition to receiving routine prenatal care</p> <p>Each CD contained approximately 30 minutes of music, respectively, in five categories: crystal music, nature sounds, classical music, lullabies, and symphonic music. The tempo of the music selections was selected to mimic the human heart rate (60—80 beats/min)</p> <p>They were asked to listen to the music for at least 30 minutes a day for 2 weeks, while they were at rest, or at bedtime, and on a self-regulated basis. The participants listened to the music in their preferred category, and were permitted to listen to the music either over speakers or through earphones</p> <p>Participants in the control group received routine prenatal care</p>	<p>Recruitment Rate: Not Specified Completion Rate: 296/320 (92.5%)</p> <p>No statistically significant differences in terms of maternal—fetal attachment were found between the post-test results of the two groups</p>	<p>Random allocation to groups (method not specified)</p> <p>No significant differences between groups in terms of demographic characteristics</p> <p>Research flow chart</p>
Quality Rating						Limitations
Internal Validity: +		EG:162 CG:158				<p>No documented power analysis</p> <p>No blinding</p> <p>Non-probability sample</p> <p>Recruitment rate not specified</p> <p>Flow diagram does not match stated number of participants</p> <p>Routine music listening habits not measured in the control group</p>
External Validity: -						

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Latifses et al., (2005), USA	To examine the effects of fathers massaging their pregnant wives and practicing relaxation with them on the fathers perception of marital adjustment, anxiety, and attachment to the fetus	A RCT comparing groups of fathers assigned to one of three groups: A massage therapy group, a relaxation training group, or a control group	PFAS completed at the beginning (Time 1), and end of the 5 week study period (Time 2)	The fathers in the massage group were taught by a licensed massage therapist to massage their pregnant wives. They received an instructional handout of the massage program and were asked to follow the routine at home twice a week for 20 minutes each time	Recruitment Rate: 175/283 (61.8%) Completion Rate: 152/175 (86.9%) There was a significant time effect in PFAS scores from time 1 to time 2 (Wilks' $\lambda = 0.83$; $F(2, 170) = 17.47$, $p = .001$) as measured by one-way repeated measures ANOVAs	Random assignment to groups (method not specified)
Quality Rating		A convenience sample of 175 psychologically healthy, adult, expectant fathers, married to, and living with, pregnant women with singleton pregnancies at a gestational age of between 24-32 weeks, with no history of prior fetal loss within the relationship. They were recruited from Lamaze classes				Limitations
Internal Validity: + External Validity: -		There were no significant pair-wise comparisons among PFAS mean scores done to examine group changes from Time 1 to Time 2, when using Holm's sequential Bonferroni procedure There was a moderate positive relationship between marital adjustment and paternal fetal attachment at Time 1 ($r = 0.40$; $p < .01$) and Time 2 ($r = 0.45$; $p < .01$)				Non-probability sample Unclear how many fathers were in each group Compliance to interventions was not measured No follow-up There were not enough participants in each group at the end of the study to satisfy power analysis requirements

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Muzik et al., (2012), USA	To explore the feasibility, acceptability, and efficacy of mindfulness-yoga in reducing symptoms of depression among pregnant women with current and lifetime psychiatric diagnoses	A non-comparative study A convenience sample of 22 adult, primiparous, English-speaking expectant mothers at a gestational age of ≤ 26 weeks gestation and scoring ≥ 9 on the EPDS depression screen at baseline. They were recruited through a university-based perinatal psychiatry clinic and through flyers posted in the community. Over 85% of participants had a lifetime psychiatric diagnosis	MFAS administered at baseline and after the final yoga class	A free 10-week prenatal "Mindfulness Yoga" programme aiming to improve wellbeing and decrease stress, with each weekly session lasting 90 minutes, and having approximately 10 participants in the class The sessions consisted of a variety of poses tailored to the pregnant state, while highlighting mindfulness practice. This included continual reminders to focus inward toward the sensations of the body, and be aware of how the body is changing to support the growing baby, thus supporting "mindfulness" of the baby and encouraging participants to sense it's unique persona The intervention was facilitated by 2 certified prenatal yoga instructors, experienced in mindfulness techniques The participants attended an average of 7.83 sessions (SD = 1.62)	Recruitment Rate: Not Specified Completion Rate: 18/22 (81.8%) MFAS scores increased significantly overall ($p < .01$) and on all five subscales from pre-to post-intervention measurement Post-intervention depression scores were significantly and inversely related with baseline ($r(18) = -0.549, p < .05$), and post-intervention ($r(18) = -0.591, p < .05$) MFAS scores	Consistent high attendance to intervention sessions
Quality Rating						Limitations
Internal Validity: - External Validity: -						Non-probability sample Small sample size No documented power analysis No control group Recruitment rate not documented Homogenous sample; lack of cultural and economic diversity 9/22 (41%) of participants were involved in psychotherapy during the trial - acknowledged in analysis

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Shin and Kim, (2011), Korea	To examine the effects of music therapy on anxiety, stress and maternal-fetal attachment in pregnant women during a transvaginal ultrasound	A before and after, controlled, nonequivalent, non-synchronised design comparing a group of women receiving a single 30-minute session of music therapy, together with general prenatal care, with a control group receiving general prenatal care 240 Korean expectant mothers, recruited during first trimester obstetrical ultrasound hospital visits. The participants were experiencing singleton pregnancies, were <14 weeks of gestation at recruitment, with no maternal or pregnancy complications EG:117 (included in analysis) CG: 116 (included in analysis)	MFAS, translated into Korean and revised by Kim (1991) Administered prior to, and following transvaginal ultrasound for both groups	The intervention group received a single transvaginal ultrasound during which they listened to 30 minutes of music with nature sounds. The music was played using an MP3 player, started when women entered the examination room and kept playing until they left. The volume of the music was adjusted to the women's satisfaction. The control group received general prenatal care The intervention was conducted by 3 nurses who were qualified sonographers	Recruitment Rate: Not Specified Completion Rate: 233/240 (97.1%) No significant differences were identified for pretest MFAS ($t = -0.00, p = .999$) scores between the experimental group and the control group The independent <i>t</i> -test showed no significant differences between two groups in post-test MFAS scores ($t = -0.44, p = .659$)	Documented power analysis No significant differences between the groups at baseline
Quality Rating						Limitations
Internal Validity: + External Validity: -						Non-concurrent measurement between groups No specification of methods for assignment to groups Lack of cultural diversity Sampling method is not specified No research flow chart Non-recording of recruitment rate No follow-up

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Toosi et al., (2017), Iran	To assess the effects of relaxation on mothers' anxiety and maternal-fetal attachment in primiparous women who used in-vitro fertilisation to get pregnant	A RCT comparing a group of expectant mothers who took part in four 90-min relaxation classes in addition to receiving routine pregnancy care and a group of expectant mothers who received routine pregnancy care 80 healthy primiparous women, between the ages of 18-40, at 32-35 weeks gestation, who used IVF to achieve a singleton, straight-forward pregnancy. The women had a minimum of a middle school degree, and low/average anxiety EG:40 CG:40	MFAS completed pre-intervention and post-intervention one month later It is unclear whether the tool was translated or completed in English	Four, weekly educational classes held on Saturdays and lasting 90 minutes each in group consisting of 20 participants. Each educational class was followed by a 10- 20 minute relaxation session using 'Benson's technique'. The expectant mothers were also expected to perform the relaxation technique daily at home. They were provided with an education CD and were provided with a checklist to record their daily exercises. The intervention was facilitated by the researcher.	Recruitment Rate: Not specified Completion Rate: Not specified The results revealed no significant differences between the two groups regarding the mean scores of attachment before the intervention ($p = .918$) MFAS scores had significantly increased in the intervention group at one month post-intervention ($p < .001$), but no similar significant difference was observed in the control group ($p = .374$) The experimental group had significantly higher MFAS scores than the control group post-intervention (51.0 ± 10.4 vs. 41.4 ± 4.1 , $p < .01$).	Random allocation to groups No significant differences between groups in terms of demographic characteristics Detailed description of the intervention
Quality Rating						Limitations
Internal Validity: +						No documented power analysis Non-probability sample No blinding No research flow chart Unclear whether it was the educative or relaxation component of the intervention that was effective (or both) Unclear whether English version of MFAS was used or whether this was translated Adherence to intervention unclear Recruitment and completion rate not specified Unclear what standard care consists of
External Validity: +						

Results Table - Educational Programmes						
Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Abasi et al., (2013), Iran	To explore the effect of maternal-fetal attachment behaviour education on mothers' mental health during the third trimester of pregnancy	A cluster RCT comparing a group of women who received education on maternal-fetal attachment behaviour, and a control group who received routine antenatal care 83 primigravidae, of gestational age between 28-32 weeks at recruitment, and having no obstetric or psychological problems. Recruited from 6 healthcare centres during routine antenatal check-ups	The MFAS was translated into Farsi for the purposes of this study. Both groups completed the scale prior to, and following the intervention period	The treatment group received four, weekly session of two hours each. The sessions comprised information regarding maternal-fetal attachment, benefits of attachment, and methods of performing attachment behaviour. These behaviours included counting and recording of fetal movements, positive imagination of fetal appearance, speaking to the fetus, imagining breastfeeding the baby, and touching the abdomen. Participants were given forms to record these behaviours and were asked to complete them weekly Women in the control group attended the healthcare centres every 2 weeks for usual antenatal care	Recruitment Rate: Not Specified Completion Rate: Not Specified The t-test showed no significant differences in MFAS mean scores in the control group at the beginning and end of the study ($t = 1.4, p = .14$), while MFAS scores in the intervention group increased significantly over the course of the programme ($t = 10, p < .001$) The mean difference between MFAS scores before and after treatment due to group division was significant ($t = 9.3, p < .001$)	Random allocation of healthcare centres to intervention and control conditions (method not specified) Multi-centre trial No significant differences between the groups in terms of demographic or pregnancy characteristics
Quality Rating						Limitations
Internal Validity: -						Number of women in each group not specified
External Validity: -		Three healthcare centres were 'randomly' devoted to the control group and three to the treatment group				Sampling method not specified Session facilitator not specified Recruitment and completion rates not specified No documented power analysis Adherence to programme not specified No blinding

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Akbarzade et al., (2014), Iran	To investigate the effect of training fathers regarding attachment skills on maternal-fetal attachment in primigravid women	<p>RCT comparing a group of women whose husbands underwent training regarding attachment skills on maternal-fetal attachment, and a control group of women whose husbands received routine care</p> <p>A purposive sample of 150 primigravidae women, of gestational age between 28-32 weeks, between the ages of 18-35, where the pregnancy was single and planned, and they were not suffering from psychological disorders, chronic diseases, or pregnancy complications, and their husband was under 45 years old</p>	Persian version of the MFAS. Both groups of women completed the scale pre-intervention and 1 month later, following the intervention period	<p>Four, 60-90 minute sessions held once a week, attended by the participant's husbands. A reminder session was also held at 38 weeks of gestation.</p> <p>The sessions covered parental attachment to the fetus and baby, attachment behaviours, effects on the parents' physical and mental health and fetal growth, parents' anxiety during pregnancy, and father's role in reduction of anxiety, father's role in attachment, effect of focusing on the fetus, considering the fetus as an independent being, getting familiar with the sensory abilities of the fetus</p> <p>Fathers were asked to pass on the information gained to their wives</p>	<p>Recruitment Rate:150/150 (100%) Completion Rate: 150/150 (100%)</p> <p>The independent t-test showed no significant difference between the two groups with regards to the total mean scores on the MFAS before the intervention ($p = .364$)</p> <p>The mean difference between MFAS scores before, and 1 month after intervention due to group division was significant ($p = .001$)</p> <p>The results of paired t-test indicated a significant difference between the intervention group's mean scores before and after the intervention ($p < .001$), while no such difference was observed in the control group ($p = .660$)</p> <p>The results of independent t-test showed significant differences between the two groups on the MFAS regarding all the five dimensions one month after the intervention ($p < .05$)</p>	<p>Documented power analysis</p> <p>Random allocation to groups (through coin flipping)</p> <p>High recruitment rate</p> <p>No attrition</p> <p>Research flow chart</p> <p>No significant differences between groups in the pre-intervention period</p>
Quality Rating						Limitations
Internal Validity: +						No blinding
External Validity: +		EG = 75 CG = 75				Non-probability sample
						Recruitment site not specified
						Session administrator not specified
						Adherence to programme not specified

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Akbarzadeh et al., (2017), Iran	To evaluate the effect of the beliefs, attitudes, subjective norms, and enabling factors (BASNEF) model on maternal-fetal attachment in pregnant women referring to prenatal clinics	Non-RCT comparing a group of women who received training based on the BASNEF model to a control group who received routine training in prenatal clinics A convenience sample of 100 nulliparous expectant mothers who lived in Shiraz city, recruited at a gestational age of 28-34 weeks, with a minimum educational level of a high school diploma and no history of severe physical/ mental illness. Potential participants were excluded if they had received previous training in maternal-fetal attachment or if their maternal visits were irregular. EG: 50 (unclear) CG: 50 (unclear)	MFAS completed before the intervention and in the last session of the educational programme It is unclear whether the English version of this questionnaire was used or if it was translated	Six weekly training sessions, which were held for 90 minutes, and were based on the BASNEF model Sessions were focused on maternal-fetal attachment and breastfeeding	Recruitment Rate: Not specified Completion Rate: Not specified Although the two groups had similar MFAS mean scores prior to the intervention ($p = .74$), the intervention group had significantly higher MFAS mean scores than the control group after the intervention ($p < .001$)	Documented power analysis Use of a control group No significant differences between groups in terms of demographic characteristics Detailed information about the intervention sessions
Quality Rating						Limitations
Internal Validity: - External Validity: -						Non-probability (convenience) sample Non-random allocation to groups (unclear how this was done) Information given about control group care lacks clarity No research flow chart Recruitment and completion rates are not specified Number of participants in experimental and control groups in unclear Language of the questionnaire and information about possible translation is not provided Unclear who facilitated the intervention

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Baghdari et al., (2016), Iran	To determine the effects of a pregnancy adaptation training package on maternal-fetal attachment in pregnant women with a history of baby loss	<p>Non-RCT comparing a group of expectant mothers who received routine prenatal education in addition to four sessions of a pregnancy adaptation training package to a group who received only routine prenatal education</p> <p>60 Iranian literate expectant mothers aged between 18-35 years recruited at a gestational age of 14-20 weeks who had experienced a fetal or infant death within the previous 5 years, with no live birth since</p>	A Farsi translation of the MFAS completed pre-intervention and 12 weeks later, immediately post-intervention	<p>Both the intervention and control groups participated in eight one-hour weekly routine sessions of prenatal educational classes that were held in the healthcare centres</p> <p>In addition to the routine classes, the intervention group participated in four 60-minute sessions on adaptation to pregnancy.</p> <p>Moreover, the subjects in the intervention group were given an educational booklet and a CD concerning the outline of the education. The researcher called the mothers weekly to remind them to study the booklet and watch the CD</p> <p>The adaptation to pregnancy classes were facilitated by one of the study researchers, a midwife</p> <p>The additional sessions comprised education about fetal development, relaxation techniques, group discussions about feelings in pregnancy and concerns about fetal health, counselling facilitated by a psychologist etc.</p>	<p>Recruitment Rate: 60/72 (83.3%) Completion Rate: 55/60 (91.7%)</p> <p>Before the intervention, there were no statistically significant differences between the intervention and control groups in terms of MFAS scores ($p = .280$)</p> <p>However, following the intervention, the mean score of the maternal-fetal attachment was significantly higher in the intervention group, when compared with the control group (77.57 ± 7.23 vs. 61.53 ± 2.62; $p = .001$)</p>	<p>Multi-site recruitment (within a single city)</p> <p>Documented power analysis</p> <p>High recruitment and completion rates</p> <p>No significant differences between the groups at baseline</p> <p>Control group care is described</p>
Quality Rating						Limitations
Internal Validity: +		Women with addictions, pregnancy-related conditions, severe family conflict, or having psychological crises were excluded. Women missing more than 1 educational session were also excluded				Pseudo-randomised allocation into groups
External Validity: +		EG:30 CG:30				Non-probability (convenience) sampling
						No blinding
						No follow-up after intervention end

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Limitations
Belliemi et al., (2007), Italy	To investigate whether prenatal education courses (PEC) can enhance fetomaternal bonding	An observational study comparing a group of women who chose to attend PEC, and a control group who did not attend PEC 77 participants, without pregnancy diseases or a history of premature childbirth. Included both primigravidae and multigravidae	PAI administered during the third trimester of pregnancy following the intervention period	Attendance to a series of five one-hour group lessons held during the second trimester of pregnancy Syllabus included basics of fetal physiology and development, singing sessions, dance sessions, and massage-through-the womb sessions. Sessions aimed to raise awareness of fetal presence and development, and to encourage mothers to interact with the fetus by stimulating it gently and perceiving its responses. Facilitated by nurses and midwives who had received specific training	Recruitment Rate: Not Specified Completion Rate: Not Specified Women in the experimental group had significantly higher scores than the control group on the PAI (65.5 ± 6.9 vs. 59.9 ± 6.1 ; $p < .05$) as determined by an unpaired t test	Small sample size Recruitment method not specified No baseline measurement of prenatal attachment Intervention not described in sufficient detail for replication Adherence to intervention not reported Non-random (self-selected) allocation to groups No blinding of investigators Unclear whether the questionnaires were administered in English or Italian
Quality Rating						
Internal Validity: -		EG=36 CG=41				
External Validity: -						

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Limitations
Burke, (2007), USA	To determine whether the Prenatal Attachment and Healthy Development Intervention (PAHDI) programme was beneficial to women during their pregnancy	A non-comparative study A convenience sample of 12 English-speaking expectant mothers, aged between 16-39, in good physical health, the majority of whom were in the second or third trimester of pregnancy, recruited from social service agencies and a baby retail store	PAI administered prior to and following the intervention	A 3-day, 18-hour PAHDI training programme. The programme is a multi-component interactive educational support and bonding group which aims to reduce stress/ anxiety, prevent depression, insecure or unattached caregiver-child relationships, infant morbidity, and infant mortality, while increasing maternal emotional attachment, self-care, and parenting competencies. It provided an opportunity for participants to meet with other expectant mothers. Activities included teaching of maternal bonding techniques that encourage expectant parents to communicate with their fetuses, cognitive/behavioural skills, and communication techniques	Recruitment Rate: Not Specified Completion Rate: Not Specified Paired t tests showed that there was a significant mean difference between pretest ($M = 57.55$, $SD = 9.80$) and posttest ($M = 66.27$, $SD = 8.38$) PAI composite scores ($p = .001$), suggesting that MFA increased significantly over the course of the intervention	No control group Small sample size No documented power analysis Non-probability sample Recruitment rate and completion rate not specified Session attendance rate not specified Large variation is gestational ages of participants
Quality Rating	To examine the effects of the PAHDI program on maternal emotional attachment during pregnancy					
Internal Validity: -						
External Validity: -				Facilitated by a research assistant having a MSc. in mental health counselling, who was trained by the researcher to instruct the programme		

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Nosrati et al. (2019), Iran	To determine the effect of expectant fathers' training on paternal-fetal attachment	RCT comparing a group of expectant fathers who received an attachment training intervention to a group of expectant fathers who did not receive the intervention	PFAS competed pre-intervention, immediately post-intervention and three weeks later	Three 120-minute sessions of attachment training once a week in the form of group discussion, lectures, question and answer sessions, videos and an educational booklet	Recruitment Rate: Not specified Completion Rate: Not specified Mean scores on the PFAS were not significantly different between the groups before training ($p = .527$)	Randomised allocation into groups (method not specified) 2 recruitment sites No significant differences between groups in terms of demographic characteristics
Quality Rating						Limitations
Internal Validity: +		60 Iranian, literate, first-time expectant fathers where the pregnancy was at a gestational age of between 28-32 weeks. Participants were excluded from the study if they missed more than one training session or if they passed through unpleasant or stressful events during the study	It is unclear if the tool was translated	The sessions covered topics such as fetal development, physical and psychological changes in pregnancy, the father's role, attachment and paternal-fetal attachment and ways to communicate/attach with the fetus	There was also no significant difference in the mean scores of paternal-fetal attachment between the two groups immediately after intervention ($p = 0.66$) However, the results of the t-test in the follow-up 3 weeks after the intervention ended showed that the mean scores of paternal-fetal attachment in the intervention group were significantly higher than those in the control group ($p = 0.006$)	Non-probability (convenience) sampling Lack of detail about power analysis Unclear whether the PFAS tool was translated No research flow chart Intervention facilitator unclear Recruitment rate and completion rate not specified No blinding No information given about control group care No information given about source population
External Validity: +		EG:30 CG:30		A female educator facilitated the intervention but it is not clear who this was		

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Setodeh et al., (2017), Iran	To investigate the effect of fathers' attachment training on paternal-fetal attachment and parental anxiety.	RCT comparing a group of expectant fathers who received an attachment training intervention to a group receiving routine prenatal care 150 male spouses of healthy nulliparous mothers expecting a singleton child, aged 18-35 years, at a gestational age of 28-34 weeks, with an uncomplicated pregnancy and receiving care in the antenatal clinic in one of two hospitals. The female spouses were required to have low to average anxiety levels and at least a middle-school degree EG:75 CG:75	An adaption of the MFAS completed by the fathers pre-intervention and immediately post-intervention The questionnaires were completed in group discussion	Four, weekly, 60-90 minute training sessions on maternal-fetal attachment in groups of 15 participants	Recruitment Rate: unclear - error in research flow chart Completion Rate: 150/150 (100%) The mean MFAS scores were similar between the two groups prior to the intervention ($p = .523$) Attachment scores increased significantly over the research period for both groups ($p < .001$) There was a significant difference between group difference in the post-intervention assessment with the experimental group scoring significantly higher than the control group ($p < .001$)	Random allocation to groups (block allocation) Documented power analysis Blinding (limited) Research flow chart No loss to follow-up No significant differences between groups in terms of demographic characteristics
Quality Rating						Limitations
Internal Validity: +						Non-probability sampling
External Validity: -						Testing of the adapted tool was limited to test-retest Description of the intervention is poor Unclear who facilitated the intervention No follow-up after intervention end The training is based on maternal- rather than paternal-attachment Questionnaires completed in group setting - potential influence by others

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Thomas et al., (2014), Australia	To examine the acceptability and effectiveness of an antenatal group intervention designed to reduce the severity of depression and anxiety symptoms and improve maternal attachment in pregnant women with current or emerging depression and anxiety	<p>A non-comparative study</p> <p>48 English-speaking expectant mothers, in their second or third trimester of pregnancy, with current antenatal depression or anxiety or at risk of developing these disorders due to a past psychiatric history or emerging symptoms.</p> <p>Recruited through referrals by health care professionals attached to antenatal clinics</p> <p>Those abusing of drugs or alcohol, having psychotic symptoms or at acute risk of suicide were excluded.</p>	MAAS completed pre-intervention at the first group session (T1) and post-intervention at the final group session (T2)	<p>The antenatal group program comprised six sessions held every 2 weeks, lasting 2 hours each, including 2 sessions which the participants' partners also attended. The program aimed to teach self-care strategies, and had a psycho-educational component focusing on mood monitoring, early detection and planning for emerging anxiety and depression in the perinatal period. It also included an interpersonal therapy (IPT) component addressing social support, couple communication, role transitions and awareness between the couple of each other's mental health warning signs; and, finally, a parent-infant relationship component addressing infant attachment needs, positive parental responsiveness and bonding with infants</p> <p>Participants were divided across 8 groups over a 2 year period, with group size ranging between 4-8 participants</p> <p>The program was facilitated by a clinical psychologist who had experience in CBT, IPT and parent-infant intervention. It was co-facilitated by different parent-infant mental health clinicians with a background in psychology or psychiatry</p>	<p>Recruitment Rate: 48/112 (42.9%)</p> <p>Completion Rate: 30/48 (62.5%)</p> <p>Participants completed at least 80% of sessions</p> <p>There was significant improvement in maternal attachment ($p = .006$) at the completion (T2) compared to the beginning of the program (T1)</p>	<p>Consistent facilitator between groups</p> <p>Large to moderate effect sizes</p> <p>Detailed explanation of intervention</p>
Quality Rating						Limitations
<p>Internal Validity: -</p> <p>External Validity: +</p>						<p>No control group</p> <p>Non-probability sample</p> <p>Low recruitment rate</p> <p>Moderately high attrition rate</p> <p>Lack of cultural diversity</p> <p>The majority of the participants (98%) were receiving concurrent individual mental health treatment</p> <p>No documented power analysis</p>

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Yuan et al., (2018), China	To examine the effects of a paternal-fetal attachment pilot intervention on perceived mental health and perceived attachment to fetus	A RCT comparing a group of expectant mothers whose male partners took part in an educational intervention regarding prenatal attachment and a control group 29 expectant mothers, aged 20 or older, recruited at a gestational age of between 28-32 weeks, and with a mental health score at least one standard deviation above the population mean on any sub-scale of the General Health Questionnaire (GHQ) (Goldberg & Hillier, 1979), but no history of significant mental or physical illness. To be considered eligible to participate, the male partners needed to be literate and expecting their first child, with no dependency issue or mental problems. EG:15 CG:14	PFAS completed pre-intervention and one week after intervention completion	A 3-week paternal-fetal attachment intervention with 1 session each week, based on the programme developed by Akbarzade et al. (2014), and designed to promote the mental health of pregnant women The educational programme included information about the paternal role, the fetal growth stages, common physical and psychological issues in the pregnancy, paternal-fetal attachment and attachment techniques It is not clear who facilitated the intervention	Recruitment rate: Not specified Completion rate: Not specified Mean PFAS scores were comparable between groups in the pre-intervention period The mean scores increased for the intervention group ($M = 2.10$, $SD = 2.03$ at the pre-intervention period, and $M = 4.51$, $SD = 2.92$ post-intervention) but remained relatively stable in the control group ($M = 2.12$, $SD = 2.33$ before the program, and $M = 2.18$, $SD = 2.62$ at after the program). It is unclear whether post-intervention group differences or the changes over time were statistically significant	Randomised allocation into groups (method not described) The intervention and control groups did not differ significantly on any of the demographic variables
Quality Rating						Limitations
Internal Validity: -						No documented power analysis
External Validity: -						Small sample size Non-probability sample It is unclear what care the control group received It is unclear why expectant mothers completed the paternal version of the measure It is unclear whether the measure was translated and validated Recruitment and completion rates are not specified Adherence to programme not specified It is not clear whether the results concerning prenatal attachment relate to the expectant mothers or their male partners

Results Table - Social and Psychological Support Techniques

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Côté-Arsenault et al. (2014), USA	To test the feasibility and acceptability of a caring-based nurse home visit intervention for women pregnant after perinatal loss	<p>Mixed methods study incorporating a RCT, and a qualitative component</p> <p>The RCT component compared a group of women who received a caring-based home visit nursing intervention, with a control group who received pregnancy information booklets</p> <p>24 healthy pregnant women with a history of at least one perinatal loss, recruited from obstetric practices, and currently in their first or second trimesters (recruited prior to 18 weeks gestation, or the consistent sensation of fetal movements). Participants were English-speaking adults over the age of 21, without uncontrolled medical or mental illness, and where the fetus was not known to be suffering from any abnormality</p>	MAAS administered at baseline, at 22-24 weeks gestation, and at 32-34 weeks gestation	<p>The goal of the intervention was reduce depression and anxiety by normalising the experience of pregnancy after loss, promoting fetal attachment, and teaching skills known to reduce stress and anxiety.</p> <p>The intervention group received a comprehensive nurse caring intervention incorporating 6 home visits, the keeping of a pregnancy diary and teaching of anxiety-reducing skills such as relaxation, problem solving, daily fetal movement records, and “I” message training. The home visits consisted of discussion of commonly experienced emotions, physical milestones, and social aspects of pregnancy.</p> <p>Intervention delivered by an experienced maternity advanced practice nurse with expertise in providing care to women who were pregnant after perinatal loss.</p> <p>The control group received pregnancy information booklets on the same schedule as the intervention group home visits</p>	<p>Recruitment Rate: 24/28 (85.7%) Completion Rate: 23/24 (95.8%)</p> <p>No statistically significant differences in MAAS mean scores were found between the post-test results of the two groups</p> <p>However, from the qualitative analysis it was determined that half of the women felt that the intervention interfered with their tendency to suppress thoughts of their prior perinatal losses, and to avoid attaching to their unborn child. Most felt this to be a positive outcome</p>	<p>Documented power analysis</p> <p>Randomised allocation to groups (method not specified)</p> <p>Blinding of assistant collecting completed questionnaires</p> <p>Research flow chart</p> <p>No significant differences between the groups at baseline</p> <p>Member-checking for qualitative component</p> <p>Multi-site recruitment</p>
Quality Rating						Limitations
Internal Validity: +						Sampling method not specified
External Validity: +		EG: 13 CG: 11				Lack of cultural diversity No blinding of participants or those delivering intervention

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Ekrami et al. (2020), Iran	To determine the effect of counselling on maternal-fetal attachment in women with unplanned pregnancy	<p>A RCT comparing a group of women who attending individual and group counselling sessions to a group of women who received routine care</p> <p>80 women, aged between 15-49 years, experiencing an unplanned singleton pregnancy at a gestation of 18-24 weeks and having weak to average maternal-fetal attachment scores. Women were excluded if they had a history of mental illness, chronic medical conditions, pregnancy complications or marital problems. The recruitment sites were health care centres providing antenatal care</p> <p>EG:40 CG:40</p>	<p>Persian version of the MFAS completed prior to the intervention and 4 weeks post-intervention</p> <p>There was an interval of 10 weeks between pre- and post-intervention measurement</p>	<p>The intervention group participated in 6 weekly counselling sessions held in groups of 6-7. In addition each participant received 1-3 individual counselling sessions.</p> <p>The sessions included information about fetal development, maternal changes over pregnancy, unplanned pregnancy and possible consequences of this, maternal-fetal attachment and ways to foster this, promoting maternal and fetal well-being in pregnancy, and signs of pregnancy complications</p> <p>The control group received routine care</p> <p>The researcher facilitated the intervention</p>	<p>Recruitment Rate: 80/105 (76%) Completion Rate: 76/80 (95%)</p> <p>The mean (<i>SD</i>) MFAS score of the intervention group increased from 73.6 (8.9) before the intervention to 96.6 (9.3) after the intervention</p> <p>The mean (<i>SD</i>) MFAS scores of the control group were 76.0 (9.4) and 76.5 (6.4), before and after the intervention, respectively</p> <p>Post-intervention, the mean MFAS score of the intervention group was significantly higher than that of the control group (adjusted mean difference: 21.7; 95% CI: 18.6 to 24.9; $p < .001$)</p>	<p>Randomised allocation to groups (through stratified blocked randomisation)</p> <p>Documented and fulfilled power analysis</p> <p>Research flow chart</p> <p>Detailed description of intervention content</p> <p>High completion rate</p> <p>One month follow-up after intervention conclusion</p>
Quality Rating						Limitations
Internal Validity: +						Non-probability (convenience) sample
External Validity: +						Some between-group differences in terms of demographic characteristics
						Pre-intervention between-group differences on certain subscales of the MFAS tool
						No blinding
						It is unclear whether the intervention facilitator had a qualification in counselling

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Flykt et al., (2012), Finland	To analyze the role of maternal prenatal representations and pre- to post-natal representational change in predicting mother–infant emotional availability (EA) among 51 drug-abusing mothers and their infants who participated in either psychodynamic group therapy (PGT) or received psychosocial support (PSS) and among 50 non drug-using comparison dyads	An observational study comparing 3 groups: A group of drug-abusing mothers who participated in PGT, a group of drug-abusing mothers who received PSS, and a comparison group of 50 non drug-abusing mothers who had pregnancy complications 101 Finnish mothers and their children. All mothers in the drug-abusing groups had a history of severe illegal drug or polysubstance abuse lasting for several years and verified by a positive drug screen or self-report. They were recruited from 2 psychiatry outpatient departments. The comparison group mothers were recruited from a maternity outpatient clinic. They visited the clinic for treatment of pregnancy complications. They had no history of drug abuse PGT: 26 PSS: 25 Comparison: 50	Adjective scale from the Interview of Maternal Representations (IRMAG) completed in the second or third trimester of pregnancy (T1), four months postpartum (T2), at 12 months postpartum (T3)	The PGT intervention started during pregnancy and comprised 20-24 weekly, 3-hour sessions. The aim of the time-limited PGT intervention was to offer the mother the experience of care that they in turn could return to their infants. Substance-abuse, mental health treatment, and parenting interventions were integrated, with the aim of addressing the mother’s psychological needs as well as preventing the child’s attachment disorders. One of the two therapists was available by telephone between the sessions. Only 1-3 sessions were missed by each mother The psychosocial support group received an individually-tailored intervention which comprised different possible elements, such as support for abstinence and for the mother–infant dyad, home visits, help with organising daily life, and marital counselling, but not psychotherapy. The PSS mothers did not have a systematic weekly participation schedule Non-drug abusing comparison group mothers received routine care	Recruitment Rate: 101/108 (93.5%) Completion Rate: 77/101 (76.2%) At T1 mothers in the 3 groups did not differ significantly with regards to their prenatal representations of the child Among PSS mothers, representations of the child first changed in a more positive direction from T1 to T2 and then back in a more negative direction from T2 to T3 whereas there was no change among the comparison mothers, and a mild, nonsignificant positive change among the PGT mothers	Blinding of investigators coding for emotional availability
Quality Rating						Limitations
Internal Validity: - External Validity: +						No documented power analysis Non-probability sample Non-random assignment into groups - Self-selection of allocation for drug abusing mothers Use of adjective scale from the representations measure, rather than the interview form Demographics variables differed between the drug abusing groups and the comparison group (controlled for in analysis) Small effect sizes

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Jangjoo et al., (2019), Iran	To determine the effect of group counselling on maternal-fetal attachment in mothers with unwanted pregnancy	A RCT comparing a group of expectant mothers who attended a group counselling intervention to a group of mothers who received routine care. 80 expectant mothers, literate, living with a spouse, recruited at 28-34 weeks of a singleton pregnancy which was unplanned or unwanted. Women with a history of psychological problems, chronic conditions, pregnancy complications or substance abuse/addiction were excluded	Persian translation of the MFAS completed pre-intervention and 2 weeks post-intervention	4 weekly group counselling sessions lasting 60 minutes each, held in the third trimester of pregnancy, aiming to promote MFA. The groups were formed of 4-6 participants Mothers were excluded from the study if they missed more than one session The sessions focused on providing information about fetal development, maternal-fetal attachment and ways to promote this The intervention was facilitated by the first author who has a master's degree in midwifery counselling, under the supervision of a psychologist	Recruitment Rate: 80/110 (66.7%) Completion Rate: 71/80 (88.8%) There was no significant difference between the two groups in terms of mean MFAS scores at baseline ($p = .96$) After the intervention, the total mean MFAS scores of the intervention group were significantly higher than those of the control group ($p < .001$) The mean scores in all subscales of the MFAS were significantly higher for the intervention group than they were for the control group	Randomised allocation into groups Stratified sampling of recruitment sites Documented and fulfilled power analysis Research flow chart High completion rate Detailed description of the interventions Multi-site recruitment Comparable between-group demographics
Quality Rating						Limitations
Internal Validity: +						Misleading terminology - The pregnancies were unplanned rather than necessarily unwanted
External Validity: +		EG:40 CG:40				Moderate recruitment rate No blinding The content of routine care is not described

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Lavi et al. (2015), USA	To examine the potential impact of a Child-Parent Psychotherapy (CPP) programme for traumatised mother-child dyads, on maternal functioning at 6 months postpartum among women with history of complex trauma and current intimate partner abuse	Non-comparative study 94 English- or Spanish-speaking pregnant women, aged between 18-40 years, recruited at a gestational age of between 12-42 weeks. They were recruited from a hospital-based women's health clinic, identified by social workers based on self-report of feeling unsafe in their relationship with their partner. Women with psychosis or drug or alcohol abusers were excluded	MFAS completed at baseline, prior to the start of the intervention	Weekly perinatal CPP sessions until the infant was 6 months old. The number of treatment session ranged from 12-49 (average of 27). The intervention aimed to promote of maternal self-care, attunement to child, and responsiveness to infant's signals, and address negative maternal attributions of infant and potentially maladaptive caregiving behaviours by exploring links between these attributions/behaviours and mother's own experiences of current and past trauma. During pregnancy, treatment focuses on woman's experience of her pregnancy and her fantasies, fears, attributions, and hopes for her unborn child 11 master's or doctoral-level clinicians trained in perinatal CPP delivered the intervention	Recruitment Rate: 94/116 (81%) Completion Rate: 64/94 (68.1%) Changes in depression, PTSS, and child-rearing attitudes from pre- to post-treatment assessments varied according to maternal-fetal attachment pre-treatment; for depression, $F(1,62) = 10.86, p = .002, \eta^2 = .15$; for PTSS, $F(1,61) = 6.74, p = .01, \eta^2 = .09$; and for child-rearing attitudes, $F(1,55) = 4.05, p = .049, \eta^2 = .07$ The greatest improvement in depression, post traumatic stress symptoms, and child-rearing attitudes were observed in women who reported low maternal-fetal attachment.	Participants were followed into the postpartum period
Quality Rating						Limitations
Internal Validity: - External Validity: +						Small sample Non-probability sample Moderate attrition rate No control group Large variation in gestational age at recruitment Unclear whether a Spanish version of the MFAS was validated No blinding

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Loughnan et al., (2019), Australia	To examine the efficacy and acceptability of a brief, unguided iCBT intervention, the MUMentum Pregnancy program, in pregnant women with anxiety and/or depression	A RCT comparing a group of expectant mothers who received the iCBT MUMentum pregnancy program to a group of expectant mothers who received treatment as usual 87 expectant mothers aged 18 or over, fluent in English, at a gestational age of between 13-30 weeks, meeting clinical thresholds on validated self-report measures for generalised anxiety and/or depression. Women reporting substance abuse, those diagnosed with schizophrenia or bipolar disorder, those having commenced psychological therapy within a month of recruitment or medication for anxiety/depression within 8 weeks of recruitment were excluded EG:43 CG:44	MAAS completed at baseline, 1 week post-intervention (week 5), and 4 weeks later (week 9)	Women in the intervention group completed the MUMentum Pregnancy program, an unguided, online cognitive behavioural therapy program tailored to women experiencing generalised anxiety and depressive symptoms in the antenatal period. It consisted of 3 weekly lessons which needed to be completed within 4 weeks, with participants encouraged to revise the content in week 5 Content for this program was presented in the form of a shortened illustrated story, in which two fictional characters experiencing anxiety and depression during their pregnancy learn to self-manage their symptoms which improve with CBT skills practice. Each lesson consisted of a set of lesson slides depicting the characters' stories and introduction to core CBT skills (e.g., thought challenging); a brief lesson summary and action plan to implement skills; and a range of supplementary resources (e.g., sleep hygiene, FAQs). Those in the control group were given access to the program following study completion	Recruitment Rate: 87/409 (21% of those who applied to participate) Completion Rate: 51/87 (58.6%) No significant group-by-time interactions were noted for antenatal bonding as measured by the MAAS ($F(2, 53.32) = 0.50, p = .61$) There were no notable between-group differences observed for antenatal bonding ($gs = < -0.16$) at post-assessment or follow-up assessment. 76% of the women completed all lessons of the program	Randomised allocation into groups (by an independent person using a computerised system) Allocation concealment from investigators Multi-method recruitment Detailed description of the intervention Intention-to-treat analysis Research flow chart
Quality Rating						Limitations
Internal Validity: +						Non-probability sample (most self-referred)
External Validity: +						Very low recruitment rate Moderately low completion rate More women in the intervention group withdrew than in the control group No blinding

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Limitations
Scherer et al., (2014), Switzerland	To examine the applicability of an online intervention self-help programme for anxiety and stress management in pregnant women with preterm labour, as illustrated by a case-based experience report	<p>A intervention case study</p> <p>A 32 year old expectant mother (G3,P1), recruited at a gestational age of 27 weeks during a 3 week hospitalisation period with preterm labour related to cervical insufficiency. She was receiving medical treatment including cerclage, tocolysis, fetal pulmonary maturation, and antibiotics</p> <p>The programme is aimed at German-speaking women with medically diagnosed preterm labour, and is intended to be commenced between the 18th-32nd week of gestation. Eligible participants are recruited through websites targeting pregnant women, women's magazines and from collaborating obstetric clinics, gynaecologists and midwives. High risk individuals, in terms of severe medical/obstetric conditions and/or severe psychological disorders are excluded</p>	Prenatal Bonding Questionnaire (Reading <i>et al.</i> , 1984), administered pre-treatment and following completion of the treatment programme	<p>A 6-week, cognitive-behavioural, self-help, online program adapted from established stress and anxiety management interventions. It comprised 6 modules providing strategies to reduce anxiety and stress. The particular items were specifically adapted for German-speaking pregnant women with medically diagnosed preterm labour. The participant worked independently and within a flexible time structure on the program elements, and had the opportunity to share her own experiences in a forum with other women</p> <p>The woman was monitored and accompanied throughout the program by a trained psychologist or a psychologist-to-be under supervision, with who she could communicate regularly, with weekly feedback. She was also able to ask pregnancy-specific questions of the study team's midwife</p>	The Prenatal Bonding score increased from 56 pre-treatment, to 62 post-treatment	<p>Case-report of a single participant</p> <p>No control group</p> <p>MFA measured using a little known, not fully validated tool. It is unclear whether this was translated into German and validated</p> <p>No follow-up</p>
Quality Rating						
<p>Internal Validity: -</p> <p>External Validity: -</p>						

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Spinelli et al., (2013), USA	To examine the comparative effectiveness of interpersonal psychotherapy for antepartum depression compared to a parenting education program for women who met DSM-IV criteria for major depressive disorder	<p>A 3-site, bilingual, RCT comparing a group of women who received interpersonal psychotherapy for antepartum depression to a group of women who attended a routine parenting education program</p> <p>142 English- and/or Spanish-speaking adult women who met DSM-IV criteria for major depressive disorder and had a minimum score of 12 on the Hamilton Depression Rating Scale (HDRS-17), recruited at between 12-33 weeks gestation and not suffering from psychosis, taking psychotropic medication, or abusing of drugs. They were recruited from 3 hospitals in a metropolitan area</p> <p>EG: 72 CG: 70</p>	MFAS administered at baseline and at treatment visits 4, 8 and 12	<p>Interpersonal psychotherapy intervention not described</p> <p>Sessions were videotaped</p> <p>The control group participated in a parenting education programme consisting of individual, therapist-led, 45-minute, weekly educational sessions over 12 weeks. Topics included physical changes, discomforts, and complications of pregnancy, fetal development, perinatal screening, labour, delivery and postpartum changes, and early infant care. Sessions were video-taped</p> <p>The intervention was conducted by six female psychotherapists, including 3 clinical social workers, with at least 5 years of experience. Two were bilingual (English and Spanish). All received training for the study.</p>	<p>Recruitment Rate: Not Specified Completion Rate: 89/142 (62.7%)</p> <p>Depressive symptom scores improved for both groups over the course of the study. However there was no significant difference in changes over time between treatment groups</p> <p>Lower depression scores were associated with higher mean MFAS scores for both groups</p> <p>Mean MFAS scores between groups are only demonstrated through a graph. It would appear that they did not differ notably between groups at any point during the treatment</p>	<p>Documented power analysis (but required number not documented)</p> <p>Random assignment to groups in blocks stratified by site, ethnicity, and pregnancy trimester</p> <p>Binding of evaluators performing assessments</p> <p>Measures taken to promote cultural and socioeconomic diversity</p> <p>No significant demographic differences between the groups at baseline</p>
Quality Rating						Limitations
Internal Validity: +						Intervention poorly described
External Validity: +						Intervention group did not receive the control group care
						Recruitment rate not specified
						Moderate attrition rate

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Weis and Ryan (2012), USA	To evaluate the effectiveness of the Mentors Offering Maternal Support (MOMS) program to promote maternal fetal attachment, maternal adaptation to pregnancy, self-esteem, and perceived community support in women within a military environment	<p>A randomised controlled, repeated measure pilot study comparing a group of pregnant military wives receiving a structured eight-session MOMS program, to a control group receiving standard prenatal care</p> <p>73 English-speaking military wives in their first trimester of pregnancy, with a singleton gestation, who were married to an American Armed Services employee who was anticipating a deployment of at least one month in length during the pregnancy. They were recruited from an airforce base</p> <p>EG = 29 (included in analysis) CG = 36 (included in analysis)</p>	MAAS completed by both groups at times corresponding to the intervention program sessions 1, 5, and 8	<p>The intervention group received the MOMS program, which comprised of eight semi-structured support sessions, lasting 1.5 hours each, with unlimited support from a trained mentor. The sessions were held once every other week, from the first trimester until the beginning of the third trimester. The intervention was carried out in groups of 6-9 women</p> <p>The sessions encouraged participants to process their pregnancy experiences, fostered reflectiveness, promoted self-understanding, facilitate coping, and enhanced their capacity for social support for each other</p> <p>The control group received the standard prenatal plan of care for military pregnant women</p> <p>Mentors were 3 mothers with varied military backgrounds, who received a 2-day training program</p>	<p>Recruitment Rate:73/521 (14%) Completion Rate: 65/73 (89%)</p> <p>When assessing the main effects of the MOMS program versus the control group on maternal-fetal attachment, no significant differences were observed</p>	<p>Randomised allocation to groups (method not specified)</p> <p>Intervention well described</p> <p>Documented power analysis</p> <p>The intervention and control groups did not differ significantly on any of the demographic variables</p>
Quality Rating						Limitations
Internal Validity: +						Sampling method not specified
External Validity: +						Very low recruitment rate (for unspecified reasons)
						Unclear how many sessions participants attended
						No blinding
						No follow-up after intervention end

Authors, (Year), Location	Purpose	Design & Sample	Relevant Scales Used	Intervention	Relevant Results	Strengths
Wu & Hung, (2019), Taiwan	To investigate the effects of a virtual community on pregnant women's well-being	A before-and-after study comparing a group of expectant mothers who participated in a unmediated, closed Facebook community for peer-to-peer interaction and received ordinary prenatal care and a group of expectant mothers who received ordinary prenatal care only	A Chinese translation of the MFAS completed at baseline (time 1), between 22-24 gestational weeks (time 2), and between 36-38 gestational weeks (time 3). The measures were completed while the participants waited for routine antenatal check-ups	<p>Participants in the intervention group were made members of a closed Facebook community, the Expectant Mothers Club (EMC)</p> <p>The EMC comprised two main components: a discussion forum and a library area for pregnancy-related information</p> <p>In the discussion forum the members could choose to publish posts, write comments, ask questions or share personal experiences</p> <p>The library area contained pregnancy information compiled by the researchers, including information on foetal growth, week-by-week pregnancy progress, a prenatal check-up schedule and contents and pregnancy nutrition</p> <p>The EMC provided a peer-to-peer interaction environment without a mediator</p>	<p>Recruitment Rate: Not specified Completion Rate: 109/138 (79%)</p> <p>Mean MFAS scores increased significantly over the study period for both groups (time 2 vs. time 1: $B = 14.89$; $SE = 3.34$; 95% CI: 8.33–21.45; $p < 0.001$) and (time 3 vs. time 1: $B = 27.90$; $SE = 3.75$; 95% CI: 20.53–35.26; $p < .001$)</p> <p>However, there were no significant differences in the interaction effects of group and time for maternal-fetal attachment</p>	<p>Documented and fulfilled power analysis</p> <p>High completion rate</p> <p>Research flow chart</p> <p>Intention-to-treat analysis</p> <p>No significant differences between the groups at baseline</p>
Quality Rating						Limitations
Internal Validity: +		138 expectant mothers, over the age of 20, with at least 9 years of education, recruited at less than 12 weeks gestation, with no chronic or pregnancy complications. They needed to have access to the internet				Non-concurrent groups
External Validity: +		EG:75 CG:63				Unclear whether the control group were free to join similar online communities
						Recruitment rate not specified
						There was a noted lack of interactive behaviour in the online community
						Non-probability sample
						No blinding
						Single recruitment site

Appendix C – Approvals from ethics boards



PRIVATE AND CONFIDENTIAL

Nicole Borg Cunen
Faculty of Health and Social Care
University of Hull
HU6 7RX

Faculty of Health and Social Care
Research Ethics Committee

T: 01482 464680
E: J.Dyson@hull.ac.uk

REF 241

23 August 2016

Dear Nicole

RE: Parents' Experiences of Relating to their Unborn Child: A Constructivist Grounded Theory Study

Thank you for your thorough and well considered responses to the Research Ethics Committees' questions.

I am happy and able, according to the Terms of Reference of the FHSC REC, to grant ethical approval for this study by Chair's action.

Please refer to the [Research Ethics Committee](#) web page for reporting requirements in the event of subsequent amendments to your study.

I wish you every success with your research.

Yours sincerely

A handwritten signature in black ink, appearing to read "J. Dyson".

Dr Judith Dyson
Chair, FHSC Research Ethics Committee

cc file

University of Hull
Hull Campus
Hull, HU6 7RX
Campus switchboard
01482 346311
www.hull.ac.uk

To be completed by Faculty Research Ethics Committee

We have examined the above proposal and advise

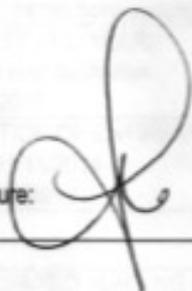
Acceptance

Refusal

Conditional Acceptance

For the following reason/s:

Signature:



Date: 21/10/2016

To be completed by University Research Ethics Committee

We have examined the above proposal and advise

Acceptance

Refusal

Conditional Acceptance

For the following reason/s:

Signature:



Date:

13/6/2017

Appendix D – Letters granting permission to recruit participants

Ms. Nicole Borg Cunen
Department of Midwifery,
Faculty of Health Sciences,
University of Malta
27th June 2016

Mr. Ivan Falzon
Chief Executive Officer
Mater Dei Hospital

*APPROVED
05/07/2016
PROCEED IN
LINE WITH
APPLICABLE
PROTOCOLS*

Dear Mr. Ivan Falzon,

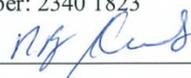
I am currently reading for a PhD with the University of Hull. For my thesis I am carrying out a study entitled, 'First-Time Parents' Experiences of Relating to their Unborn Child: A Constructivist Grounded Theory Study'.

Through this letter I am seeking your permission to recruit expectant parents from the Antenatal Clinic of Mater Dei Hospital for the purposes of the research. I intend to recruit a maximum of 20 participants, with half being expectant mothers, and the remainder comprising their male partners. An intermediary person will approach potential participants, giving them verbal and written information about the study. The researcher will interview individuals who volunteer to participate three times over the course of the pregnancy to enquire into the meaning assigned to the relationship built with the unborn child, and the way that this bond evolves during the gestational period. Data generation is foreseen to take place between October 2016 and December 2017.

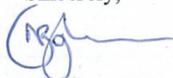
I am fully aware that I must adhere to ethical considerations throughout the research, including the strict maintenance of participant confidentiality and the obtainment of informed consent. I will also be consulting my research supervisory team throughout the research process, including my local supervisor Dr. Rita Borg Xuereb. I will be seeking approval to conduct the study from the Faculty of Health Sciences Ethics Committee and the University Research Ethics Committee at the University of Malta, as well as the Research Ethics Committee at the Faculty of Health and Social Care at the University of Hull, UK.

I would greatly appreciate if you would grant your permission to allow recruitment of expectant parents making use of the services provided by Antenatal Clinic at Mater Dei hospital. Should you have any queries please do not hesitate to contact myself or my supervisor.

Ms. Nicole Borg Cunen
Email: nicole.borg-cunen@um.edu.mt
Contact number: 2340 1895

Dr. Rita Borg Xuereb (Local Supervisor)
Email: rita.borg-xuereb@um.edu.mt
Contact number: 2340 1823
Signature: 

Sincerely,



Nicole Borg Cunen

Ms. Nicole Borg Cunen
B.Sc. (Hons.), M.Sc.
Department of Midwifery,
Faculty of Health Sciences,
University of Malta
27th June 2016

Professor Brincat
M.R.C.P., L.R.C.S. (Lond.), F.R.C.O.G. (Lond.), F.R.C.P. (Irel.), Ph.D. (UK)
Director,
Department of Obstetrics and Gynaecology,
Mater Dei Hospital

Dear Professor Brincat,

I am currently reading for a PhD with the University of Hull. For my thesis I am carrying out a study entitled, 'First-Time Parents' Experiences of Relating to their Unborn Child: A Constructivist Grounded Theory Study'.

Through this letter I am seeking your permission to recruit expectant parents from the Antenatal Clinic of Mater Dei Hospital for the purposes of the research. I intend to recruit a maximum of 20 participants, with half being expectant mothers, and the remainder comprising their male partners. An intermediary person will approach potential participants, giving them verbal and written information about the study. The researcher will interview individuals who volunteer to participate three times over the course of the pregnancy, to enquire into the meaning assigned to the relationship built with the unborn child, and the way that this bond evolves during the gestational period. Data generation is foreseen to take place between October 2016 and December 2017.

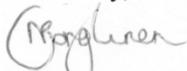
I am fully aware that I must adhere to ethical considerations throughout the research, including the strict maintenance of participant confidentiality and the obtainment of informed consent. I will also be consulting my research supervisory team throughout the research process, including my local supervisor Dr. Rita Borg Xuereb. I will be seeking approval to conduct the study from the Faculty of Health Sciences Ethics Committee and the University Research Ethics Committee at the University of Malta, as well as the Research Ethics Committee at the Faculty of Health and Social Care at the University of Hull, UK.

I would greatly appreciate if you would grant your permission to allow recruitment of expectant parents making use of the services provided by Antenatal Clinic at Mater Dei hospital. Should you have any queries please do not hesitate to contact myself or my supervisor.

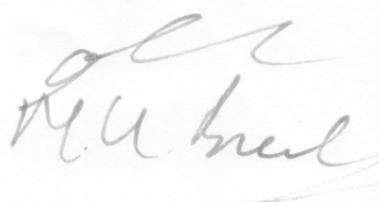
Ms. Nicole Borg Cunen
Email: nicole.borg-cunen@um.edu.mt
Contact number: 2340 1895

Dr. Rita Borg Xuereb (Local Supervisor)
Email: rita.borg-xuereb@um.edu.mt
Contact number: 2340 1823
Signature: 

Sincerely,



Nicole Borg Cunen

 28/06/16

Ms. Nicole Borg Cunen
B.Sc. (Hons), M.Sc.
Department of Midwifery,
Faculty of Health Sciences,
University of Malta
26th May 2016

Dr. Victoria Sultana
B.Sc.(Hons),M.A.,Ph.D.,R.G.N.
Director of Nursing and Midwifery
Mater Dei Hospital

Dear Dr. Victoria Sultana,

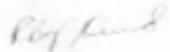
I am currently reading for a PhD with the University of Hull. For my thesis I am carrying out a study entitled, 'First-Time Parents' Experiences of Relating to their Unborn Child: A Constructivist Grounded Theory Study'.

Through this letter I am seeking your permission to recruit expectant parents from the Antenatal Clinic of Mater Dei Hospital for the purposes of the research. I intend to recruit a maximum of 20 participants, with half being expectant mothers, and the remainder comprising their male partners. Participants will be interviewed by the researcher three times over the course of the pregnancy to enquire into the meaning assigned to the relationship built with the unborn child, and the way that this bond evolves during the gestational period. Data generation is foreseen to take place between October 2016 and December 2017.

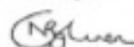
I am fully aware that I must adhere to ethical considerations throughout the research, including the strict maintenance of participant confidentiality and the obtainment of informed consent. I will also be consulting my research supervisory team throughout the research process, including my local supervisor Dr. Rita Borg Xuereb. I will be seeking approval to conduct the study from the Faculty of Health Sciences Ethics Committee and the University Research Ethics Committee at the University of Malta, as well as the Research Ethics Committee at the Faculty of Health and Social Care at the University of Hull, UK.

I would greatly appreciate if you would grant your permission to allow recruitment of expectant parents making use of the services provided by Antenatal Clinic at Mater Dei hospital. Should you have any queries please do not hesitate to contact myself or my supervisor.

Ms. Nicole Borg Cunen
Email: nicole.borg-cunen@um.edu.mt
Contact number: 2340 1895

Dr. Rita Borg Xuereb (Local Supervisor)
Email: rita.borg-xuereb@um.edu.mt
Contact number: 2340 1823
Signature: 

Sincerely,



Nicole Borg Cunen

Approved subject to
Ethics clearance.



Dr. Victoria Sultana
Director Nursing & Midwifery Services
Mater Dei Hospital
Tel. 2545 4202

RE: Request for Permission to Conduct Study

Data Protection at MDH <datapro.mdh@gov.mt>

4 July 2016 at 17:07

To: Nicole Borg Cunen <nicole.borg-cunen@um.edu.mt>

Cc: Aquilina Graziella at MDH-Health <graziella.aquilina@gov.mt>, Buhagiar Nadine at MDH-Health <nadine.buhagiar@gov.mt>

Dear Ms Cunen

On the basis of the documentation you submitted, from the MDH data protection point of view you have been cleared to proceed with your study provided that you obtain approval from MDH CEO and the University Ethics Committee.

Please contact Ms. Nadine Buhagiar on 2545 5334 or Ms. Graziella Aquilina on 2545 5346 to present a copy of your approvals and fill in the appropriate Data Protection Form.

Remember that in no way should you retain any personal details you obtain from your research and this should be destroyed at the end of your study.

All medical records are to be viewed at the Medical Records Department MDH.

You are requested to submit a copy of your findings to this office at the end of your study.

Regards

Sharon Young

Data Protection Officer

Mater Dei Hospital

Appendix E – Letter granting permission to act as gatekeeper

Appendix D – Permission to Act as Gatekeeper

Ms. Nicole Borg Cunen
Department of Midwifery,
Faculty of Health Sciences,
University of Malta
27th June 2016

Ms. Carmen Pace
Acting Charge Midwife
Antenatal Clinic,
Mater Dei Hospital

Dear Ms. Carmen Pace,

I am currently reading for a PhD with the University of Hull. For my thesis I am carrying out a study entitled, 'First-Time Parents' Experiences of Relating to their Unborn Child: A Constructivist Grounded Theory Study'.

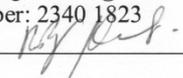
Through this letter I am seeking your permission to recruit expectant parents from the Antenatal Clinic of Mater Dei Hospital for the purposes of the research. I intend to recruit a maximum of 20 participants, with half being expectant mothers, and the remainder comprising their male partners. The researcher will interview participants three times over the course of the pregnancy to enquire into the meaning assigned to the relationship built with the unborn child, and the way that this bond evolves during the gestational period. Data generation is foreseen to take place between October 2016 and December 2017.

I would be grateful if you would kindly also agree to act as an intermediary person during recruitment for this study. This would involve approaching expectant mothers and fathers, who are attending the Antenatal Clinic for their pregnancy booking visit, explaining the purpose of the research, assessing their eligibility to take part, and giving them an information letter if they express an interest in participation. The approached individuals may return an opt-in form to you, indicating a wish to participate in the study. This form should then be returned to the researcher to enable her to contact the individuals to further explain the study and to set up an interview.

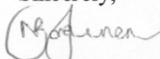
I am fully aware that I must adhere to ethical considerations throughout the research, including the strict maintenance of participant confidentiality and the obtainment of informed consent. I will also be consulting my research supervisory team throughout the research process, including my local supervisor Dr. Rita Borg Xuereb. I will be seeking approval to conduct the study from the Faculty of Health Sciences Ethics Committee and the University Research Ethics Committee at the University of Malta, as well as the Research Ethics Committee at the Faculty of Health and Social Care at the University of Hull, UK.

I would greatly appreciate if you would grant your permission to allow recruitment of expectant parents making use of the services provided by Antenatal Clinic at Mater Dei hospital. Should you have any queries please do not hesitate to contact myself or my supervisor.

Ms, Nicole Borg Cunen
Email: nicole.borg-cunen@um.edu.mt
Contact number: 2340 1895

Dr. Rita Borg Xuereb (Local supervisor)
Email: rita.borg-xuereb@um.edu.mt
Contact number: 2340 1823
Signature: 

Sincerely,



Nicole Borg Cunen

Agreed.
27/6/16
C Pace

Appendix F – Letter granting permission to refer participants for psychological services



Nicole Borg Cunen <nicole.borg-cunen@um.edu.mt>

Re: Request for Permission to Allow Participant Referral

1 message

Christian Borg Xuereb UoM <christian.borg-xuereb@um.edu.mt>
To: Nicole Borg Cunen <nicole.borg-cunen@um.edu.mt>

28 June 2016 at 13:32

Hi Ms. Borg Cunen

Interesting study. I would gladly support your study and offer psychological services on a voluntary basis to participants who require them.

Best wishes
Christian

Dr. Christian Borg Xuereb PhD
Department of Gerontology
Faculty for Social Wellbeing
University of Malta

Sent from Android!

On 24 Jun 2016 16:53, "Nicole Borg Cunen" <nicole.borg-cunen@um.edu.mt> wrote:

Dear Dr. C. Borg Xuereb,

I am a Ph.D. student, registered at the University of Hull, carrying out a study locally entitled 'First-Time Parents' Experiences of Relating to their Unborn Child: A Constructivist Grounded Theory Study'. In the attached document please find a letter, addressed to yourself, giving a brief explanation of the scope of the study, and a request to allow me to give participants your contact details should they require psychological support, during or following the study period. Although the subject under consideration is not viewed to be particularly sensitive, embarrassing, or upsetting, it may be that, for some participants, issues emanating from their past or present environments could potentially result in them becoming distressed during the study.

Your support for this research would be greatly appreciated.

Best Regards,
Ms. Nicole Borg Cunen

Assistant Lecturer

Room 47,
Department of Midwifery,
Faculty of Health Sciences,
University of Malta
Msida 2080, Malta
Tel: [2340 1895](tel:23401895)
Email: nicole.borg-cunen@um.edu.mt

Appendix G – Participant information letter and opt-in form

Participant Information Letter

You are being invited to take part in research that is being carried out as part of a PhD study. Before you decide whether you want to participate, it is important that you understand why the research is being done and what it will involve. Please take the time to read the following information, and discuss it with your partner and others if you wish to.

What is the purpose of the study?

The project is about:

‘First-Time Parents’ Experiences of Relating to their Unborn Child’

Although it is known that during pregnancy parents spend time thinking about their unborn child, it remains unclear what the nature of these thoughts are, and how they compare between individuals, and between men and women. The purpose of this study is to gain a better understanding of this subject.

Why have I been invited to take part in this study?

If you have been approached to take part in this study you are a man or woman expecting your first child, where the pregnancy is currently at 12 weeks or less. You should also be aged 18 or over, and be in a relationship or married. You should be residing in Malta, with no plans to emigrate during the pregnancy.

The study requires the participation of approximately 10 women and 10 men in total.

If you are interested in participating but your partner does not wish to, while we appreciate your willingness, you will not be eligible to take part. This is because we are interested in exploring possible influences of partner relationships on your thoughts about the unborn child.

What will I need to do if I take part?

Participation in the study will involve taking part in three interviews over the course of the pregnancy. The first will be held at about 12 to 14 weeks of pregnancy, the second at approximately 24 to 26 weeks of pregnancy, and the third at 36 to 38 weeks of pregnancy.

The interviews will be held at a time and location of your choosing, as long as it is a quiet and private place that allows open discussion. The same female researcher will carry out all the interviews, which are anticipated to last approximately one hour each. The interviews will be audio-recorded with your consent, to ensure that an accurate account of what was said is available for further reference.

You and your partner will be interviewed separately for the first and second interviews, because we are interested in exploring your individual insight into the subject, which might differ from that of your partner. However, the third interview will be a joint interview, held with both your partner and yourself. Talking to you both together will allow the researcher a gain a better understanding of how your thoughts about the baby compare or differ, and how one partner’s feelings might influence the other. Nothing that was disclosed to the researcher during the first and second interview will be revealed during the final interview.

Are there any advantages to taking part?

We cannot promise that taking part in the study will help you directly, although you may find it interesting. Knowledge gained from the interviews will help us learn more about parents' thoughts concerning the unborn child, and experiences in relating to their child before birth. This might help to improve service provision for expectant parents in the future.

You will be able to request a summary report of the study findings after the study is completed.

Are there any disadvantages to taking part?

There are no particular disadvantages to taking part in the study. However, we appreciate that this may be a busy period for you and that the interviews may take some time.

We also appreciate that the subject under consideration may be emotional to talk about for some individuals. Just in case you would like to receive emotional support after the interviews, we will be able to give you the contact details of a psychologist, who will be able to provide the support you require, at no cost to you.

Will the information I provide be kept confidential?

We will follow ethical practice throughout the research and all information about you will be kept private and handled in confidence. All information received from you, including your contact details and the audio-recordings of the interviews, will be stored in a secure location accessible only to the researcher.

In order to conceal your identity, you will be assigned a pseudonym that will be used throughout the research in place of your real name. The information gathered during the interviews may be shared with other researchers involved in the study, but only after any identifying details have been removed. Although portions of the interview may be reproduced in the research write-up and any related publications or presentations, you will never be identifiable. The information related to the study, including the interviews recordings, will be destroyed five years after it is completed.

It is important for you to know that there are certain limits to the researcher's ability to keep matters confidential. Should the researcher feel that a participant presents a serious risk to another person, including his/her partner or the unborn child, or plans to engage in criminal behaviour, the researcher has a duty to report this to relevant authorities, namely social services and/or the police force.

What happens if I no longer want to participate?

Participation in the study is entirely voluntary, and you are under no obligation to participate. You may also withdraw your consent to participate at any point during the study, without the need to provide a reason, and with no consequences to you or your family.

If either you or your partner decide that you no longer want to participate in the research, the other member of the couple will also be withdrawn from the study. This is because the final interview is a joint interview, held with both members of the couple, and will not be possible if one member has withdrawn.

What should I do if I would like to participate in the study, or would like further information?

If you and your partner have decided that you would like to participate or would like further information about the study, you can express your interest in one of two ways.

You can either complete the opt-in form attached to this letter with your contact details and hand it back to the midwife who initially approached you about the study. This form will then be passed onto the researcher who will contact you to provide further information and, if you decide to take part, schedule the first interview. Alternatively, you can contact the researcher directly through the details provided below.

This project is being organised by the University of Hull and the University of Malta. The research midwife working on this study has been funded through the University of Malta Scholarship Scheme. The plan for this study has been reviewed by a Research Ethics Committee to protect your safety and rights. If you have any queries regarding the study you can contact:

Researcher
Nicole Borg Cunen
Senior Midwife at Mater Dei Hospital and
Assistant Lecturer at University of Malta
Contact Number: 23401895 / 79230187
Email: nicole.borg-cunen@um.edu.mt

Local Supervisor
Dr. Rita Borg Xuereb
Head of Midwifery Department at
University of Malta
Contact Number: 23401823
Email: rita.borg-xuereb@um.edu.mt

Signature: 

Signature: 

Opt-in form

My partner and myself are interested in receiving further information about the study, and may be interested in participation.

Please contact us using the following details:

Expectant Mother

Expectant Father

Name:

Name:

Contact Number:

Contact Number:

Email Address:

Email Address:

Preferred method of contact:

Preferred method of contact:

Comments:

Comments:

Appendix H – Consent form

Consent to Participate in Research

Project:

‘First-Time Parents’ Experiences of Relating to their Unborn Child’

Researcher: Nicole Borg Cunen
Contact Number: 23401895 / 79230187
Email: nicole.borg-cunen@um.edu.mt

Local Supervisor: Dr. Rita Borg Xuereb
Contact Number: 23401823
Email: rita.borg-xuereb@um.edu.mt

Signature: 

Signature: 

I understand that:

- I do not have to participate in this study;
- I can stop participating in this study at any time, without the need to give a reason;
- There will be no negative consequences to myself or my family if I decide not to participate or to withdraw from the study;
- If I do decide to withdraw from the study, any information received from me in connection with the research will not be used unless I give my permission;
- The interviews will be audio-recorded to ensure that an accurate account of what was said is available for further reference;
- I can request a summary of the research results after the study is completed;
- All information received from me, or relating to me, will be kept strictly confidential, and I will not be identifiable as a research participant in any publication or presentation related to the research;
- The data collected from me will only be used for the purpose of this study.

I was given a copy, and understand the contents, of the ‘Participant Information Letter’ and of this consent form.

I have had any questions I had about the research answered to my satisfaction.

I agree to participate in the study and give my consent freely.

Participant Name: _____

Participant Signature: _____

Date: _____

Appendix I – Interview guide

Assigned Pseudonym: _____

Interview Schedule

Interview 1 - 12-14 weeks' gestation

Demographic Information

Age: _____	Level of Education: _____
Marital Status: _____	Pregnancy Planned/Unplanned: _____
Length of Partner Relationship: _____	Natural Pregnancy/Assisted Reproduction: _____
Occupation: _____	Gestation: _____

Interview Schedule

1. Can you tell me about your experience of your/ your partner's pregnancy so far?

Probes:

- a. Can you tell me about your feelings when you realised you / your partner was pregnant?
- b. How have your parents/siblings reacted to the news of the pregnancy? Can you tell me how this has affected your own feelings?
- c. What has been on your mind most since you found that you/your partner are/is pregnant?

2. Can you tell me about any lifestyle changes that have occurred since you learned about the pregnancy?

Probes:

a. What has influenced or motivated these changes?

3. Can you talk to me about how you currently feel about the baby?

Probes:

a. What do you think has influenced the way you feel about the baby?

4. In what ways have your feelings towards the baby changed between the time you found out about the pregnancy till the present?

Probes:

a. Where these changes influenced by any particular event or experience?

b. Have you viewed the baby on an ultrasound yet? Has that experience changed the way you feel about the baby?

5. How do you feel about your/your partner's changing body?

6. How has this influenced the way you feel about the baby?

Probes:

a. Can you explain further?

7. How would you describe the baby at the moment?

Probes:

- a. What do you imagine him/her to be like?
- b. Can you tell me what you imagine the baby will be like when he/she is born?
- c. What have you based your thoughts on?
- d. Can you tell me how you imagine yourself caring for the baby?

8. How do you try to connect to the baby?

Probes:

- a. Can you explain further?

9. Can you tell me what possible concerns could be holding you back from establishing a stronger connection with the baby?

Probes:

- a. Would you like to feel more connected to the baby?
- b. Why do you think this is not possible?
- c. Do you think this will change later in the pregnancy?

10. What do you and your partner talk about when discussing the baby?

Probes:

- a. How do you think your feelings towards the baby compare to those of your partner?
- b. Do you think that your partner's feelings towards the baby have influenced your own? In what ways?

11. Can you tell me how your own experiences as a child with your parents has influenced your feelings about the baby?

Probes:

a. Can you explain further?

12. Can you tell me how are you preparing for the birth of the baby?

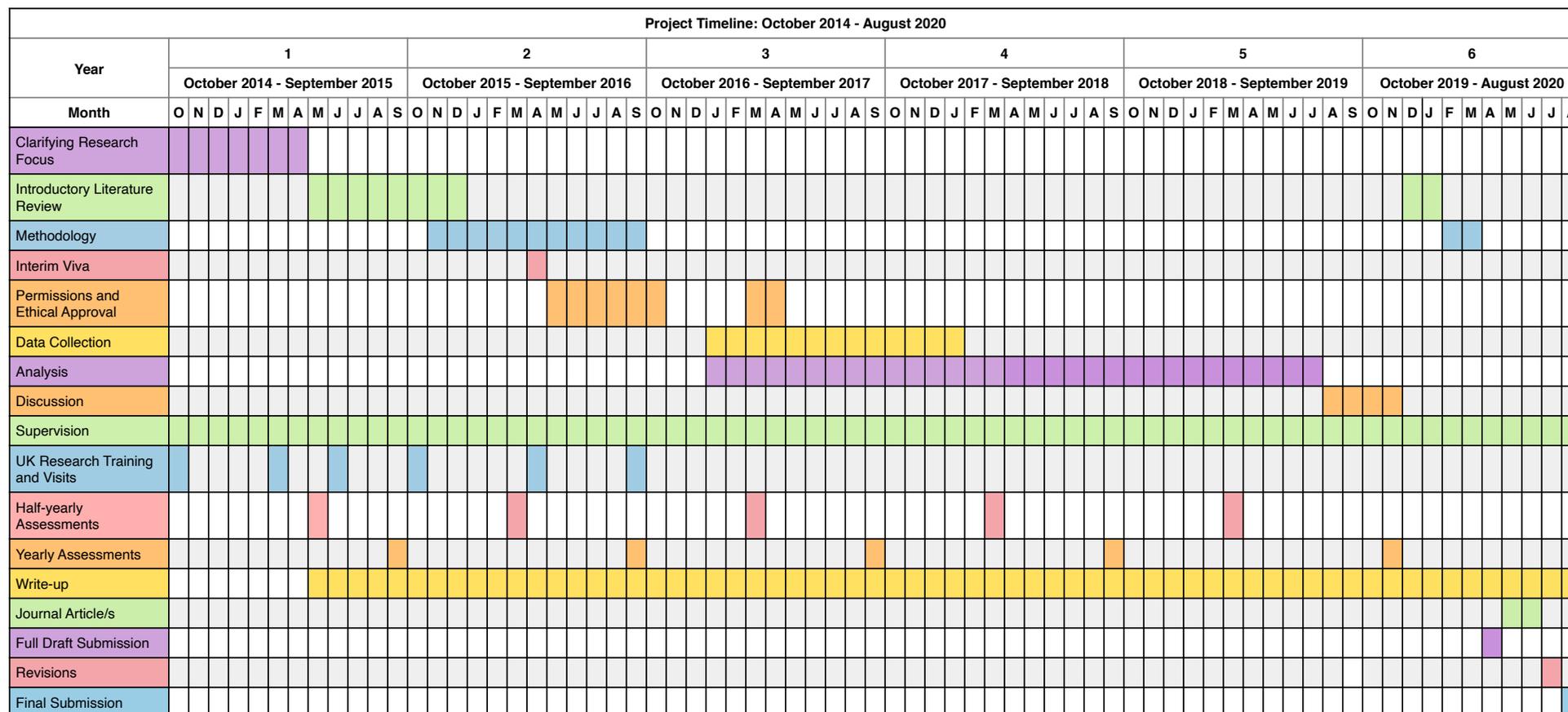
Probes:

a. Do you feel emotionally prepared?

b. Can you explain to me what may be causing those feelings?

13. Is there anything else you would like to add before we conclude the interview?

Appendix J – Gantt chart



Appendix K - Research journey

Journey to the final research question	
Original Proposal	<p>The original research proposal was for a quantitative, longitudinal study assessing parental adjustment over the transition to parenthood. This was envisioned to focus on evaluating the evolving strength of the parent's attachment to the fetus/child, as well as measuring related concepts, such as their psychological well-being.</p>
Problems Encountered	<p>A scoping review on the concept of parental-fetal attachment, in preparation for the study, revealed significant issues in existing conceptualisations of the phenomenon, and in the tools designed to measure it.</p> <p>It was felt that the use of these tools would prevent the accurate assessment of parental-fetal attachment and thus compromise overall research validity and reliability.</p>
New Ideas	<p>In view of these issues, a significant change in research direction was considered. The need for research re-examining the conceptual underpinnings of parental-fetal attachment was recognised. Grounded theory was identified as a potential methodology for such research.</p> <p>A more detailed look into existing knowledge on parental-fetal attachment was needed to refine the emerging research question.</p>
Hesitance	<p>A tenet of grounded theory is that the researcher should enter the field relatively 'tabula rasa' to avoid the risk of preconceived ideas influencing the emerging theory. Thus, a detailed look at previous conceptual work in the field was avoided. Instead, related concepts were examined, including work examining the effects of interventions seeking to address parental-fetal attachment.</p>
Final research question	<p>The results of the latter review suggested that research in the area has not advanced to the degree needed to develop consistently effective and useful interventions. This supported the need for further in-depth exploration of the parental-fetal tie, to enhance our understanding of the concept.</p> <p>The journey thus led to the emergence of a new question: "How do expectant parents conceptualise and relate to the unborn child over a first pregnancy?"</p>